Garoo Solar Farm & BESS

Scoping Report

PREPARED FOR
GreenPulse Solar Farm and BESS Unit Trust

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Garoo Solar Farm & BESS

Scoping Report

0751705

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym	Description
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
AbSec	NSW Child, Family and Community Peak Aboriginal Corporation
AC	Alternating Current
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEMO	Australian Energy Market Operator
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
ALA	aircraft landing areas
ARENA	The Australian Renewable Energy Agency
AS	Australian Standards
ASC	Australian Soil Classification
BAM	Biodiversity Assessment Method 2020
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BOS	Biodiversity Offset Scheme
BSAL	Biophysical Strategic Agricultural Land
COP	Convention on Climate Change Conference of Parties
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DC	Direct Current
DP	Deposit Plan
DPE	NSW Department of Planning and Environment, now known as Department of Planning, Housing and Infrastructure.
DPIE	NSW Department of Planning, Industry & Environment
DPHI	NSW Department of Planning, Housing and Infrastructure, previously known as Department of Planning and Environment.
EDC	Estimated Development Cost
EEAP	Energy Efficiency Action Plan
EII Act	*Electricity Infrastructure Investment Act 2020*
EIS	Environmental Impact Statement
EnergyCo	NSW Energy Corporation
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*

Acronym	Description
ERM	Environmental Resources Management Australia Pty Ltd
ESOO	Electricity Statement of Opportunities
FTE	Full Time Equivalent
Garoo	Garoo Solar Farm and BESS
GDEs	Groundwater Dependent Ecosystems
GHG	Greenhouse Gas
GreenPulse	GreenPulse Solar Farm & BESS Unit Trust
GW	Gigawatt
ha	hectare
IBRA	Interim Biogeographic Regionalisation for Australia
ISP	Integrated System Plan 2024
km	kilometres
km^2	square kilometres
kV	kilovolt
LALC	Local Aboriginal Land Council
LCA	Land Categorisation Assessment
LEP	Local Environmental Plan
LGA	Local Government Area
LGCs	Large-scale Generation Certificates
LLS Act	*NSW Local Land Services Act 2013*
LoO	Likelihood of Occurrence Assessment
LRET	The Large-scale Renewable Energy Target
LUCRA	Land Use Conflict Risk Assessment
LSC Assessment	Land and Soil Capability Assessment
LSPS	Tamworth Regional Council Local Strategic Planning Statement
LSS	Large Scale Solar
Tamworth Regional LEP	*Tamworth Regional Local Environmental Plan 2012*
M	metre
mm	millimetres
MNES	Matters of National Environmental Significance
MW AC	Megawatt Alternating Current
MWh	Megawatt hour
NEM	National Electricity Market

Acronym	Description
NENWRP	New England North West Regional Plan
NIAA	National Indigenous Australians Agency
NIS	Network Infrastructure Strategy for NSW
NGLG	*Noise Guide for Local Government*
NMG	*Noise Mitigation Guideline*
NPI	*Noise Policy for Industry*
NSW	New South Wales
NT Act	*Native Title Act 1993*
NTSCORP	Native Title Service Provider for Aboriginal Traditional Owners in New South Wales
NTV	Native Title Vision online mapping tool
ORALRA	Office of the Registrar of the Aboriginal Land Rights Act
OSOM	Oversize Overmass
Paris Agreement	The United Nations Paris Agreement on climate change
PBA	Preliminary Biodiversity Assessment
PCT	Plant Community Type
PCU	Power Conversion System
PMST	Protected Matters Search Tool
PoA	Parliament of Australia
Project Area	Refers to all affected lots where the Project may be located
PV	Photovoltaic
RDA	Regional Development Australia
REAP	Registered Environmental Assessment Practitioner
Resilience and Hazards SEPP	*State Environmental Planning Policy (Resilience and Hazards) 2021*
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RNCG	*Road Noise Criteria Guideline*
RNE	Register of the National Estate
SDGs	Sustainable Development Goals
SEARs	Secretary's Environmental Assessment Requirements
SEED	Sharing Enabled Environmental Data
SEIFA	Socio-Economic Indexes for Areas
SEPP	*State Environmental Planning Policy*
SES	NSW State Emergency Service

Acronym	Description
SIA	Social Impact Assessment
SIA Guideline	*Social Impact Assessment Guideline for State Significant Projects*
Site Boundary	Refers to the boundary of the Project Area
SHR	State Heritage Register
SRES	Small-scale Renewable Energy Scheme
SSD	State Significant Development
TACCO	The Tamworth Coalition of Aboriginal Community Controlled Organisations
TfNSW	Transport for New South Wales
the Agenda	The 2030 Agenda for Sustainable Development
the Plan	Community and Stakeholder Engagement Plan
the Project	Refers to the proposal by the proponent (GreenPulse) to construct and operate the Solar Farm & Battery Energy Storage System, as described in this report
the Proponent	GreenPulse (trading as The Trustee for GreenPulse Solar Farm and BESS Unit Trust)
The Roadmap	The NSW Electricity Infrastructure Roadmap
Transport and Infrastructure SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
TTIA	Traffic and Transport Impact Assessment
UCL	Urban Centre and Locality
WRI	World Resources Institute

1. INTRODUCTION

GreenPulse Solar Farm and BESS Unit Trust (GreenPulse, The Proponent) proposes to construct and operate the Garoo Solar Farm & Battery Energy Storage System (BESS) (the Project), a renewable energy development situated in the rural locality of Garoo, New South Wales (NSW), within the Tamworth Regional Local Government Area (LGA) (**Figure 1-1)**. The proposed development comprises several allotments on the eastern side of the New England Highway, approximately 40 kilometres (km) (by road) south of Tamworth and 370 km northwest of Sydney.

The Project has an area of approximately 368 hectares (ha) (Project Area; also referred to as Site Boundary) and a development footprint of approximately 319.5 ha. The Project proposes to connect to the national grid via the existing 330 kilovolt (kV) Line 84 Liddell-Tamworth overhead transmission line, which traverses the Project Area in a general north-south alignment (**Figure 1-1**).

The proposed solar farm is anticipated to have an installed capacity of up to 155 Megawatt (MW) Alternating Current (AC), and a BESS facility with 360 MW / 1,440 Megawatt hour (MWh) storage capacity. The Proponent is seeking State Significant Development (SSD) Consent under Division 4.7, Part 4 of the *Environmental Planning and 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, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs). The SEARs will guide the preparation of an Environmental Impact Statement (EIS) for the Project.

1.1 PROPONENT

The Proponent for the Project is GreenPulse, an Australian organisation that specialises in the development, operation and maintenance of large-scale assets, predominantly focusing on wind, solar and industrial scale battery storage. The organisation aims to contribute to the transition to a carbon-neutral economy by providing innovative, sustainable energy solutions to households, businesses, communities and cities as part of the NSW Government's ambitious target to halve emissions by 2030, achieve net zero by 2050 and to establish a reliable, affordable and clean energy system.

The GreenPulse management team has extensive Australian and international experience with over 10 projects completed in Australia and more than 20 renewable energy projects internationally across Europe, Asia and Africa.

The Australian Business Number (ABN) and address of the Proponent (trading as The Trustee for GreenPulse Solar Farm and BESS Unit Trust) are listed below:

- ABN: 93 705 623 303; and
- Address: Suite 906 821 Pacific Highway, Chatswood, NSW 2067.

1.2 PROJECT OVERVIEW

The Project involves the construction, operation and decommissioning of an AC solar farm, BESS and associated supporting and ancillary infrastructure. **Table 1-1** summarises the key indicative Project components and specifications.

TABLE 1-1 INDICATIVE PROJECT DESIGN - COMPONENTS AND SPECIFICATION

Component	Feature	Specification
Energy generation	Solar Arrays	155 MW AC solar farm. Single axis tracking system with maximum panel height of up to 2.9 metres (m) when fully tilted.
Electrical Reticulation Network	On-site substation	New customer and TransGrid high voltage interconnection facilities will be developed in the northeast section of the Project Area, linking into the existing 330 kV Liddell-Tamworth transmission line.
	Internal electrical reticulation network (Medium Voltage)	▪ Electrical reticulation will generally follow rows of panels and internal access routes to reach the step-up substation (33 / 330 kV) for the Project. ▪ The Project will connect into the substation (33 / 330 kV) on-site directly via underground cables (33 kV, internal reticulation voltage). ▪ The Project will be connected to the Grid by Switching Station (330 kV) located on-site boundary.
	Switchyard / BESS	BESS with a capacity of 360 MW / 1,440 MWh storage capacity. Switch and other electrical equipment providing connection to the existing 330 kV transmission network.
Access Roads	Access to site	Access to the Project Area will be via the existing Garoo Road, located on Crown land and road reserve. Approximately 330 m of a currently unsealed road, that runs from Garoo road into the northeast section of the Project Area, will be required to be upgraded. This will be subject to assessment in the EIS phase.

The indicative Project layout is displayed in **Figure 3-1** and identifies the proposed development footprint for the solar farm, including solar panels, BESS, substation and associated ancillary infrastructure. The Project layout will be subject to further design development during the EIS phase.

The EIS and associated technical assessments will facilitate further refinement to the Project layout in response to environmental values and constraints and will include strategies to minimise and mitigate any potential impacts.

1.3 PROJECT OBJECTIVES

The objectives of the Project are to:

- Help achieve the NSW Government's ambitious target to halve emissions by 2030 and achieve net zero by 2050 and to establish a reliable, affordable and clean energy system;
- 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;

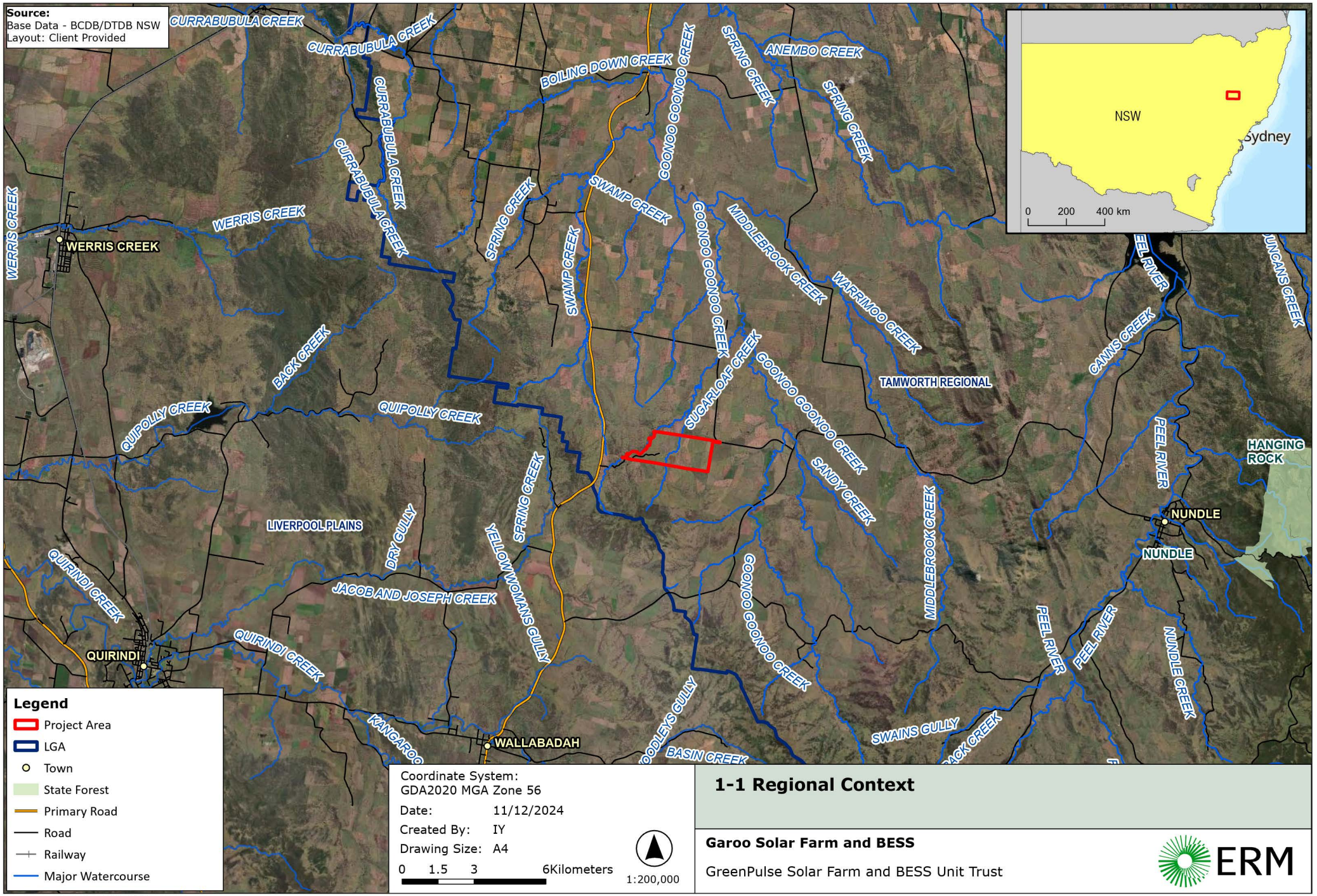
- Assist in providing network stability and reliability through battery storage;
- Contribute to NSW and Commonwealth targets for renewable energy;
- Provide both direct and indirect employment opportunities during construction and operation;
- Provide additional income streams for associated landholders;
- 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:

- *Large-Scale Solar Energy Guideline* (DPE, 2022a)***;***
- *State Significant Development Guidelines* (NSW DPHI, 2024);
- *State Significant Development Guidelines - Preparing a Scoping Report: Appendix A to the State Significant Development Guidelines* (DPE, 2022b) (Scoping Report Guidelines);
- *Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2023a);
- *Technical Supplement: Social Impact Assessment Guideline for State Significant Projects* (NSW DPHI, 2023);
- *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE, 2022c); and
- *Undertaking Engagement Guidelines for State Significant Projects* (NSW DPHI, 2024).



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2. STRATEGIC CONTEXT

2.1 SITE AND SURROUNDING DEVELOPMENT

2.1.1 REGIONAL CONTEXT

The Project Area is situated in the rural locality of Garoo NSW 2340, within the Tamworth Regional LGA. The Project is located approximately 370 km northwest of Sydney, 40 km south of Tamworth and 14 km west of Wallabadah. Wallabadah, which is located in the neighbouring Liverpool Plains Shire LGA, represents the closest urban centre to the Project Area with a population of 216 (ABS, 2021).

Tamworth Regional LGA is located within the New England North West Region of NSW. This LGA encompasses an area of 9,884.4 km^2, has a population of 64,522 (NSW Office of Local Government, 2022) and is bounded serval LGAs; Gwydir Shire to the north, Uralla Shire and Walcha to the east, Upper Hunter Shire to the south and Liverpool Plains, Gunnedah and Narrabri to the west. The Tamworth Regional LGA is predominantly rural, with the majority of the population situated within the urban centres of Tamworth, Manilla, Barraba, Kootingal and Nundle. The LGA is bisected by the New England Highway, which runs in a general north-south alignment and connects many of the towns, villages and localities to the city of Tamworth.

The key land use in the region is centred around primary agriculture (grazing and cropping), with mining, forestry, national parks and state forests also present. Health care and social assistance is the largest industry employer in the region, followed by retail trade, construction, education and training, manufacturing and accommodation and food services (NSW Office of Local Government, 2022). The Project Area sits within the Nungaroo Local Aboriginal Land Council (LALC) (NSW Aboriginal Land Council, 1983) and the traditional owners of the land are the Kamilaroi nation (AIATSIS, 1996).

Nearby Towns and Population Centres

The nearby towns and population centres in the vicinity of the Project Area (by road) include (ABS, 2021).

- Wallabadah – 12.9 km southwest (population 216);
- Nundle – 25.3 km east (population 314);
- Quirindi – 29 km southwest (population 2,602);
- Werris Creek – 49 km northwest (population 1,349); and
- Tamworth – 40.5 km north (population 35,415).

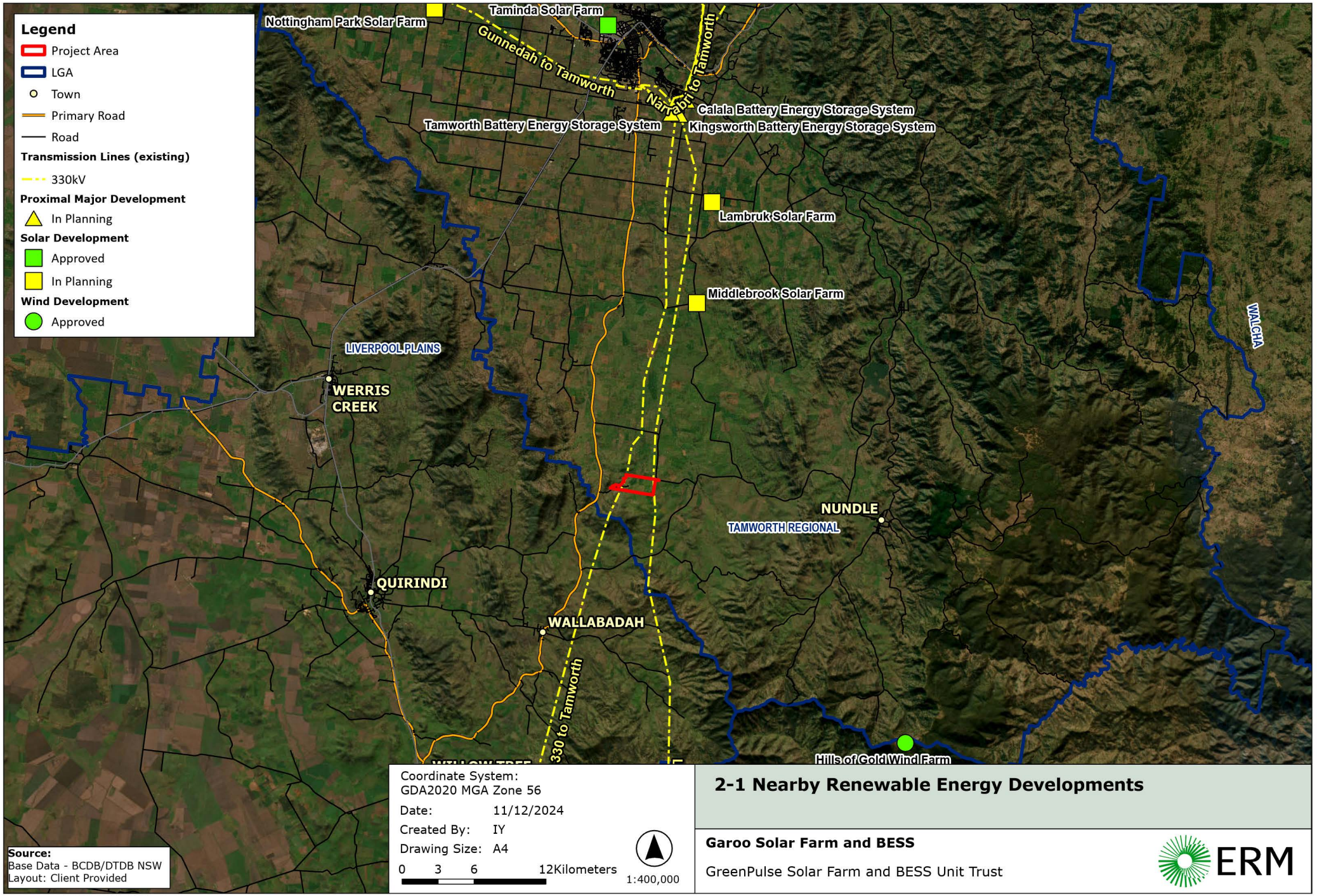
Nearby Renewable Energy and Related Projects

There are several existing or proposed renewable energy projects located in close proximity to the Project Area. These are detailed in **Table 2-1** and **Figure 2-1**

TABLE 2-1 NEARBY RENEWABLE ENERGY AND RELATED PROJECTS

Project	Developer/ Operator	Energy	Indicative Scale	Proximity to Project*	Status
Solar Energy Developments					
Middlebrook Solar Farm and BESS	Total Eren	Solar	320 MW of solar capacity with a 300 MW / 600 MWh BESS	25 km	Recommendation with Independent Planning Commission (IPC)
Lambruk Solar Farm	Venn Energy	Solar	500 (DC) / 300 (AC) MW of solar capacity with a 300 MW / 1200 MWh BESS	37.6 km	Prepare EIS
Nottingham Park Solar Farm	Nottingham Park Solar Farm Renewables	Solar	250 MW of solar capacity with a 400 MWh BESS	62.5 km	Prepare EIS
Wind Energy Developments					
Hills of Gold Wind Farm	Wind Energy Partners	Wind	420 MW of wind capacity	48.8 km	Approved
Energy Storage & Supply					
Kingswood BESS	Iberdrola Australia Development	Electricity supply	500MW / 1000 MWh BESS	41.4 km	Response to Submissions
Calala BESS	Equis Energy	Electricity supply	300 MW / 600 MWh BESS	45.6 km	Approved
Tamworth BESS	Maoneng	Electricity supply	200 MW BESS	42.6 km	Response to Submissions

*Estimated distance by road



2-1 Nearby Renewable Energy Developments

Garoo Solar Farm and BESS

GreenPulse Solar Farm and BESS Unit Trust

ERM

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2.1.2 LOCAL CONTEXT

The Project Area is situated in the rural locality of Garoo, which is characterised by generally flat open plains with gentle undulations, transitioning into low-lying hills and ridges. The Project Area has elevation ranging from approximately 640 m near the south-west boundary, to approximately 566 m in the northern area around Tamarang Creek, which runs through the centre of the Project Area. The land sloping up from Tamarang Creek to low-lying ridges present on the eastern and western boundaries.

Tamarang Creek flows in a south to north direction (**Figure 6-6**). This creek is a tributary of Sugarloaf Creek, which traverses the western boundary of the Project Area. Both watercourses are within the Namoi Catchment, which covers an area of 42,000 km^2.

There are no national parks or conservation areas in the immediate vicinity of the Project, with all closest protected areas located to the south and southeast. The nearest national park is the Wallabadah Nature Reserve, located approximately 17.5 km southwest of the Project Area. The zoning and location of nearby national parks and conservation areas is provided in **Table 2-2**.

TABLE 2-2 NEARBY CONSERVATION AREAS

National Park or Conservation Area	Distance & Direction from Project Area	Local Environmental Plan (LEP)	Zoning
Wallabadah Nature Reserve	17.5 km south	Liverpool Plains LEP 2011	C1 National Parks and Nature Reserves
Crawney Pass National Park	18.9 km southeast	Tamworth Regional LEP 2010	C1 National Parks and Nature Reserves
Ben Halls Gap Nature Reserve	29.1 southeast	Tamworth Regional LEP 2010	C1 National Parks and Nature Reserves
Ben Halls Gap National Park	31.4 km southeast	Tamworth Regional LEP 2010	RU1 Primary Production
Back Rover Nature Reserve	30.3 km east	Tamworth Regional LEP 2010	C1 National Parks and Nature Reserves

2.1.3 PROJECT AREA

The Project Area is defined as the area of land corresponding to property boundaries on which the Project is located. The Project Area covers a total area of approximately 368 ha on the eastern side of the New England Highway and is zoned entirely as *RU1 – Primary Production* under the Tamworth Regional LEP 2010 (NSW Government, 2024). Details of the Project Area are provided in Table 2-3, and a map of the Project Area is provided in **Figure 2-2**. The allotments contained within the Project Area are outlined in **Table 2-4** and illustrated in **Figure 2-3**.

TABLE 2-3 PROPERTY DETAILS OF THE PROJECT

Aspect	Description
Address	291 Garoo Road, Garoo NSW 2340
LGA	Tamworth Regional
Land Zoning	*RU1 – Primary Production*

Aspect	Description
Land Use	Grazing modified pastures and Cropping

TABLE 2-4 LAND CADASTRES

Lot	DP	Tite
1, 2, 14, 15, 16, 17, 19, 20, 22	755341	Freehold
2, 3, 4, 5, 6, 7	1108524	Freehold
3, 4	114643	Freehold
1	250846	Crown land

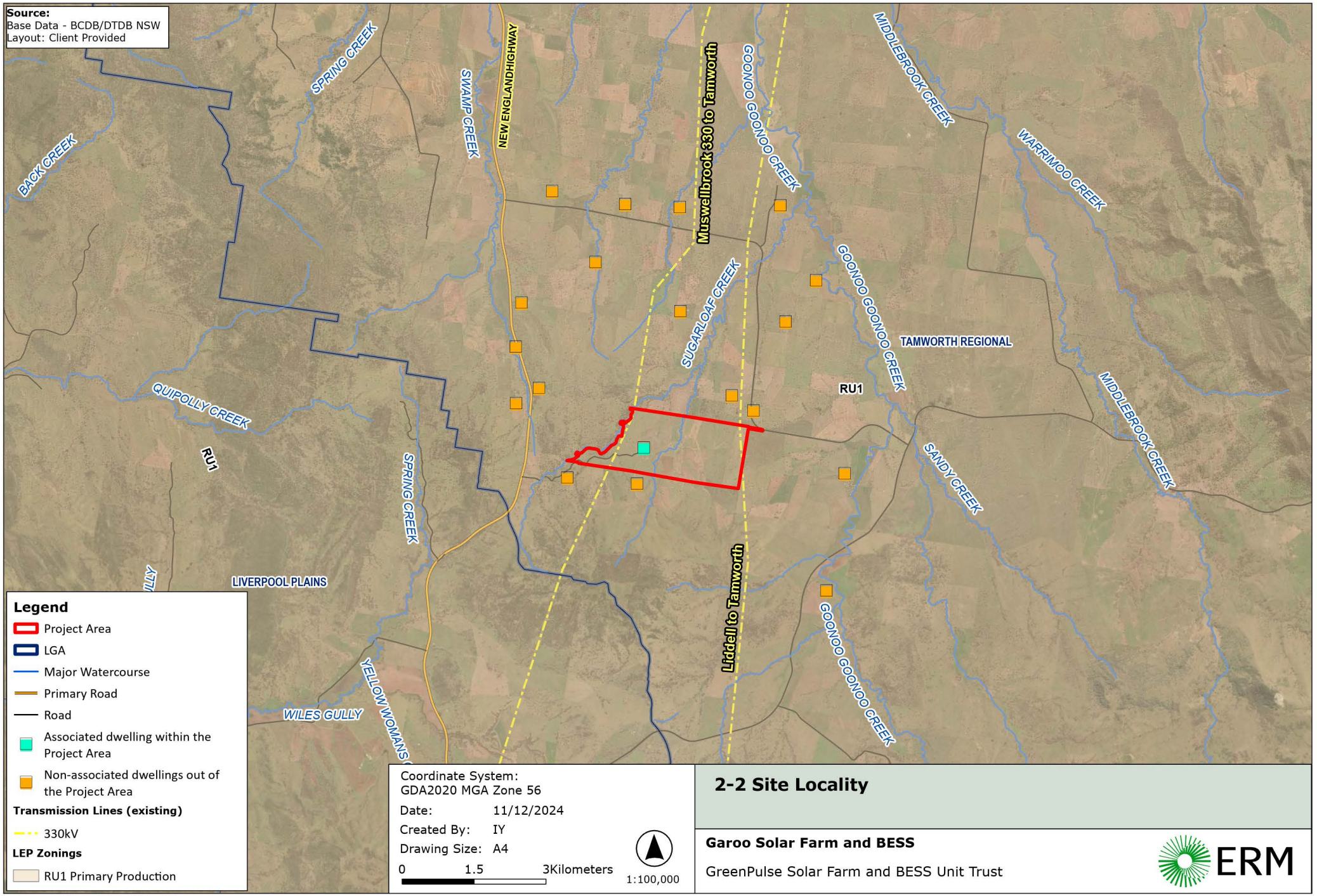
The existing land uses surrounding the Project Area predominantly comprise agricultural grazing and irrigated cropping. The Project Area is located on the eastern side of the New England Highway, with a minor unsealed road running through the Project Area in a northeast-southwest alignment, linking Bulls Road with Garoo Road. Garoo Road is a link road between the New England Highway and Lindsays Gap Road. The unsealed road may need to be upgraded to be utilised as an access route for the Project.

An existing 330 kV overhead transmission line also traverses the Project Area, running in a north-south alignment (**Figure 2-2**). There is a single existing dwelling and ancillary structures located at the western section of the Project Area (associated), with 18 additional dwellings (non-associated) identified within a 5 km radius of the Project Area (**Figure 2-2**). Details of these dwellings are provided in **Table 2-5**.

TABLE 2-5 DWELLINGS LOCATED WITHIN 5 KM OF THE SOLAR FARM INSTALLATION

Dwelling	Distance and Direction from solar installation	Landowner consultation
R1	Within Project Area	Associated
R2	0.3 km south	Non-associated
R3	0.4 km northeast	Non-associated
R4	0.4 km southwest	Non-associated
R5	0.5 km north	Non-associated
R6	1.8 km northwest	Non-associated
R7	2 km north	Non-associated
R8	2.1 km east	Non-associated
R9	2.2 km west	Non-associated
R10	2.4 km northeast	Non-associated
R11	2.7 km northwest	Non-associated
R12	2.8 km southeast	Non-associated
R13	3 km north - northwest	Non-associated
R14	3.2 northwest	Non-associated
R15	3.4 km northeast	Non-associated

Dwelling	Distance and Direction from solar installation	Landowner consultation
R16	4.2 km north	Non-associated
R17	4.3 km north	Non-associated
R18	4.6 km northeast	Non-associated
R19	4.8 km northwest	Non-associated



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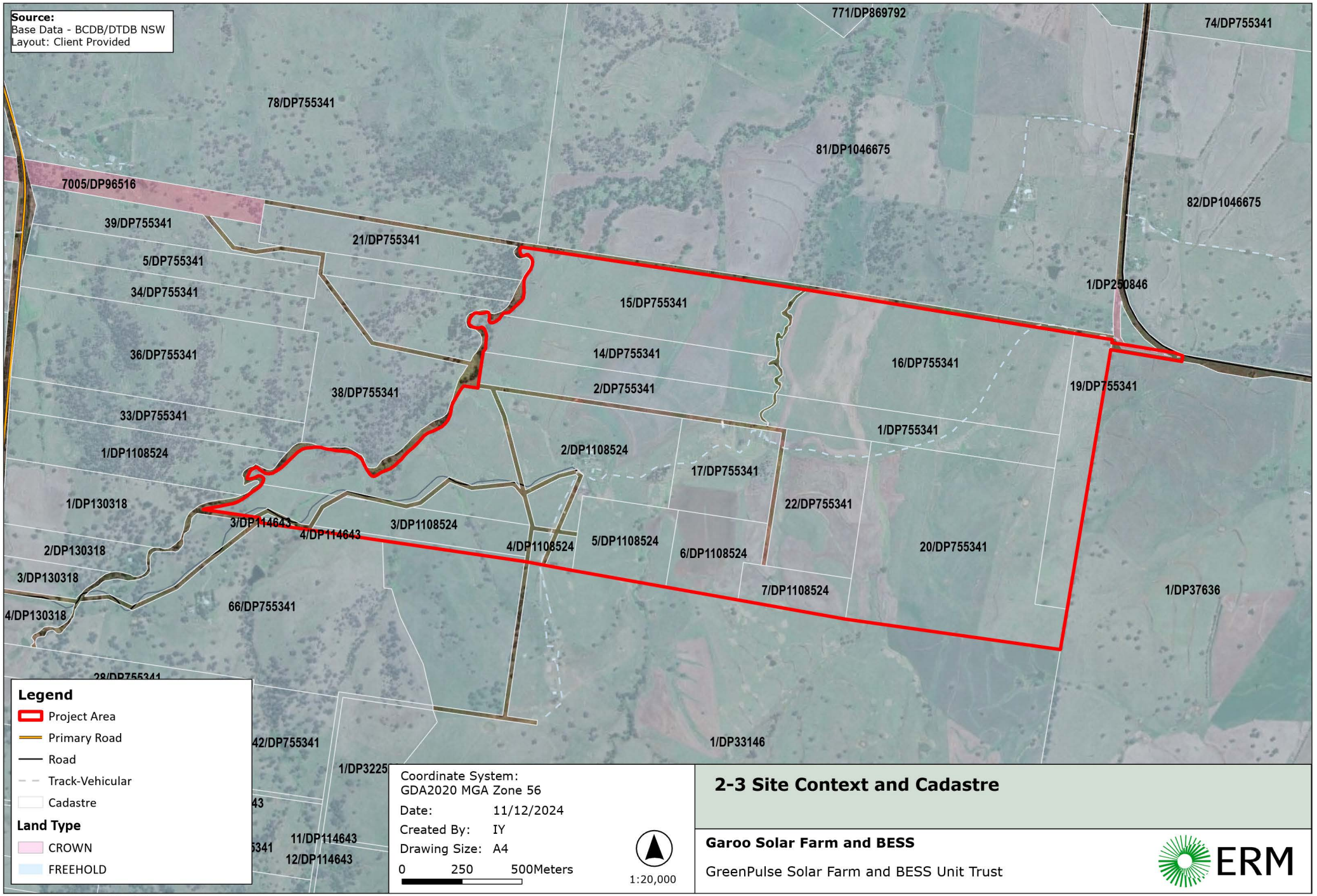

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2.2 STRATEGIC FRAMEWORK

The Project will align with various strategies, policies, and plans across national, state, regional, and local contexts. The strategic framework for the Project is outlined in **Table 2-6** below.

TABLE 2-6 ALIGNMENT WITH STRATEGIC FRAMEWORK

Strategy, Policy or Plan	Description	Project Alignment
National Context		
United Nations Framework Convention on Climate Change Conference of Parties (COP28) – United Arab Emirates 2023	COP28 was the 28th climate change conference held in Dubai, UAE in 2023. One of the key outcomes of COP28 was an agreement to "triple the world's renewable energy capacity and double its energy efficiency by 2030" (WRI, 2023). This pledge was made by 130 countries, including Australia.	The Project will contribute to meeting Australia's commitments through the generation of renewable solar 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% below 2005 levels by 2030. This builds on the 2020 target of reducing emissions by 5% below 2000 levels (PoA, 2017).	The Project will contribute to meeting Australia's commitments under the Paris Agreement through the generation of renewable solar energy and resultant annual reduction in greenhouse gas emissions. It should be noted that NSW targets are to achieve net-zero emissions by 2050 and as listed in Part 2 section 9(1)(c) of the *Climate Change (Net Zero Future) Act 2023.*
United Nations Sustainable Development Goals	The 2030 Agenda for Sustainable Development (the Agenda) (United Nations Department of Economic and Social Affairs, 2015) was adopted by all member states (including Australia) in 2015, and represents a 15-year plan to achieve the Sustainable Development Goals (SDGs) and related targets. The 17 SDGs and 169 targets represent the shared vision, principles and commitments to deliver a sustainable and resilient future for "people, planet and prosperity". This includes *Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all*, *Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix*.	The Project will increase the proportion of renewable energy in Australia, directly aligning with Target 7.2 of the SDGs.

Strategy, Policy or Plan	Description	Project Alignment
Large-Scale Renewable Energy Target (LRET)	The 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.	As a solar and BESS development, the Project will result in the generation and provision of renewable electrical energy. Therefore, the Project will contribute to meeting the LRET target for 33,000 Gigawatt hours (GWh) of additional renewable energy to be generated annually.
Integrated System Plan 2024	The Integrated System Plan 2024 (ISP) (AEMO, 2024) provides an integrated roadmap for the development of the National Electricity Market (NEM) over the next 20 years, and the most recent ISP 2022. The ISP states that in response to the retirement of coal-fired power generation, the amount of renewable energy connected with transmission and distribution needs to increase significantly as Australia transitions to a net zero economy.	The Project will contribute to meeting the required increase in renewable energy generation and transmission.
NSW Context		
Net Zero Plan Stage 1: 2020-2030	The Net Zero Plan Stage 1: 2020–2030 (DPE, 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.	This Project will contribute to 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 270,000 tonnes per annum (p.a).

Strategy, Policy or Plan	Description	Project Alignment
	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 reduction targets, 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).	
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 Australia's first 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 the lower cost of power in comparison to wholesale prices. The Project will also contribute to greater energy resilience through the use of the BESS to support stabilising the supply of electricity to the Tamworth region.
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 Project will connect into the existing 330 kV transmission line from Lidell to Tamworth, which is part of the Queensland-NSW interconnector identified for upgrade to increase transmission capacity. The renewable energy generated by the Project will therefore be distributed to major demand centres, aligning with the NSW Transmission Infrastructure Strategy. Additionally, with the provision of a BESS, the Project will provide energy storage and dispatch capacity to facilitate and provide electricity demand management,

Strategy, Policy or Plan	Description	Project Alignment
	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 Strategy seeks to help meet future energy needs by facilitating new transmission that could support up to 17,700 MW of new electricity generation. Other benefits include improved energy reliability, security, timely project delivery, increased affordability and access to cheaper electricity.	which will provide more reliability in the NEM.
NSW Electricity Infrastructure Roadmap	The NSW Electricity Infrastructure Roadmap (the Roadmap) is the NSW Government's plan to transform the NSW electricity sector to be cleaner, cheaper and more reliable (DPE, 2020b). Enabled by the *Electricity Infrastructure Investment Act 2020* (EII Act), 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 REZs, which will expand transmission and generation capabilities in strategic areas across NSW, including the Central-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. It aims to achieve a capacity target of at least 12 gigawatts (GW) of renewable energy generation, and 2 GW of long-duration storage by 2030.	As a renewable energy generation and storage development, the Project will contribute NSW's transition from coal fired power generation to renewable energy and will assist in meeting the NSW Government's GHG emissions reduction targets. Additionally, the Project reflects a significant investment into a regional area of NSW, and potential to create multiple employment opportunities, resulting in regional growth.
Network Infrastructure Strategy for NSW	The NSW Energy Corporation (EnergyCo) was appointed as the Infrastructure Planner under Section 63 of the EII Act. In May 2023 EnergyCo released the Network Infrastructure Strategy for NSW (NIS) (EnergyCo, 2023).	The Project will connect into the existing 330 kV transmission line from Liddell to Tamworth, distributing renewable energy to major demand centres, and consequently increasing future network capacity and resilience.

Strategy, Policy or Plan	Description	Project Alignment
	This outlines a 20-year plan for the coordination of NSW network infrastructure to connect new electricity generation and storage in NSW's five REZs and proposes Network Infrastructure Options with a total capacity of 14 GW to be delivered by 2033. The Strategy also includes a "Secure Now" and "Plan for the Future" that seek to identify options for increases in network capacity and resilience into and beyond 2030.	
Regional Context		
New England North West Regional Plan 2041	New England North West Regional Plan (NENWRP) 2041 (DPE, 2022d) covers multiple aspects of land use planning, including employment areas, town centres, housing and related infrastructure to the natural environment and future hazards such as climate change. It establishes a 20-year land use planning framework, focused on protecting and enhancing the regions assets and promoting sustainable growth. The NENWRP was developed by the DPE in consultation with local councils and key stakeholders.	The Project will contribute to the national renewable energy targets by providing a lower emission energy source, increasing energy diversity and consequently security, and is proposed to connect with the existing transmission lines to provide ready access to the electricity network. Therefore, the Project directly contributes to the NENWRPs *Objective 9 Lead renewable energy technology and investment.* The project will also provide regional investment and the potential for regional economic growth, aligning with *Objective 1: Coordinate land use planning for future growth, community need and regional economic development.*
Local Context		
Blueprint 100 Part 1: Overall Strategy	The Blueprint 100 is a series of plans that outline Tamworth LGAs strategic direction and action plan to deliver the Community Strategic Plan outcomes. The Overall Strategy binds these plans to guide and promote the Tamworth Region through to 2041 (Tamworth Regional Council, 2020a)	The Project will contribute to the growth of renewable energy in the area, aligning with Tamworth Regional Councils priority to support appropriately located renewable energy production opportunities and battery storage facilities. The Project will also provide jobs and economic investment into the Tamworth LGA, directly aligning with *Theme 3 Create a prosperous region.*
Blueprint 100 Part 2: Tamworth Regional Council Local Strategic Planning Statement 2020	The Tamworth Regional Council Local Strategic Planning Statement 2020 (LSPS) is the core strategic planning document that outlines land use vision, priorities and actions throughout the Tamworth Regional LGA over the next 20 years (Tamworth Regional Council, 2020b).	

Strategy, Policy or Plan	Description	Project Alignment
Blueprint 100: Our Community Plan 2022 - 2023	Blueprint 100 Our Community Plan 2022 – 2023 is the major strategic document that outlines the future vision and actions required for the Tamworth Regional LGA to deliver facilities and services over the next decade. The Community Plan is grouped into nine key focus areas that form the basis of all other council strategies and plans (Tamworth Regional Council, 2022).	The Project reflects new investment in the region, creates jobs and will help build a diverse and multi-skilled workforce, driving economic growth in the region. It also provides a renewable energy form that diversifies energy generation, providing increased resilience and reliability. Therefore, the Project is consistent with *Focus Area 3 Prosperity and Innovation* and *Focus Area 4 Resilient and diverse communities.* The Project also aligns with *Focus Area 6 Working with and Protecting our Environment* by providing increased access and availability to renewable energy sources in the region.
Tamworth Regional Local Environmental Plan 2010	The Tamworth Regional LEP 2010 makes environmental planning provisions for land in Tamworth Regional Council, and aims to: • Encourage the orderly management, development and conservation of natural and other resources within the Tamworth region; and • promote ecologically sustainable urban and rural development. There are additional objectives for land zoned as RU1 Primary Production, focused on promoting sustainable industry practices, preserving natural resources and diversifying industry enterprises appropriate to the area.	As a renewable energy development, the Project aligns with the fundamental aims detailed in the Tamworth Regional LEP 2010. The Project Area is located on RU1 zoned land; whilst not a primary industry, the Project would diversify and enhance local employment opportunities and provide additional income streams from natural resources.

2.3 PROJECT JUSTIFICATION

2.3.1 COMMITMENTS TO RENEWABLE ENERGY

2.3.1.1 FEDERAL COMMITMENTS

Climate Change Act 2022

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 43% below 2005 levels by 2030 as part of its commitments under the Paris Agreement, which builds on its previous target of reducing emissions by 5% below 2000 levels by 2020 (PoA, 2017; DCCEEW, 2022).

The Federal Government also 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.

In 2022, Australia formally legislated the 43% by 2030 emissions reduction target under the Paris Agreement through the Climate Change Act 2022. This Act also legislated the Federal Government's commitment to achieving net zero greenhouse gas emissions by 2050.

Renewable Energy Target

The Renewable Energy Target (RET) Scheme was implemented in 2009 to encourage renewable electricity generation and in turn reduce emissions from the electricity sector. The RET comprises two schemes, the LRET and Small-scale Renewable Energy Scheme (SRES) The LRET had an initial target of 44,000 GWh of renewable energy generation by 2020, which was reduced to 33,000 GWh in 2015. 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 solar energy and resultant annual reduction in greenhouse gas emissions.

2.3.1.2 STATE COMMITMENTS

NSW Renewable Energy Action Plan

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% by 2014; and
- Assist 50% of NSW commercial floor space to achieve a four-star National Australian Built Environment Ratings System (NABERS) energy and water rating by 2020 through the delivery of high-standard building retrofit programs.

Net Zero Plan Stage 1: 2020-2030

The Net Zero Plan Stage 1: 2020–2030 (DPE, 2020a) 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. This plan aligns closely with the NSW Electricity Strategy and the NSW Electricity Infrastructure Roadmap (the Roadmap) (DPIE, 2020), which aim to provide more reliable, affordable, and sustainable electricity across NSW (DPIE, 2019). Further detail regarding these plans is provided in **Table 2-6** above.

Climate Change (Net Zero Future) Act 2023

The *Climate Change (Net Zero Future) Act 2023* commits the NSW Government to address climate change, and legislates the following greenhouse gas emissions reduction targets in NSW:

- 50% reduction on 2005 levels by 2030;
- 70% reduction on 2005 levels by 2035; and
- Net zero by 2050

20-year Economic Vision for Regional NSW

The 20-year Economic Vision for Regional NSW (DPIRD, 2021) identified the states excellent renewable energy resources and labelled renewable energy as an emerging "engine industry" that will drive future economies in regional NSW. It also highlights strategic renewable infrastructure projects as a key source for providing a more secure, affordable and clean energy to NSW communities and business.

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.

2.3.1.3 REGIONAL AND LOCAL PLANNING CONTEXT

The development of renewable energy is supported by relevant regional and local plans and strategies that have been outlined in **Table 2-6** above. They include:

- New England North West Regional Plan 2041 (DPE, 2022d);
- Tamworth Blueprint 100 Part 1: Overall Strategy (Tamworth Regional Council, 2020a);
- Blueprint 100 Part 2: Tamworth Regional Council Local Strategic Planning Statement 2020 (Tamworth Regional Council, 2020b);
- Blueprint 100 Our Community Plan 2023-2033 (Tamworth Regional Council, 2022); and
- Tamworth Regional Local Environmental Plan 2010 (NSW Government, 2010).

2.3.2 ALTERNATIVE SOURCING OF ENERGY

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

Due to the abundance of solar resources in Australia and a sparsely populated locality, it is considered that large-scale solar technology is an optimum form of energy generation.

The Project has the potential to contribute significant amounts of renewable energy supply over a 30-year period. Large-scale solar technology is now one of the cheapest forms of new energy generation, reducing cost pressures on consumers and is completely renewable, reducing emissions.

2.3.3 CONTRIBUTION TO THE NATIONAL ELECTRICITY MARKET

The 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) 2023 Electricity Statement of Opportunities (ESOO) provides updated forecasts for demand and supply of electricity, focusing commentary on the next 10 years, and includes forecasts over the next 30 years (AEMO, 2023). The 2023 report noted:

- Electricity consumption is forecast to grow faster than forecast in the 2022 ESOO;
- Growth in electricity demand is driven primarily by economic activity, population growth, an acceleration in the rate of electrification of all sectors of the economy, and the emergence of a domestic hydrogen industry, supported by jurisdictional policy;
- Maximum electricity demand is forecast to grow over the forecast horizon, broadly in tune with drivers affecting energy consumption growth. The distributed photovoltaic (PV) has less offset impact, as operational maximum demand is typically in the early evening, with little or no contribution from PV systems; and
- With the sustained uptake of distributed PV, minimum demand forecasts continue to show a rapid decline.

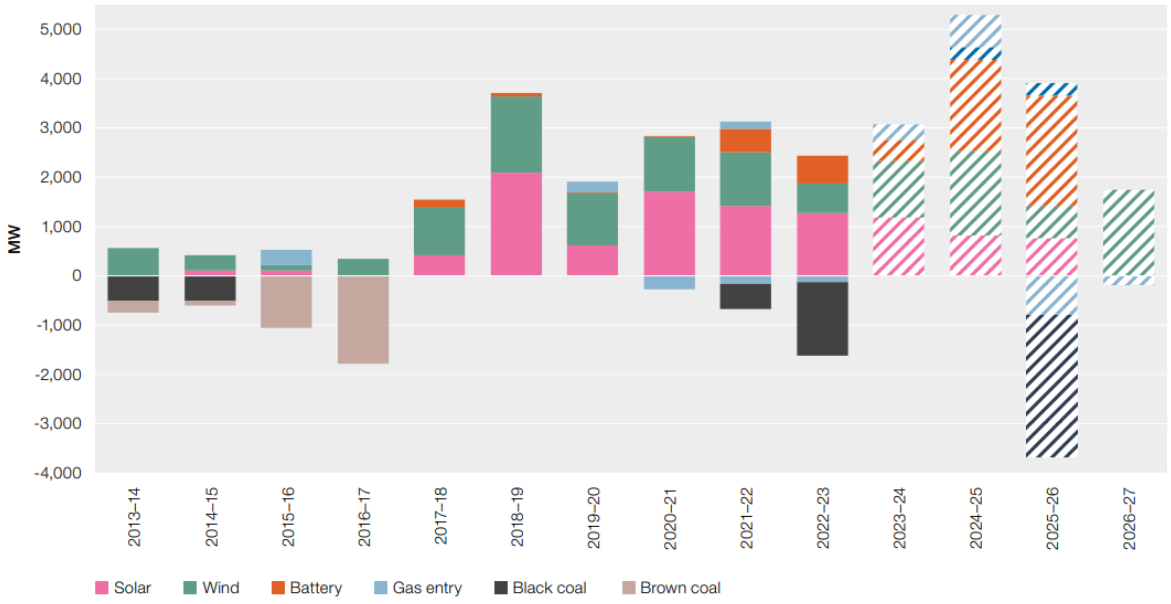
A significant component that drives electricity consumption is business electrification and electrical vehicle uptake in the residential and business sectors, which combined are responsible for more than three quarters of forecast consumption growth over the next 10 years.

The Project will help to meet the forecast increasing demand for energy in the NEM as forecast demand increases over the forecast horizon 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, 2023). The Australia Energy Regulator (2023) 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 2-4**;
- Technological advancements and cost reductions in grid scale wind and solar generation facilitating lower cost options for new build generation, including advancements in solar panel technology; and
- Deteriorating economics of fossil fuel generation associated with aging of the coal fired generation fleet and increase fuel costs.

FIGURE 2-4 EXIT AND ENTRY OF GENERATION CAPACITY IN THE NEM (SOURCE: AUSTRALIAN ENERGY REGULATOR, 2023)



Note: Capacity includes scheduled and semi-scheduled generation, but not rooftop solar capacity. New entry and exit are by registered capacity, except for solar which uses maximum capacity. Committed investment and closures from 30 June 2023 are shown as shaded components. These include Eraring power station in 2025.

Source: AER; AEMO (data).

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 and accounted for a combined 27% of total generation in 2022, fossil fuel generation continued to produce approximately 64% of electricity in the NEM (Australian Energy Regulator, 2023). However, about 58% of the current coal-fire capacity is expected to withdraw by 2030, initiated by the closure of Muswellbrook's Power Station in April 2023 which marked the first of four-coal station exists for the decade.

The imminent exit of much of the NEM's coal fired generation has prompted AEMO to forecast reliability gaps (risk of unserved electricity demand) as early as 2024 in some regions. AEMO's forecasts of these reliability gaps are accelerating in response to growing demand via electrification and generation investment proceeding slower than hoped. Wind and solar provide emission-free, low-cost electricity when weather conditions allow them, but their supply will need to be supplemented with adequate electricity storage technology to avoid reliability gaps as coal stations continue to retire (Australian Energy Regulator, 2023). Renewable energy generation is projected to continue to grow to 73% in 2030 and can reach up to 82% in the 'with additional measures' scenario, that includes higher generation from large-scale renewables projects such as solar and wind for on grid electricity and lower fossil fuel generation when compared with the baseline scenario (DCCEEW, 2022).

The Project represents an investment in a new large scale renewable energy, providing up to 155 MW of solar electricity generating capacity, subject to final design. The Project will thereby provide an essential input into the additional renewable energy sources needed in the transition from coal fired generation to renewable generation. Additionally, the proposed BESS would provide approximately 360 MW / 1,440 MWh storage capacity to regulate the supply of energy to the grid and increase the reliability of the NEM.

2.3.4 SOLAR FARM BENEFITS

Through the generation of renewable energy, solar farms provide significant contribution to Australia's transition to greener energy. The Australian Renewable Energy Agency (ARENA, 2021) notes that solar is the fastest growing generation type in Australia, contributing to approximately 10 % of Australia's total electricity supply in 2020-2021. Large-scale solar (LSS) generation has experienced significant growth in Australia and its share of the total electricity generated is continuing to increase each year.

In relation to LSS generation in Australia, it is further noted by ARENA (ARENA, 2021) that:

- As of March 2021, approximately 7 GW of LSS had been connected to Australia's electricity grid, which is more than 20 times greater than the LSS capacity in 2016;
- More than 100 LSS projects have been accredited as registered generators by the Clean Energy Regulator, including over 80 of these which were connected in 2018 or later;
- The capital cost of LSS projects in Australia decreased by 25 % from $1.87 to $1.39 per watt between 2015 and 2020; and
- LSS has played a significant role in meeting the Australian Government's mandated RET of generating at least 20 per cent of electricity from renewable energy by 2020.

2.3.5 PROJECT-SPECIFIC 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 GHG emissions; and
- Contributing to the additional generating capacity and dispatchable energy by the provision of the large-scale BESS which will assist in managing ongoing electricity demand peak required to meet the growing energy demand in NSW.

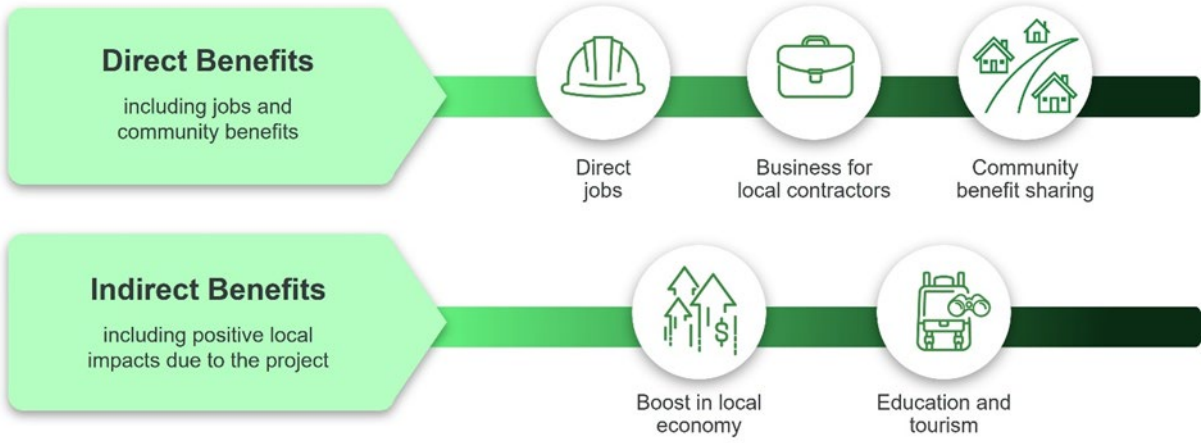
In addition, the Project will deliver significant benefits to the Tamworth Region and local communities, including:

- Direct investment in the region;
- Opportunities for local contractors and businesses, through creation of construction jobs and operational activities;
- 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.

A summary of the Project benefits is displayed in **Figure 2-5**.

FIGURE 2-5 PROJECT BENEFITS

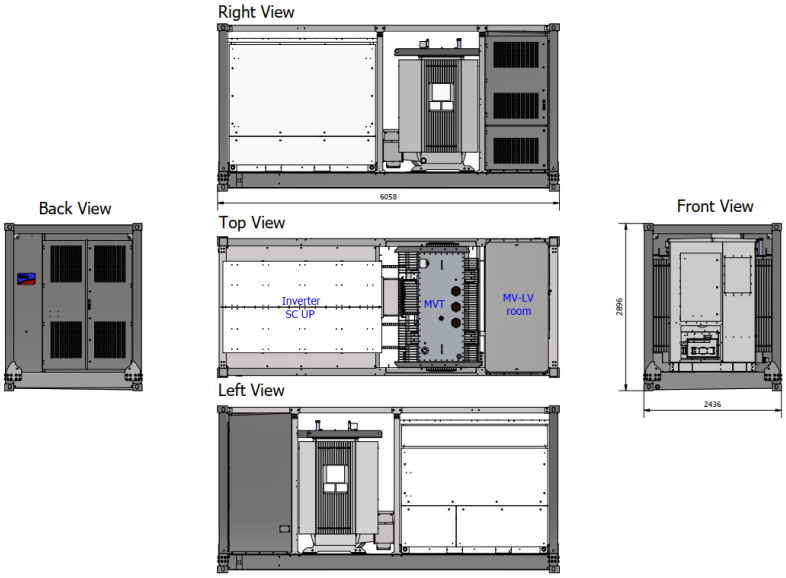


3. THE PROJECT

3.1 PROJECT DESCRIPTION AND LAYOUT

The Project involves the construction, operation and decommissioning of a solar farm, a BESS and associated infrastructure. **Table 3-1** summarises the key indicative Project components and specifications. The total development footprint for the proposed solar farm and BESS and ancillary infrastructure will be 319.5 ha within the 368 ha Project Area.

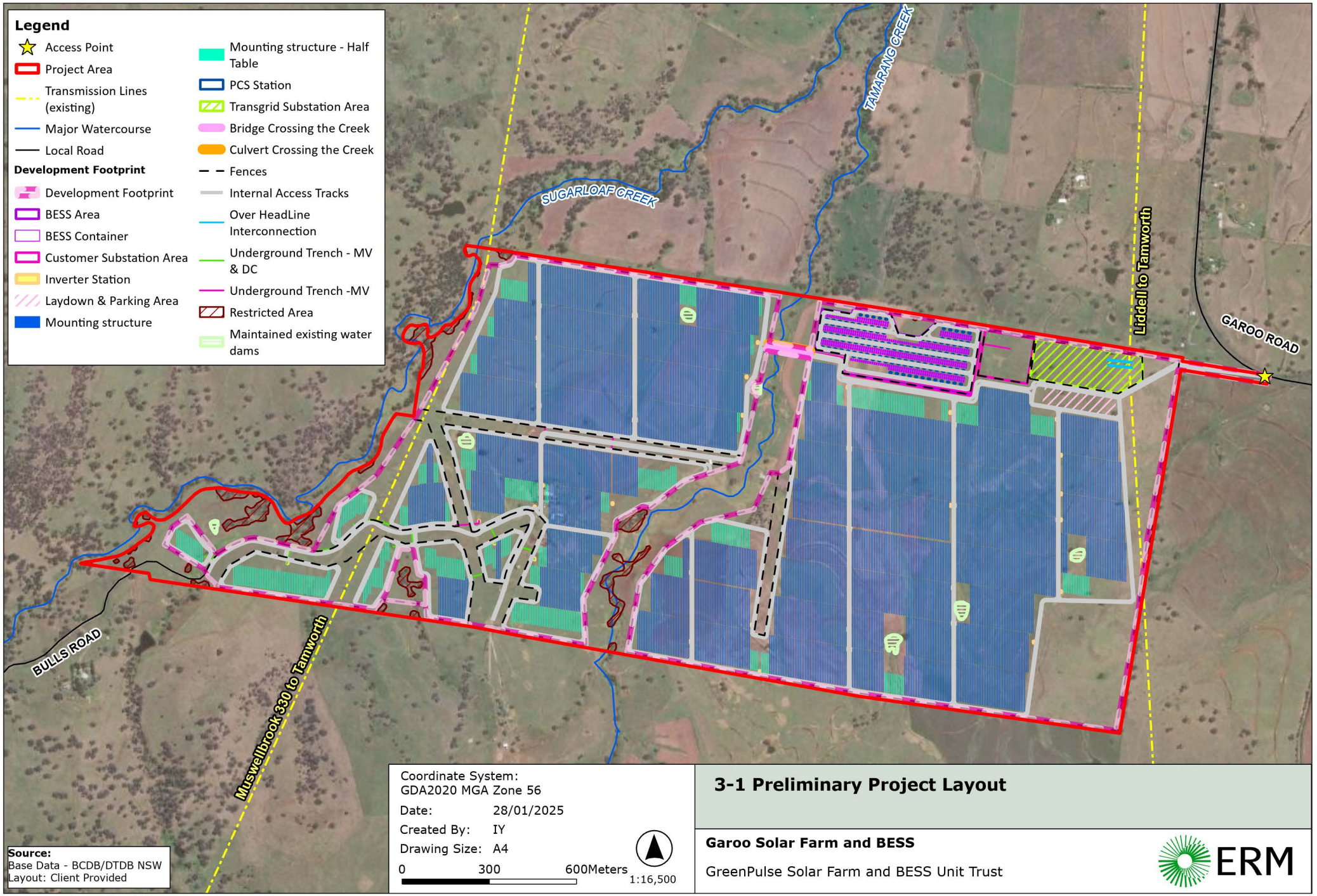
TABLE 3-1 INDICATIVE PROJECT DESIGN - COMPONENTS AND SPECIFICATION

Component	Feature	Specification
Energy generation	Solar Arrays	• Solar PV panels • Maximum installed capacity up to 155 MW AC • Solar arrays mounted.
Power Conversion Units	Power Station (inverter, DC-AC transformer and associated equipment	• Up to 44 Power Conversion Units (PCU) for the solar farm and 142 PCUs for the BESS Plant with the same brand and technology, measuring approximately 2815 millimetres (mm) / 1588 mm / 1588 mm (W / H / D). Refer to the basic closed door configuration below. 
Electrical Reticulation Network	On-site substation and Switching Station	• New high voltage substation including 330 kV switching station, BESS substation and associated structures. • Maximum occupied area of 145 m x 450 m for all facilities. • Proposed location within the Project Area near the intersection of the existing 330 kV transmission line, subject to final design.
	Internal electrical reticulation network (Medium Voltage)	• Electrical reticulation will generally follow rows of panels and internal access routes to reach the step-up substation (33 / 330 kV) for the Project. • The Project will connect into the substation (33 / 330 kV) on-site directly via underground cables (33 kV, internal reticulation voltage). • The Project will be connected to the Grid by Switching Station (330 kV) located on-site boundary.
	BESS	• Capacity of 360MW / 1,440 MWh storage capacity. • Approximate footprint of 14 ha.

Component	Feature	Specification
		• Associated electrical equipment providing connection to the existing 330 kV transmission network.
Access Roads	Access to site	• Access to the Project Area will be from Garoo Road, subject to assessment in the EIS phase. • Internal access tracks.
Ancillary activities and infrastructure	Construction and Operation infrastructure	• Temporary on-site infrastructure, including construction compounds, concrete batching plants, borrow pits, and laydown and storage areas. • Permanent Operations & Maintenance (O&M) and associated infrastructure. • Proposed location to be within development footprint of the proposed solar farm. Design and locations to be confirmed during EIS preparation.

The preliminary Project layout is displayed in **Figure 3-1**, which shows the proposed development footprint for the solar farm, including solar panels, BESS, substation and associated ancillary infrastructure. The Project layout will be subject to further design development during the EIS phase.

The EIS and associated technical assessments will facilitate further refinement to the Project layout in response to environmental values and constraints and will include strategies to minimise and mitigate potential impacts.



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3.1.1 SOLAR ARRAYS

The Project is a proposed solar farm consisting of a maximum installed capacity of up to 155 MW AC, subject to final design. The solar arrays will be mounted to steel structures and will utilise single axis tracking systems, with relatively little soil disturbance required. **Figure 3-2** shows the indicative tracking system. The indicative specifications for the proposed solar arrays are provided in **Table 3-2**.

FIGURE 3-2 EXAMPLE OF SINGLE AXIS PV ARRAY

TABLE 3-2 INDICATIVE PROJECT SPECIFICATIONS

Solar Farm Feature	Specification
Tracking system	Single axis tracking system
Maximum generation capacity AC (MW)	155 MW
Power Stations (contains inverter)	up to 4400 kW
Approximate Development Footprint (ha)	319.5 ha
Estimated height of panels when horizontal (m)	1.5 m at 0 degrees
Distance to ground at max tilt (to lower edge) (m)	0.4 – 0.5 m
Estimated height (to higher edge) when at max tilt (m)	2.9 m
Rotational axis elevation	Up to +/- 60 degrees for rotation angle in the solar trackers

Solar Farm Feature	Specification
Estimated Development Cost (EDC)	Greater than $30 million

3.1.2 BATTERY ENERGY STORAGE SYSTEM

A centralised large-scale battery energy storage is proposed for the Project. The BESS has a capacity of 360 MW / 1,440 MWh storage capacity. The BESS will be located within the Project Area near the intersection of the existing 330 kV transmission line with the existing train line.

3.1.3 OTHER INFRASTRUCTURE AND ASSOCIATED WORKS

The Project will also require additional project infrastructure and associated works including:

- Solar panel array;
- Battery components and associated infrastructure;
- Substation and connection via existing 330 kV transmission line;
- Underground electrical layouts connecting panels;
- Internal access to connect panels and ancillary infrastructure;
- Associated buildings for operations and maintenance facilities; and
- Perimeter security fencing. The fencing near Bulls Road will exclude the road reserve.

3.1.4 ELECTRICAL RETICULATION SYSTEM AND GRID CONNECTION

The Project will include underground and overhead electrical reticulation network to connect to the substation. The interconnection infrastructure will then connect to the existing 330 kV transmission line within the Project Area.

3.1.5 CONSTRUCTION AND TEMPORARY FACILITIES

The Project will require the following construction and temporary facilities:

- Temporary construction facilities such as offices, car park and amenities;
- Fencing and landscaping works;
- Delivery of project components, including panels, battery modules, substations, transformers and associated components;
- Installing maintenance and environmental managements processes and equipment;
- Internal access roads;
- Earthworks required to establish hardstand and laydown areas;
- Installation of underground and overhead cabling; and
- Access to project site.

3.1.6 DEVELOPMENT FOOTPRINT

The Development Footprint represents the maximum potential area of impact, within the 368 ha Project Area, associated with the construction and operation of the Project. For the purposes of this Scoping Report, the indicative development footprint is 319.5 ha, consisting of:

- Temporary Development Footprint: the area of land that will be temporarily disturbed during construction of the Project with areas to be rehabilitated following construction; and

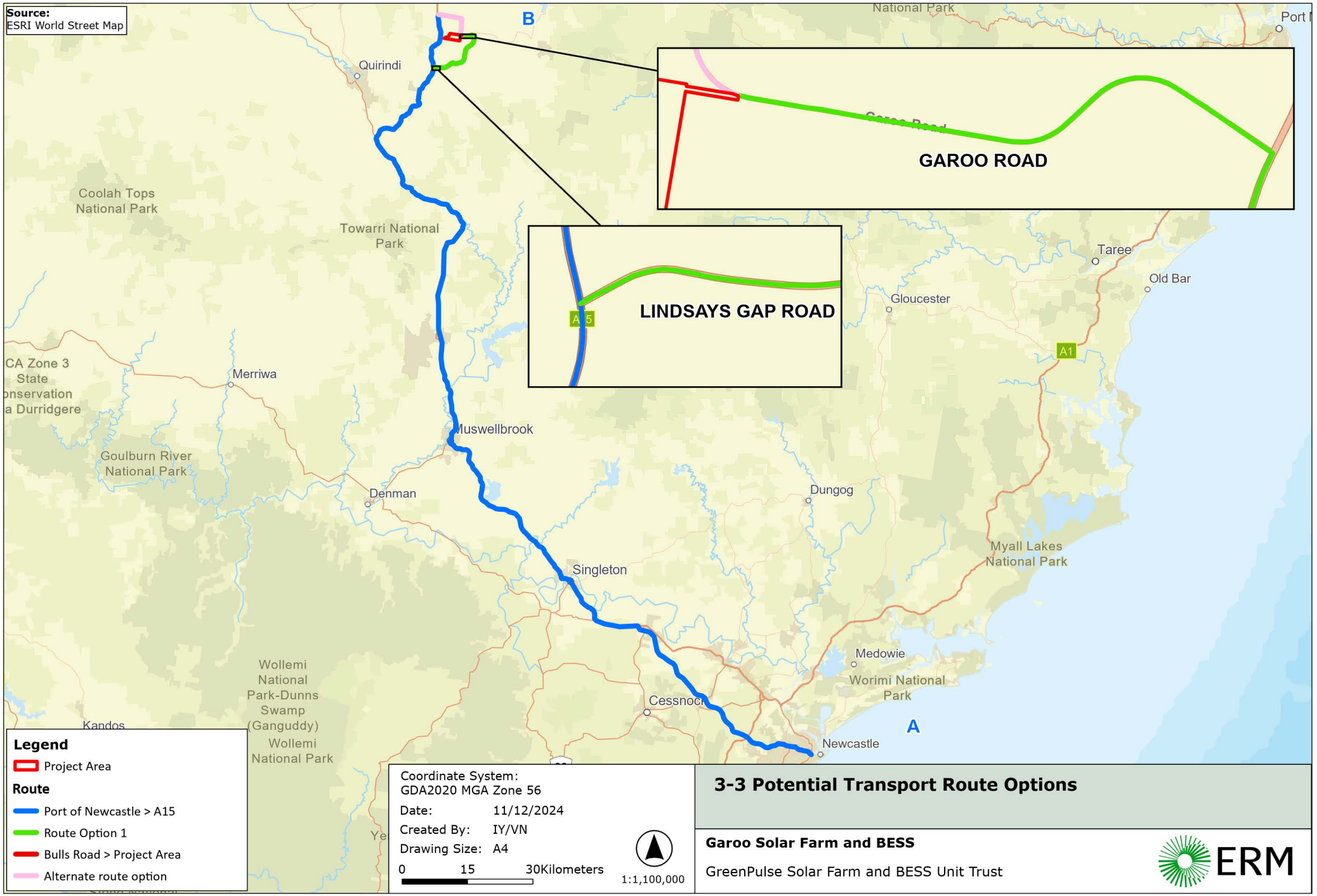
- Permanent Development Footprint: the area of land that will remain disturbed throughout the operational life of the Project and will not be suitable for agricultural use. This will include infrastructure areas such as the solar panel array, BESS, switchyard, substation and associated facilities.

Further refinements and changes to the project layout may be proposed in the EIS as well as strategies to minimise and mitigate potential impacts from the Project.

3.1.7 TRANSPORT ROUTE AND SITE ACCESS

Access to the Project Area during construction and operations is proposed via an access track from Garoo Road to the northeastern section of the Project Area. The access track from Garoo Road is currently unsealed and therefore approximately 330 m will require upgrading. There are two potential access routes to access Garoo Road, shown in **Figure 3-3**. One of the access routes is to the south of the project area from New England Highway to Lindsays Gap Road and Garoo Road. The second access route to the north of the project area is proposed from New England Highway and Garoo Road. This will be subject to assessment in the EIS phase.

The Port of Newcastle has been identified as the preferred port for the delivery of solar farm equipment, BESS equipment and plant. The transport route of PV panels and other Project related materials are subject to a Transport and Traffic 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 (TTIA). This will identify a proposed transport route from the port to the Project Area, as well as any required road upgrades.



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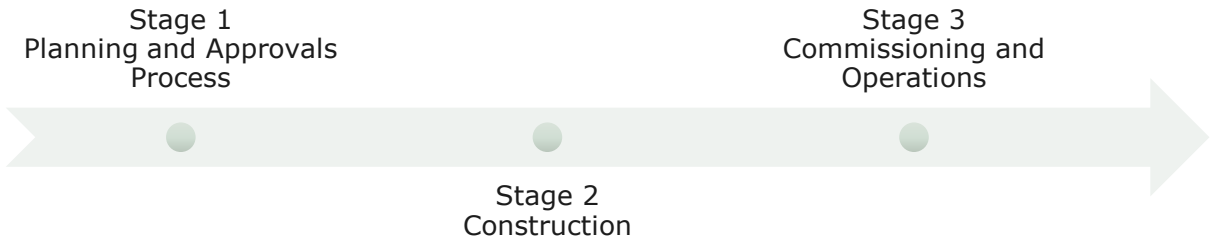
3.2 STAGING

The anticipated staging of the Project is summarised in **Table 3-3** and presented in **Figure 3-4**. The Project is currently in Stage 1, the planning and approvals process, involving the preparation of the Scoping Report and EIS. The planning and approval process is expected be completed by mid-2026. Construction of the Project is expected to commence in late 2026, with operations commencing in 2028.

TABLE 3-3 PROJECT STAGING

Stage of Project	Estimated Date of Completion
Planning and Approvals Process	Mid 2025
Construction	Late 2026
Commissioning and Operations	2028 onwards

FIGURE 3-4 PROJECT STAGING MAP



3.3 PHASES

3.3.1 CONSTRUCTION

Construction of the Project is anticipated to begin in late 2026 with design and procurement activities leading into groundworks commencing. Construction if anticipated to take approximately 18 months to complete, including commissioning of the Project to achieve full grid export.

During the peak construction phase of the Project, an estimated 250 Full Time Equivalent (FTE) employees will be required. Temporary construction workers accommodation may be sited within the Project Area, however most staff are likely to be located off site and commute in daily. This will be explored and assessed further in the EIS phase, including consultation with the local councils.

3.3.2 OPERATIONS

The operational phase of the Project is currently planned to commence in 2028 for a 30-year period minimum. Ongoing maintenance will be required for all infrastructure associated with the Project, including:

- Landscaping;
- Panel cleaning;
- Maintaining Asset Protection Zones (APZ) (if required); and

- Repair and replacement of Project components.

There will be five FTE staff to operate the Project, once constructed.

3.3.3 DECOMMISSIONING

The EIS to be 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 solar farm (minimum 30 years) the site could be formally decommissioned. A decision will be made at this point whether to erect new PV modules (re-power) or to remove the existing PV modules and rehabilitate the site.

3.4 ALTERNATIVES

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

3.4.1 ALTERNATIVE SITE LAYOUT OPTIONS

The Project Layout shown in the Scoping Report is indicative and will be subject to further design development during the preparation of the EIS. The design will be informed by the environmental assessment, landowner feedback, consultation with the community and stakeholders, as well as technical considerations and requirements.

3.4.2 DO NOTHING

The Project Area is currently used for agricultural and grazing land uses. 'Do nothing' would result in a slower transition to renewable energy and a missed opportunity to generate additional renewable energy to reduce Australia's dependency on fossil fuels for energy generations and the consequential emissions of GHGs. In addition, the local area and wider region would not benefit from the Project outcomes, including:

- The economic benefits to the local and regional community provided directly and indirectly by the employment associated with the Project;
- Capital investment 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* (EP&A Act) and other relevant NSW and Commonwealth legislation with regard to the *State Significant Development Guidelines – Preparing a Scoping Report: Appendix A to the State Significant Development Guidelines* (DPE, 2022b).

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

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

Under the provisions of Section 2.6 (1) of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP), a development is classified as SSD if it is specified in Schedule 1 or 2:

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

Schedule 1, Section 20 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 involves development for the purpose of electricity generating works using solar power which will have an Estimated Development Cost (EDC) of more than $30 million. Therefore, the Project is classified as SSD under Part 4 of the EP&A Act.

4.2 PERMISSIBILITY

The Project Area is contained wholly within the Tamworth Regional Council LGA and is subject to the provisions of the Tamworth Regional LEP 2010. The Project Area in its entirety is zoned as *RU1 – Primary Production* under the Tamworth Regional LEP 2010.

Under the Tamworth Regional LEP 2010, the use of the site for 'electricity generating works' is not specified as prohibited in the RU1 zone and is therefore permissible with development consent. 'Electricity generating works' means a building or place used for the purpose of—

(a) making or generating electricity, or

(b) electricity storage.

A solar farm and BESS would be described as electricity generating works'.

However, as the proposed development has an EDC of over $30 million, *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) is applicable.

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

> *"electricity generating works means a building or place used for the following purposes, but does not include a solar energy system —*
>
> *(a) making or generating electricity,*
>
> *(b) electricity storage."*

Section 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.

> *Development for the purpose of electricity generating works may be carried out by any person with consent on the following land—*
>
> *(a) in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,*
>
> *(b) in any other case—any land in a prescribed non-residential zone.*

As RU1 is a prescribed rural zone, the Project is permissible with consent under the provisions of Section 2.36 (1) of the Transport and Infrastructure SEPP.

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 road authority under Section 138 of the *Roads Act 1993* for any works undertaken on public roads. The impacts of the Project on roads and traffic will be assessed within the EIS.
Native Title	*Native Title Act 1993* (NT Act)	Under Section 13 of the NT Act, an individual can apply to the Federal Court for a determination of native title. A detailed 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, 2024) currently indicates there is an active claim over the Project Area.

Approval Category	Legislation	Requirement
EPBC Act Approval	*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Approval from the Minister for the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is required for any action that will or is likely to have a significant impact on one or more Matters of National Environmental Significance (MNES).
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.
	Biodiversity Conservation Act 2016 (BC Act)	A Biodiversity Assessment Report (BDAR) will be prepared to accompany the EIS and will assess impacts on listed threatened flora and fauna species and threatened ecological communities (TECs). Any biodiversity offsets required under the Biodiversity Offset Scheme will be addressed in the EIS.
Approvals not required under SSD Section 4.41 of the EP&A Act outlines 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 PRE-CONDITIONS TO EXERCISING THE POWER TO GRANT CONSENT

TABLE 4-2 APPLICABLE PRE-CONDICTIONS TO GRANTING DEVELOPMENT CONSENT

Statutory Reference	Requirement
Environmental Planning and Assessment Regulation 2021	
Section 23(1)	A development application can only be made by the owner of the land to which the development application relates, or by another person with written consent of the owner of the land.

Statutory Reference	Requirement
Section 28(2)	A development application that is accompanied by a Biodiversity Development Assessment Report (BDAR) under the BC Act must contain the biodiversity credits information.
Biodiversity Conservation Act 2016	
Section 7.9(2)	Biodiversity assessment for State significant development or infrastructure is to be accompanied by a BDAR unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity value.
Section 7.9(3)	The EIS accompanying the application is to include the biodiversity assessment required by the environmental assessment requirements of the Planning Agency Head under the *Environmental Planning and Assessment Act 1979.*
State Environmental Planning Policy (Transport and Infrastructure) 2021	
Section 2.48(2)	As the Project would be adjacent to two existing 330 kV transmission lines, written notice is to be given to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks. Consideration is to be given to any response to the notice that is received within 21 days after the notice is given.

4.5 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 4-3**.

TABLE 4-3 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,*

Statutory Reference	Mandatory Consideration
	j) *to provide increased opportunity for community participation in environmental planning and assessment*.
Section 4.15 – Evaluation	In accordance with Section 4.40 and 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; • Relevant development control plans: • 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 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) – Chapter 3	Chapter 3 of the 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 Section 3.7 of the Resilience and Hazards SEPP, consideration will be given to current circulars or guidelines published by the DPHI relating to hazardous or offensive development.
State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)– Chapter 4	Chapter 4 of the Resilience and Hazards SEPP provides a statewide planning approach to the remediation of contaminated land. Under Section 4.6 (1) of the Resilience and Hazards SEPP, a consent authority is required to consider whether a proposed development site is contaminated before granting consent. An assessment will be prepared as part of the EIS to determine the potential contamination risk associated with the Project.
Tamworth Regional Local Environmental Plan 2012	The EIS will address relevant components of the Tamworth Regional LEP 2010, including the land use objectives for the 'RU1 – Primary Production' zones.

5. COMMUNITY AND STAKEHOLDER ENGAGEMENT

GreenPulse recognises that individual communities are unique. Community engagement provides an opportunity for projects to benefit from local insights and better anticipate unforeseen issues. ERM has developed a Community and Stakeholder Engagement Strategy (CSES) for this Project to guide delivery of clear and consistent community engagement activities through to Project determination. The content of this chapter is consistent with the Strategy.

5.1 ENGAGEMENT PRINCIPLES

GreenPulse believes successful renewable energy projects are built on strong relationships with local communities and collaboration and relevant authorities.

With a robust engagement approach, GreenPulse focuses on:

- building positive, trusted, and open relationships with local communities and stakeholders;
- listening and understanding to ensure the voices of the communities are prioritised; and
- aligning projects with community values and contributing to local development.

The CSES presents a proactive engagement program that incorporates these principles.

5.2 ALIGNMENT WITH NSW GOVERNMENT ENGAGEMENT GUIDELINES

The CSES complies with NSW Government consultative requirements under relevant planning instruments and guidelines, including the following:

- Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024);
- State Significant Development Guidelines (DPHI, 2024);
- Community Participation Plan (DPHI, 2024); and
- Social Impact Assessment Guideline for State Significant Projects (DPIE, 2023).

The International Association of Public Participation (IAP2) Quality Assurance Standard has also been considered, being the engagement industry best practice guideline.

5.3 STAKEHOLDER IDENTIFICATION

Mapped stakeholders are broadly defined as the people and groups who are interested in or affected by the proposed Project. **Table 5-1** provides an initial list of stakeholder groups who have been or will be engaged throughout the Project lifecycle. This list will be updated in response to stakeholder feedback as the Project progresses.

TABLE 5-1 STAKEHOLDER MAPPING

Stakeholder group	Stakeholders	Likely areas of impact/influence
Government	• The Hon. Kevin Anderson MP, State Member for Tamworth • The Hon. Barnaby Joyce MP, Federal Member for New England • The Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) • NSW DPHI	• Community consultation and community benefits • Economic benefits (including jobs, tourism, local procurement) • Visual impact • Construction impacts • Agricultural impacts • Fire safety

Stakeholder group	Stakeholders	Likely areas of impact/influence

	• NSW Biodiversity, Conservation and Science (BCS) directorate
	• NSW DCCEEW
	• Heritage NSW
	• Transport for NSW (TfNSW)
	• EnergyCo NSW
	• NSW Local Land Services
	• NSW Environmental Protection Authority (EPA)
	• Regional Development Australia (RDA) Northern Inland Region
	• Australian Energy Infrastructure Commissioner
	• NSW Rural Fire Service
	• WaterNSW
	• Tamworth Regional Council
	  ◦ Cr Russel Webb, Mayor and elected councillors
	  ◦ Paul Bennett, General Manager
	  ◦ Peter Resch, Director Regional Services
	  ◦ Gina Vereker, Director Liveable Communities	

Traditional Owners and Indigenous groups	• Office of the Registrar of the Aboriginal Land Rights Act (ORALRA) • Native Title Service Corporation (NTSCORP) • AbSec • National Infigenous Australians Agency (NIAA) • Supply Nation • Aboriginal Affairs NSW • The Traditional Owners, the Kamilaroi/Gamilaroi/Gomeroi peoples of the Kamilaroi Nation • Nungaroo Local Aboriginal Land Council (LALC) • Tamworth LALC • The Tamworth Coalition of Aboriginal Community Controlled Organisations (TACCO)	• Cultural heritage • Jobs and employment opportunities • Supplier opportunities • Community benefits • Land impacts/disturbance
Host landholder	• Individual landowner of the proposed site	• Access restrictions • Landholder negotiations and compensation • Construction and operations impacts
Neighbours	• Neighbouring dwellings within 5km of the proposed site	• Access restrictions • Construction and operations impacts
Community	• Community members who neither own land surrounding the project area or host project infrastructure • Tamworth Business Chamber • Business NSW New England/North West • NSW Farmers' Tamworth District Branch • Local contractors and suppliers	• Community consultation and benefits • Information sharing • Business and workforce opportunities • Economic impacts and opportunities • Local skills development

Stakeholder group	Stakeholders	Likely areas of impact/influence
	• Service industries likely to benefit during construction – food and beverage, supermarkets • Nearby businesses such as Goonoo Goonoo Station • Local tourism organisations, including Tamworth Region and Tamworth Visitor Information Centre • Estate agents • Regional Aviation Association of Australia • Wallabadah Public School • Lions and Rotary Clubs • Local churches	• Environmental benefits (broader renewable energy education)
Utilities	• Transgrid • Ausgrid	• Supply of services • Fire safety

Media	• Newspapers
	  ◦ Northern Daily Leader
	  ◦ New England Times
	• Radio stations
	  ◦ 88.9FM Tamworth
	  ◦ ABC New England
	  ◦ Rhema FM 89.7 Tamworth
	  ◦ 92.9FM Tamworth Radio
	• Facebook groups
	  ◦ Community Notice Board - Tamworth and District
	  ◦ Tamworth; who, what, when, where, how
	  ◦ Tamworth True
	• National and state newspapers, radio and television
		• Economic impact (jobs, procurement and skills)
		• Community consultation and community benefits
		• Renewable energy development

5.4 ENGAGEMENT ACTIVITIES

The Proponent commenced community and stakeholder engagement on the Project in Q4, 2024. Consultation undertaken during scoping phase is summarised in **Table 5-2** and has been carried out in accordance with *Undertaking Engagement Guidelines for State Significant Projects* (DPHI, 2024).

TABLE 5-2 SUMMARY OF ENGAGEMENT DURING SCOPING PHASE

Activity	Engagement activity
Government engagement	• Held an on-line meeting with Tamworth Regional Council staff to introduce the Project and hear feedback
Engaged landowners and neighbours	• Sent an introductory letter to 28 landowners within 5km of the Project boundary
Communications channels and tools	• Published a Project website www.garoosolarfarm.com.au, which provides Project information and is a key interface for stakeholders • Established a Project 'contact us' page, where people can contact the Project via an email form • Established a Project phone number 1800 979 858, which is published on the website

5.4.1 ABORIGINAL CONSULTATION

On 6 November 2024, eight agencies were emailed to request the names of Registered Aboriginal Parties (RAPs) for the project area. Heritage NSW provided a list which included the names of RAPs which may be interested. An email was also received from Officer of the Register (OR) stating that the Registered Aboriginal Owners within the area are the Bulagaranda and to contact the Nungaroo LALC as they may wish to participate.

Registration of interest letters were sent out on the 25th November to RAPs, with the closing date being 10th December 2024. A total of 39 stakeholders/groups were also emailed.

An advert was also placed in the Northern Daily Leader newspaper on Monday 25th November.

At Gomilaroi Cultural Consultancy, Corroboree Aboriginal Corporation, Didge Ngunawal Clan, Guyinbaraay people Clan group, Gomery Cultural Consultants, Wurrumay Culture Heritage Consultants, Long Gully Cultural Services, Ngagga Ngagga and two stakeholders registered yes to expression of interest.

5.4.2 ENGAGEMENT FEEDBACK

The feedback received from stakeholder engagement during the scoping phase is summarised in **Table 5-3.**

TABLE 5-3 SUMMARY OF ENGAGEMENT FEEDBACK

Theme	Stakeholder group	Focus of feedback	Response to feedback / addressing in the EIS
Project location	Neighbours	• Requests for the exact location of the Project to assist with identifying where it is situated in relation to surrounding properties	• Project street address has been added to **Table 2-3** of this report. • Project street address has been added to Project collateral distributed to the community • A large Project map has been developed to identify the location in relation to surrounding areas and this map will be available at all in-field engagements
Property prices	Neighbours	• Potential impact of the Project on the value of nearby properties	• Advised the stakeholder there are no known studies or evidence that renewable energy projects impact property prices
Transport and traffic	Government (local)	• Location of entry into the site • Tangible traffic management plans required with specific measures to manage flow	• These matters will be addressed in a Traffic Management Plan (TMP) developed in collaboration with Tamworth Regional Council. • Further detail regarding the TMP will be included in the Traffic Impact Assessment within the EIS.
Accommodation	Government (local)	• Tamworth's sensitivity to accommodation stock – low supply • Cumulative impact with other projects also requiring worker accommodation	• These matters will be part of EIS planning. GreenPulse will discuss the best approach with the Council to better understand the cumulative needs of projects in the area and the best regional solution • Avoiding potential impacts to the accommodation required to meet local tourism needs will be considered, in particular in high-demand times when local significant events take place
Impact of development on local construction industry	Government (local)	• Quantity of materials available for the Project given the construction pipeline in the LGA • Availability of workforce for local needs given the construction pipeline in the LGA	• Planning for local participation where possible to facilitate local supply chain benefits • Liaison with Tamworth Regional Council will assist in understanding the cumulative needs of other nearby projects and how to best manage available labour and material resources.
Environmental impact	Government (local)	• Fire management • Stormwater management • Feral species management	• These matters are expected to be raised in the SEARs and will be investigated in the EIS through the appropriate studies and in compliance with the directions of the SEARs
Community engagement	Government (local) Community	• Timing and tactics	• The CSES identifies an engagement program, including face-to-face activities, with many stakeholder groups

Theme	Stakeholder group	Focus of feedback	Response to feedback / addressing in the EIS
	Neighbours		• Neighbours were engaged first via introductory letter (provided to Tamworth Regional Council in advance) • Created an easy-to-understand Project website • Established a Project email and dedicated 1800 phone number • A Project fact sheet is available on the website and will be available in hard copy at all engagement events • A community drop-in session is planned to take place near Garoo during EIS development

5.5 FUTURE ENGAGEMENT

Community and stakeholder engagement during the preparation of the EIS will build on relationships established through early engagement activities and complement formal consultation required under planning regulations. The proposed activities are outlined in **Table 5-4**.

TABLE 5-4 SUMMARY OF FUTURE ENGAGEMENT ACTIVITIES

Description	Target engagement groups
One-on-one meetings	• Government (Federal, State, local MPs and agencies). • Traditional owners. • Host landholder. • Neighbours.
Stakeholder briefings	• Government (Federal, State, local MPs and agencies). • Business, industry and interest groups.
Face-to-face community information and engagement session near Garoo	• Community (who neither own land surrounding the Project or host Project infrastructure). • Business, industry and interest groups.
Media advertisements to raise awareness and promote community sessions	• Community (who neither own land surrounding the Project or host Project infrastructure). • Business, industry and interest groups.
Communications materials (fact sheet, FAQ, letters)	• All.
Toll-free community information number	• All.
Project website	• All.

5.6 MONITORING AND EVALUATION

All stakeholder engagement feedback will continue to be collected and recorded in a structured and formal manner.

Engagement and communication process will be monitored and evaluated throughout the Project life cycle to ensure adequate participation opportunities and responses to stakeholder feedback. Monitoring of engagement and communication will be achieved by:

- reviewing enquiries and complaints data to identify unresolved or recurring issues and emerging trends;
- informal discussions with stakeholders and the community;
- information discussions with members of the Project team; and
- media monitoring, including social media.

All communications materials will be regularly updated for currency throughout the Project life cycle. FAQ and fact sheets will be available on the Project website.

6. 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 (DPE, 2022b):

- 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 and 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 solar farm developments in NSW.

TABLE 6-1 PROPOSED ASSESSMENT

Level of Assessment	Aspect
Detailed (potential constraint)	• Biodiversity – Terrestrial flora and fauna. • Heritage – First Nations.
Detailed	• Amenity – Visual. • Access - Traffic and Transport. • Land Resources - Land capability.
Standard	• Aviation. • Amenity – Noise and vibration. • Heritage – Historic. • Hazards and Risks – bushfire and environmental hazards. • Social – surroundings, livelihoods. • Water Resources – hydrology and surface water management. • Air Quality. • Waste Management.

The EIS will be prepared in accordance with the SEARs to be issued by the DPHI 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 renewable energy projects.

6.1 VISUAL AMENITY

This section is a summary of the results and findings of the Preliminary Visual Impact Assessment (PVIA) prepared by Moir Studio and contained as **Appendix B** to this Scoping Report.

The PVIA was undertaken by Moir LA in December 2024 and was prepared in accordance with the:

- *Large-Scale Solar Energy Guideline* (DPE, 2022a)*;*
- *Large-Scale Solar Energy Guideline – Technical Supplement: Landscape and Visual Impact Assessment (Technical Supplement 2022)* developed by the DPHI (DPHI, 2022a)*;*
- *Environmental Planning and Assessment Regulation 2021;*
- *Transport and Infrastructure SEPP; and*
- *State Significant Development Guidelines- Preparing a Scoping Report* (DPE, 2022b).

In accordance with the requirements of the *Large-Scale Solar Energy Guideline* and Technical Supplement, the PVIA includes a preliminary landscape character assessment and a preliminary visual impact assessment.

6.1.1 EXISTING VISUAL AND LANDSCAPE CHARACTER

A 'Study Area' of 4km from the Project boundary has been defined in accordance with the Technical Supplement 2022. The Study Area is characterized by significant undulations and cleared vegetation.

The Project Area is situated in the rural locality of Garoo, which is characterised by generally flat open plains with gentle undulations, transitioning into low-lying hills and ridges. The Project Area has elevation ranging from approximately 640 m near the south-west boundary, to approximately 566 m in the northern area around Tamarang Creek, which runs through the centre of the Project Area. The land sloping up from Tamarang Creek to low-lying ridges present on the eastern and western boundaries.

There is one associated dwelling (ID 1) within the Project Area (refer to **Figure 2-2**) and a total of 14 non-associated dwellings were identified within 4 km of the Project Area, refer to **Table 6-2**.

6.1.2 ASSESSMENT APPROACH

6.1.2.1 PRELIMINARY ASSESSMENT TOOL

The preliminary assessment tool identifies viewpoints (public and private) within 4km of the Project Area that will require a detailed assessment in Stage 2. Two visual study areas were identified as follows:

- 2.5 km from the proposed Development Footprint or public roads; and
- 4 km from the proposed Development Footprint from other private receivers and other public and private viewpoints.

The following public roads have been identified within 2.5 km from the Development Footprint:

- Bulls Road;
- Garoo Road; and

- New England Highway

Representative viewpoint locations have been selected for roads identified within the 2.5 km study area. A total of ten viewpoints have been selected for assessing the potential visibility of the Project.

Application of the preliminary assessment tool identified that a total of 14 non-associated dwellings were identified within the Study Area (4 km from the Development Footprint). Out of these, six non-associated dwellings to the northwest and southwest of the Project within the 4km of the Study Area have no theoretical visibility of the Project due to intervening topography.

East of the Project, within the Study Area, has the highest potential visibility of the Project due to a relatively flat topography. Land to the south, northwest and north of the project has minimal potential visibility of the Project.

TABLE 6-2 NON-ASSOCIATED DWELLINGS LOCATED WITHIN 4 KM OF THE PROJECT AREA

ID	Viewpoint type	Distance from the Project (m)	Detailed Assessment Required
2	Residential	309	Yes
3	Residential	441	Yes
4	Residential	547	Yes
5	Residential	563	Yes
6	Residential	1,664	No
7	Residential	2,144	No
8	Residential	2,206	Yes
9	Residential	1,763	No
10	Residential	2,349	Yes
11	Residential	2,648	No
12	Residential	3,108	No
13	Residential	3,211	No
14	Residential	3,305	No
15	Residential	3,417	Yes

A total of 8 non-associated dwellings were identified within 4km of the Development Footprint, with a line of sight to the project. Of these 8 non-associated dwellings, the assessment identified 7 non-associated dwellings that require further assessment in accordance with the Guidelines.

Viewshed mapping identifies all areas from which a development may be viewed. Viewshed mapping was undertaken using GIS, which accounts for topography and line of sight between viewpoints and the Project. The purpose of the viewshed map is to eliminate the need to further assess certain viewpoints if the analysis shows there is intervening terrain that would block the line of sight to a particular viewpoint.

Viewshed mapping was undertaken in order to eliminate viewpoint locations that would not have a line of sight to the proposed development. Viewshed mapping provides an assessment based on topography alone and does not take into account intervening elements such as vegetation and structures. Therefore, the viewshed map represents a theoretical worst-case scenario.

Viewshed mapping has been undertaken at a height of 4 m for a worst-case scenario, taking into consideration any significant undulations in the topography within the project site.

The following provides a summary of the viewshed map assessment:

- A total of 14 non-associated dwellings were identified within the Study Area (4 km from the Development Footprint);
- Out of these, six non-associated dwellings to the northwest and southwest of the Project within the 4km of the Study Area have no theoretical visibility of the Project due to intervening topography;
- East of the Project, within the Study Area, has the highest potential visibility of the Project due to a relatively flat topography;
- Land to the south, northwest and north of the project has minimal potential visibility of the Project;
- Bulls Road and Garoo Road have high potential visibility towards the Project within the 2.5 km Study Area; and
- Due to the intervening topography, the southwest, southeast, far west, and northwest portions of the Study Area have little to no theoretical visibility of the Project.

Reverse viewshed mapping takes into account the 8 non-associated dwellings identified within 4km of the development footprint with a theoretical line of sight to the Project. This assessment also represents a bare ground scenario, i.e., a landscape without intervening elements such as vegetation and structures. Therefore, the reverse viewshed map represents a theoretical worst-case scenario.

The following provides a summary of the reverse viewshed map assessment:

- Based on the reverse viewshed mapping, the majority of the Project will be viewed by up to 2 non-associated dwellings within 4km of the Project. Limited areas of the Project have the potential to be viewed by up to 6 dwellings and only a very small part to the east within the Project site has the potential to be viewed by 8 dwellings; and
- The Project has the lowest theoretical visibility from the west, north and south, with some areas in the west and east within the highest potential visibility of the Project.

6.1.2.2 POTENTIAL CUMULATIVE VISUAL IMPACTS

In accordance with the Cumulative Impact Assessment Guidelines (DPE, 2002b), the area chosen to assess relevant cumulative impacts from other development should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible, relative to the baseline condition of the relevant Project. Visibility research suggest solar panels and objects recede into the background in terms of visibility at 8 km (DPE, 2022b).

The occurrence of large-scale renewable energy projects within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed as these projects could become part of the existing landscape. It is important to determine whether the effect of multiple projects and other major infrastructure within the region would combine to become the dominant visual element, altering the perception of the general landscape character.

There are several existing or proposed renewable energy projects located in close proximity to the Project Area. The closest being the Middlebrook Solar Farm and BESS (25km). The EIS will consider the cumulative visual impacts of the Project and renewable developments within proximity of the Project. However, all of the surrounding renewable energy projects are located more than 20 km from the Project Area, and unlikely to be visible simultaneously with the project.

6.1.3 LANDSCAPE AND VISUAL IMPACT

A Landscape and Visual Impact Assessment will be undertaken as part of the EIS for the Project, which will assess the likely visual impacts resulting from the Project. The assessment will consider the potential impacts of the Project (including reflectivity, glare, and night lighting) on nearby receptors, and scenic or significant views, including public viewpoints in accordance with the requirements of the *Large-Scale Solar Energy Guideline* (DPE, 2022a).

Specialised modelling tools and visualizations (including photomontages) will be developed to illustrate potential views of the Project from key public and private viewpoints identified through this report. In addition, site inspections will be undertaken from key public viewpoints identified as requiring further assessment.

The LVIA will include an assessment of the landscape and visual impact resulting from all associated infrastructure and ancillary structures, and consideration of cumulative impacts of nearby infrastructure. Further assessment will be undertaken to assess potential impacts of glint and glare using industry standard methodology.

Cumulative impacts on visual and landscape amenity associated with other renewable energy developments in the region will also be assessed further in the EIS.

6.2 NOISE AMENITY

6.2.1 EXISTING ENVIRONMENT

Based on a review of available online aerial imagery, the existing noise environment at the closest noise sensitive receptors is characterised to be that of a typical rural area, dominated by natural sounds, having little or no road traffic noise and generally characterised by low background noise levels.

The closest residential receptor is the existing associated-dwelling within the Project Area located at 291 Garoo Road, Garoo, and four non-associated residential receivers within 1.5 km from the Project area. Noise impacts from the construction and operation of the solar farm at the closest sensitive receptors are not anticipated to be significant.

6.2.2 LEGISLATIVE CONTEXT & ASSESSMENT APPROACH

The EIS will assess the construction and operational noise impacts at the noise sensitive receptors within the area of influence.

During the construction phase, noise and vibration impacts from machinery, equipment and vehicle movements on access roads may adversely impact nearby sensitive receptors. Construction noise generated by the Project will be assessed at the EIS, including noise impact levels and duration.

During the operational phase of the Project, noise impacts are anticipated to be minimal and will likely be associated with noise sources such as vehicle movements on local roads within the Project Area and electrical infrastructure (transformers, power conversion units, BESS and substation). It is not anticipated that the operation of the solar farm will produce significant vibration impacts.

Noise and vibration at all receptors will be further assessed during the noise and vibration assessment for the EIS. It will be developed in accordance with the following standards, policies and guidelines:

- NSW Environment Protection Authority (EPA), *Noise Policy for Industry (NPI) 2017* (NSW EPA, 2017);
- NSW Department of Environment and Climate Change, *Interim Construction Noise Guideline 2009* (NSW DECC, 2009);
- Australian Standards (AS) 1055:2018 *Acoustics – Description and measurement of environmental noise* (Standards Australia, 2018);
- NSW Department of Environment and Conservation *Assessing Vibration: A Technical Guideline 2006* (NSW DEC, 2006);
- NSW Department of Environment, Climate Change and Water, *Road Noise Policy* (NSW DECCW, 2011);
- Transport for NSW (TfNSW), *Road Noise Criteria Guideline (RNCG) 2022* (TfNSW, 2022a);
- Transport for NSW (TfNSW), *Noise Mitigation Guideline (NMG) 2022* (TfNSW, 2022b); and
- NSW Environment Protection Authority (EPA), *Noise Guide for Local Government (NGLG) 2013* (NSW EPA, 2013).

6.3 BIODIVERSITY

ERM conducted a Preliminary Biodiversity Assessment (PBA) to inform the Scoping Report for the Project, as presented in **Appendix C**. This section summarises the methodology, results and recommendations presented in the PBA.

The objective of the PBA was to assess potential ecological constraints that may occur within the Project Area, and subsequently the Development Footprint. The results of this assessment are based on desktop reviews and biodiversity field surveys undertaken in September 2024. The PBA allows preliminary recommendations to be provided in terms of avoidance, mitigation and/or additional assessment of ecological values.

6.3.1 EXISTING ENVIRONMENT

Native vegetation and landscape features within the locality are summarised in the PBA (refer **Appendix C**).

Large portions of land within the Project Area have been disturbed and are characterised by grazed native and modified grasslands resulting from vegetation clearing, cropping and livestock grazing. Native vegetation is present within the Project Area; however, this is highly fragmented due to historical clearing and current agricultural land uses. Scattered trees remain

throughout the Project Area as paddock trees providing shelter to stock and play an important role to local wildlife.

The Project Area is located entirely within the Peel subregion of the Nandewar Interim Biogeographic Regionalisation for Australia (IBRA) bioregion.

6.3.2 LAND CATEGORISATION

The development of the solar farm and BESS will require assessment using the Biodiversity Assessment Method 2020 (BAM) and the preparation of a BDAR to support the submission of the EIS. Part 6, Division 2, Section 6.8 (3) of the NSW BC Act determines that the BAM is to exclude the assessment of the impacts of clearing of native vegetation on Category 1 - exempt land (within the meaning of Part 5A of the NSW *Local Land Services Act 2013* (LLS Act)), other than prescribed impacts (e.g., impacts on the habitat of threatened species). This determination is repeated in Section 1.5 (1)(d) of the BAM.

BAM accredited assessors may establish a reasonable approximation of land categorisation for the Environment Agency Head to consider. An outline of an evidence-based approach to identifying Native Vegetation Regulatory (NVR) map land categorisation, and the biodiversity assessment requirements in relation to Category 1 – exempt land, is provided in the guide *Determining native vegetation land categorisation for application in the Biodiversity Offsets Scheme* (DPE, 2023a).

A Land Categorisation Assessment (LCA) Report will be prepared separately and will include the full details for the reasonable approximation of land categorisation for the Project Area of the Project. Initial surveys, including LCA transects, have informed the proposed field verified Plant Community Type (PCT) mapping, with proposed Category 1 – exempt land mapped as PCT 0, Non-native Vegetation (**Figure 6-1**).

6.3.3 PLANT COMMUNITY TYPES

Field surveys completed within the Project Area have determined the presence of the following PCT:

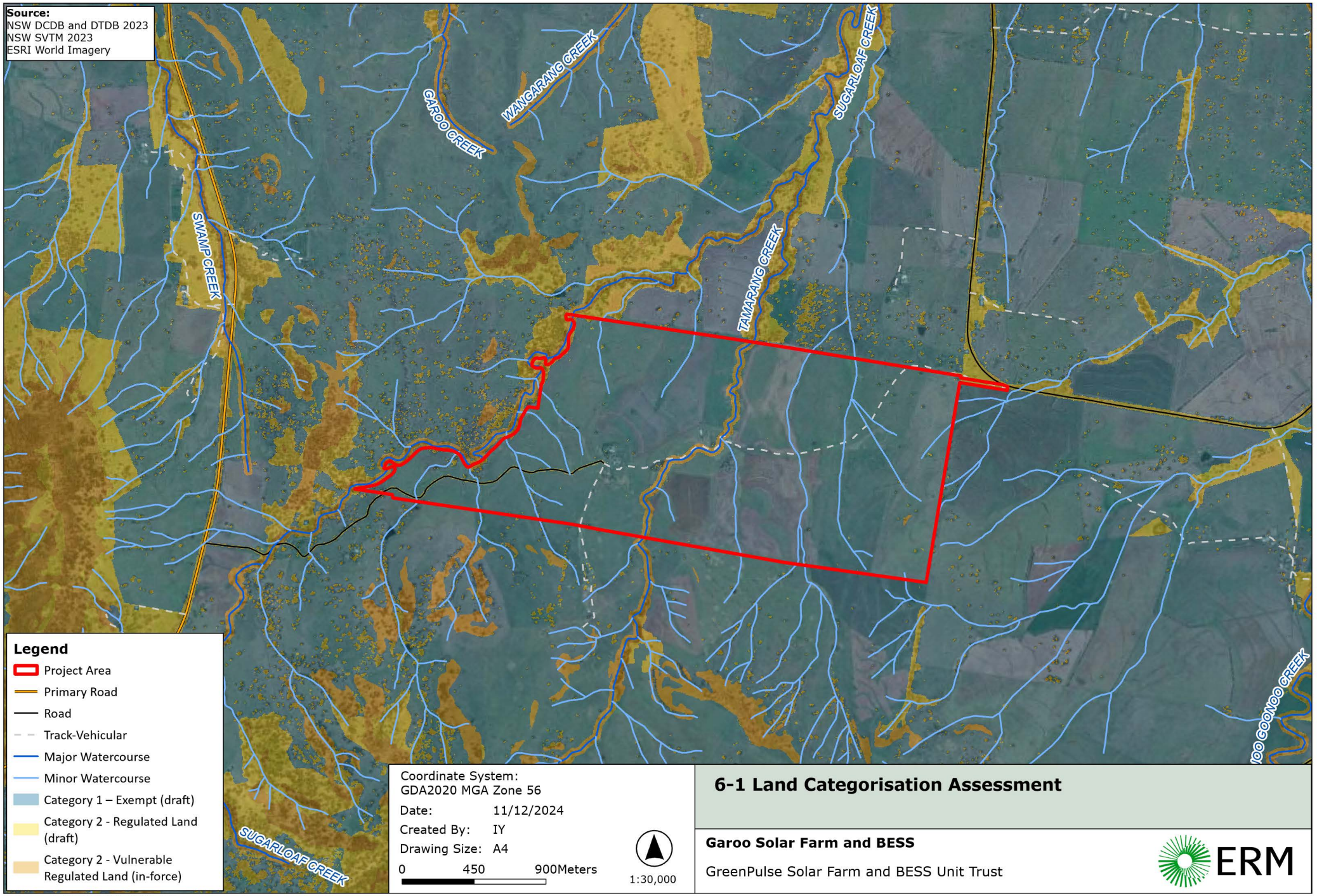
- PCT 599 Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion.

A total of four vegetation integrity plots were completed within PCT 599 in the Project Area and used to determine the vegetation community present.

This PCT was found to occur in four distinct vegetation zones:

- Derived Grassland – areas mapped on the Transitional NVR as Regulated Land that do not correspond to the following vegetation zones;
- Scattered Trees – Native paddock trees that constitute the canopy species of PCT 599, considered scattered trees in accordance with section B.1 of the BAM;
- Woodland Formation – Patches of open woodland and scattered trees that do not meet the scattered tree criteria under section B.1 of the BAM; and
- Mixed Vegetation – A patch of vegetation containing a mix of native plantings and remnant diagnostic species for PCT 599.

The Development Footprint has been established avoiding all areas of Woodland Formation and Mixed Vegetation condition states of PCT 599. PCT mapping is displayed in **Figure 6-2**.



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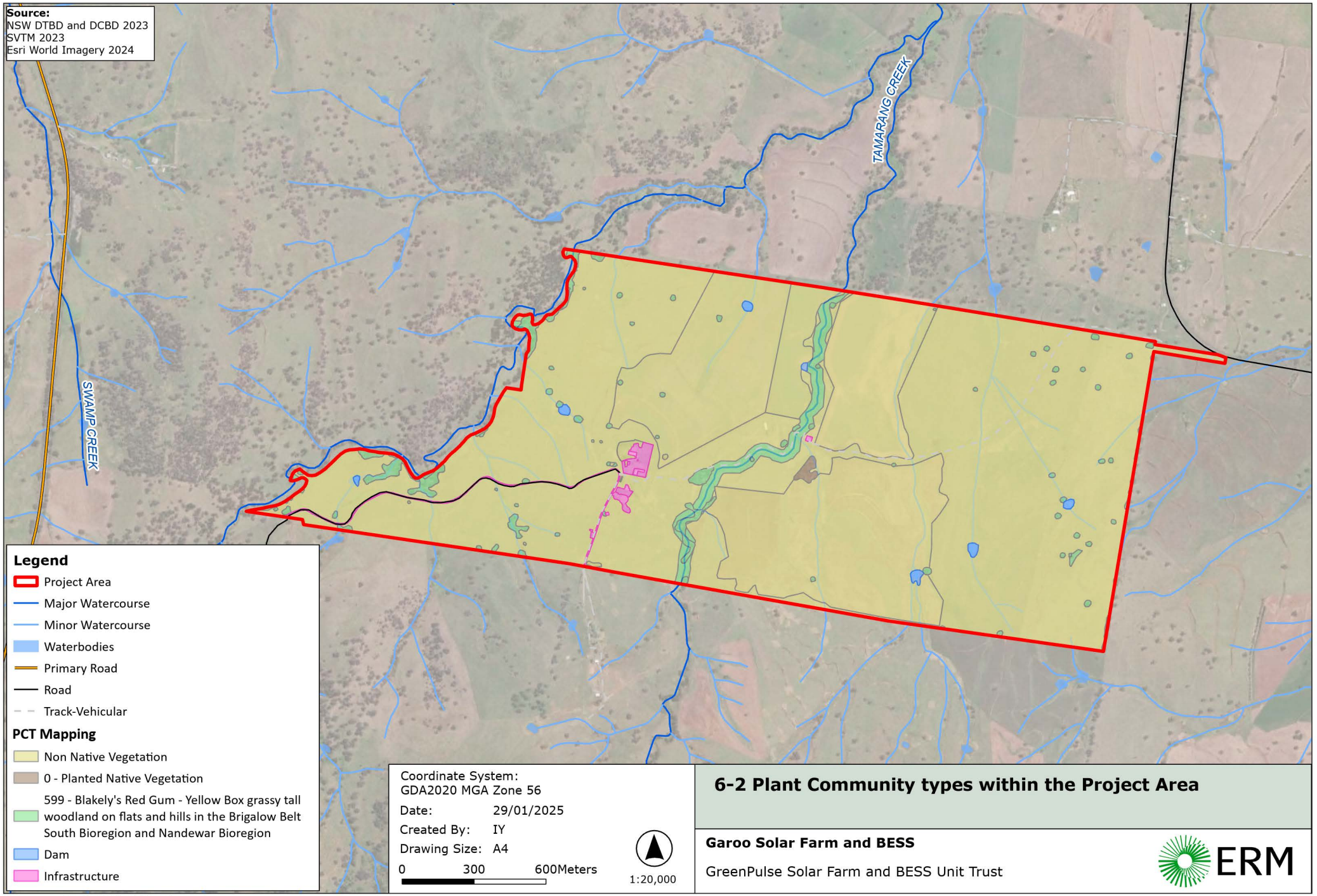

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6.3.4 THREATENED ECOLOGICAL COMMUNITIES

Threatened Ecological Communities (TECs) identified through desktop searches including the Protected Matters Search Tool (PMST) and through associated PCTs within the Project Area, were reviewed to identify any potential occurrence. The results are presented in **Table 6-3**. Further details regarding the assessment of TECs within the Project Area can be found in Section 4.3 of the PBA (**Appendix C**).

TABLE 6-3 POTENTIAL TECS ACROSS THE PROJECT AREA

TEC	EPBC Act	BC Act	Likelihood to occur within Project Area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland/White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Critically Endangered (CE)	CE	**Known** – mapped in association with patches of PCT 599.
Weeping Myall Woodlands Endangered	Endangered (E)	E	The TEC is **unlikely** to occur. The Project Area is within the species distribution, however dominant key flora species in this community such *as Acacia pendula* are not present in the Project Area.
New England Peppermint (Eucalyptus nova-angelica) Grassy Woodlands, Critically Endangered	E	-	The TEC is **unlikely** to occur. The Project Area is within the distribution however suitable habitat was not present, as the Project Area was not dominated or co dominated by *Eucalyptus nova-anglica* or a *Poa sieberiana* dominated ground layer.
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland, Critically Endangered	CE	-	The TEC is **unlikely** to occur. The Project Area is within the species distribution. However, suitable landform and soils for this community are absent.

Patches that correspond with the known EPBC Act listed TEC have been avoided by the Development Footprint. Scattered trees mapped across the Development Footprint form part of the known BC Act listed TEC.

6.3.5 LISTED SPECIES

The following sections identify the ecosystem credit species, species credit species and dual credit species as well as species listed under the EPBC Act and additional species relevant to the Project Area as identified through threatened species records.

No threatened and/or migratory flora or fauna species were detected during the field survey.

6.3.6 CANDIDATE SPECIES

Review of the BAM-C completed as part of the PBA in **Appendix C** concluded that there are 32 Candidate Species that have the potential to occur within the Project Area. A targeted survey or an expert report is required to confirm the presence or absence of these species within areas of direct and indirect impacts when completing a BDAR. Alternatively, for a development activity, clearing or biodiversity certification proposal only, the applicant may elect to assume the species is present.

Review of the BAM-C provided a list of candidate species applicable to the Project Area, listed in **Table 6-4**. Where the Project Area does not meet the Threatened Biodiversity Profile Data Collection (TBDC) listed geographic or habitat requirement for a species, the species has been excluded from the candidate species list. Further assessment of these species is provided in **Appendix C**.

TABLE 6-4 PRELIMINARY LIST OF CANDIDATE SPECIES

Scientific Name	Common Name
Acacia atrox	Myall Creek Wattle
Adelotus brevis - endangered population	Tusked Frog population in the Nandewar and New England Tableland Bioregions
Anthochaera phrygia	Regent Honeyeater
Aprasia parapulchella	Pink-tailed Legless Lizard
Burhinus grallarius	Bush Stone-curlew
Callistemon pungen	Callistemon pungens
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo (Breeding)
Cercartetus nanus	Eastern Pygmy-possum
Chalinolobus dwyeri	Large-eared Pied Bat
Dichanthium setosum	Bluegrass
Digitaria porrecta	Finger Panic Grass
Euphrasia arguta	Euphrasia arguta
Haliaeetus leucogaster	White-bellied Sea-eagle
Hieraaetus morphnoides	Little Eagle (Breeding)
Homopholis belsonii	Belson's Panic
Hoplocephalus bitorquatus	Pale-headed Snake
Lathamus discolor	Swift Parrot
Litoria booroolongensis	Booroolong Frog
Lophoictinia isura	Square-tailed Kite (Breeding)
Miniopterus orianae oceanensis	Large Bent-winged Bat
Ninox connivens	Barking Owl
Petaurus norfolcensis	Squirrel Glider
Phascolarctos cinereus	Koala

Scientific Name	Common Name
Picris evae	Hawkweed
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)
Swainsona sericea	Silky Swainson-pea
Thesium australe	Austral Toadflax
Tylophora linearis	Tylophora linearis
Tyto novaehollandiae	Masked Owl
Uvidicolus sphyrurus	Border Thick-tailed Gecko
Vespadelus troughtoni	Eastern Cave Bat

6.3.7 ECOSYSTEM CREDIT SPECIES

Ecosystem credit species, also referred to as 'predicted species' are threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. The TBDC identifies the threatened species assessed for ecosystem credits. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.

Review of the BAM-C completed as part of the PBA in **Appendix C** was undertaken. The ecosystem credit species predicted to occur on or use areas of PCT 599 within the Project Area are listed in **Table 6-5.** Two ecosystem credit species have been excluded from further assessment due to habitat constraints.

TABLE 6-5 PRELIMINARY LIST OF ECOSYSTEM CREDIT SPECIES

Common Name	Scientific Name
Anthochaera phrygia	Regent Honeyeater
Artamus cyanopterus cyanopterus	Dusky Woodswallow
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo
Chalinolobus picatus	Little Pied Bat
Chthonicola sagittata	Speckled Warbler
Circus assimilis	Spotted Harrier
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)
Daphoenositta chrysoptera	Varied Sittella
Dasyurus maculatus	Spotted-tailed Quoll
Falco subniger	Black Falcon
Glossopsitta pusilla	Little Lorikeet
Grantiella picta	Painted Honeyeater
Haliaeetus leucogaster	White-bellied Sea-Eagle
Hieraaetus morphnoides	Little Eagle

Common Name	Scientific Name
Hirundapus caudacutus	White-throated Needletail
Lathamus discolor	Swift Parrot
Lophoictinia isura	Square-tailed Kite
Macropus dorsalis	Black-striped Wallaby
Melanodryas cucullata cucullata	South-eastern Hooded Robin
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)
Miniopterus orianae oceanensis	Large Bent-winged Bat
Neophema pulchella	Turquoise Parrot
Nyctophilus corbeni	Corben's Long-eared Bat
Petroica boodang	Scarlet Robin
Petroica phoenicea	Flame Robin
Pomatostomus temporalis temporalis	Grey-crowned Babbler
Pteropus poliocephalus	Grey-headed Flying-fox
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat
Stagonopleura guttata	Diamond Firetail

6.3.8 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Matters of National Environmental Significance (MNES) relevant to the Development Footprint are provided in **Table 6-6**. The PBA provides details of a 'Likelihood of Occurrence' assessment (LoO), undertaken for EPBC Act listed TECs, threatened species and migratory species.

Under the EPBC Act, projects that are expected to have a significant impact on MNES are required to refer the proposed action (the Project) to the Commonwealth Minister for Climate Change, Energy, Environment and Water (DCCEEW). This process involves a formal assessment and determination by the Minister. If the Minister determines the proposed action is likely to have a significant impact on MNES then the action is deemed to be controlled action under the EPBC Act.

NSW maintains a bilateral agreement with the Australian Government with regards to biodiversity. This agreement aims to establish a consistent framework for environmental assessment and approvals. This agreement allows accredited assessors in NSW to conduct assessments and approvals for state significant development projects in line with state and federal standards. The PMST report is attached as Appendix A of the PBA (**Appendix C**).

TABLE 6-6 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

MNES	Relevance to the Project Area
World Heritage Properties	No World Heritage Properties are mapped within or are adjacent to the Project Area.
National Heritage Places	No National Heritage Places are mapped within or are adjacent to the Project Area.

MNES	Relevance to the Project Area
Wetlands of International Importance (Ramsar Wetlands)	The PMST identified three Ramsar Wetlands: • Banrock station wetland complex; • Riverland; and • The Coorong, and lakes Alexandrina and albert wetland. The Project Area is between 900-1200 km upstream from each Ramsar site. There are not expected to be any direct impacts to these water bodies, however, impacts to local water quality from the construction of the proposed development should be avoided and/or sufficiently mitigated.
Listed Threatened Ecological Communities (TECs)	The PMST identified four TECs with the potential to occur within the Project Area. These are listed below: • Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland, Critically Endangered; • New England Peppermint (Eucalyptus nova-angelica) Grassy Woodlands, Critically Endangered; • Weeping Myall Woodlands Endangered; and • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, Critically Endangered. Based on field survey results, one EPBC Act listed TEC is confirmed to be present within the Project Area: • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, Critically Endangered. This TEC has been avoided, and is not present within the Development Footprint.
Listed Threatened Species	The PMST identified forty-six species listed under the EPBC Act that may be present within the Project Area. A likelihood of occurrence was undertaken for these species, considering the refined Development Footprint, with three (3) species considered likely to occur within the limited habitat present: • Booroolong Frog (*Litoria booroolongensis*), Endangered • Diamond Firetail (*Stagonopleura guttata*), Vulnerable • Koala (*Phascolarctos cinereus*), Endangered A further 14 are considered to have the potential to occur.
Listed Migratory Species	The PMST identified 11 migratory species listed under the EPBC Act with the potential to occur within the Project Area. Based on the LoO assessment against the Development Footprint, no EPBC Act listed migratory species are considered known or likely to occur. One species has the potential to occur within the Development Footprint, the White-throated Needletail (*Hirundapus caudacutus*).
Great Barrier Reef Marine Park	Not applicable
Oher Matters Protected by the EPBC Act	The PMST identified two Commonwealth Lands (Australian Telecommunications Commission [12949]/ [12948]) within the buffer area.

6.3.9 ASSESSMENT APPROACH

The Project SEARs are likely to require the preparation of a BDAR. This will require completion of Stage 1 and Stage 2 of the BAM. The following sections generally outline the future scope of these works.

6.3.9.1 STAGE 1 OF THE BAM

Stage 1 of the BAM requires that additional survey periods be completed to inform the Project BDAR. At this stage of the project, ERM has completed initial surveys, to be followed by seasonal surveys to meet the anticipated survey requirements in accordance with the BAM. The project BDAR will document the methods and results of these survey efforts and how they adhere to the relevant survey guidelines. Relevant survey guidelines in force at the time of this PBA include:

- Threatened Reptiles Biodiversity Assessment Method Survey Guide (DPE, 2022f);
- Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide (DPE, 2022g);
- 'Species credit' threatened bats and their habitats, NSW survey guide for the Biodiversity Assessment Method (DPIE, 2021d);
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (2004 Working Draft) (DEC, 2004);
- Survey Guidelines for Australia's Threatened Mammals (DSWP&C, 2011);
- NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE, 2020b); and
- Surveying Threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPIE, 2020c).

Remaining investigations include the following:

- Obtaining of additional BAM plot data for delineated vegetation zones;
- Further assessment of planted native vegetation in accordance with the relevant streamlined assessment module; and
- Targeted surveys for candidate and EPBC Act listed species.

6.3.9.2 STAGE 2 OF THE BAM

Application of Stage 2 of the BAM aims to determine how the Project will meet the "No Net Loss" standard required by the NSW BC Act. This calculation depends on the extent of biodiversity values being impacted, whether the impact is direct, indirect of prescribed. These impacts are to be assessed following application of the mitigation hierarchy (avoid, minimise, mitigate). Therefore, allowing for the quantification of residual impacts.

The BAM is then used to calculate the offset liability of the Project in units referred to as biodiversity credits. A Biodiversity Offset Strategy will be defined to demonstrate how this offset is to be delivered. This defines the "No Net Loss" for the proposed Project.

6.3.9.3 APPLICATION OF THE MITIGATION HIERARCHY

This PBA has identified the biodiversity constraints on the proposed Garoo Solar Farm and BESS that will require consideration and application of the mitigation hierarchy.

All impacts to threatened species and native vegetation should be avoided as a priority. The following points are to be considered in the application of the mitigation hierarchy:

Avoid

- Avoid areas of mapped TECs;

- Avoid areas along Tamarang Creek and Sugarloaf Creek;
- Avoid areas of mapped native vegetation (PCT 599); and
- Avoid areas with identified biodiversity values such as habitat features (including but not limited to, hollow bearing trees).

Minimise

- Minimise the risk for weed and pest incursion within the Project Area; and
- Minimise the risk of injury to fauna

Mitigate

- Mitigate any residual impacts to biodiversity. This should be achieved through conservation and improvement of existing native vegetation on the Project Area.

6.3.9.4 OFFSET STRATEGY

If deemed to be required, an offset strategy would need to demonstrate a 'no net loss' outcome and may comprise one or more of the following:

- Retirement of suitable ecosystem and species credits registered in the Biodiversity Offset Scheme (BOS) including payment into the Biodiversity Conservation Trust fund;
- Contribution to a conservation initiative; and/or
- Implementation of a Voluntary Planning Agreement (VPA) (s7.18 of the BC Act).

The Minister may also consider Ancillary Rules in lieu of retiring biodiversity credits as well as any additional and appropriate measures that will minimize those impacts if consent or approval is to be granted for impacts on entities at risk of serious and irreversible impacts (s7.16(3) of the BC Act).

6.3.9.5 PREPARATION OF A BDAR

A BDAR prepared in accordance with the BAM is expected to be provided as a part of the EIS and will have regard for the PCTs and BAM-C generated Candidate species identified in this PBA. This is to be used to assess the impacts of the Project on assessable biodiversity values. The Project BDAR will comprise the survey methods and results and an assessment of impacts associated with the Project. It will also outline the offset strategy for any residual impacts as a result of the Project.

6.4 FIRST NATIONS CULTURAL HERITAGE

6.4.1 EXISTING ENVIRONMENT

The Project Area is located in Garoo, entirely within the Peel subregion of the NSW Nandewar IBRA bioregion. The Nandewar bioregion is comprised of foothills and ranges on the western edge of the New England Tablelands.

Silty clay soils are found more commonly in the landscape, and soils within the Project Area and the surrounding environment are predominantly Chromosols. The Project Area lies within the southern part of the Tamworth Fold Belt which consists of a complex series of Early Carboniferous and Devonian sedimentary rocks. Arenite, greywacke, and mudstone are common lithologies found in these formations (Banks, 2001).

The Fullwoods Hill landscape located within the Tamworth region is woodland 85% cleared for grazing and cultivation purposes, exposing the undulating landscapes and rocky outcrops (Banks, 2001).

The Nandewar bioregion is dominated by a sub-humid climate characterised by hot summers and typically drier season in the low-lying areas. The Nandewar area was traditionally home to the *Anaiwan*, *Kamilaroi, Bingara, Weraerai*, and *Kwaimbul* language groups, of the Gomeroi People. These communities established transient campsites, noted by explorer Thomas Mitchell, and followed seasonal patterns for hunting and gathering (Sahukar, Gallery, Smart, & Mitchell, 2003). They crafted stone tools from local materials like quartz and greywackes, hunting kangaroos and possums for food and clothing. Fish were trapped in the Gwidir River using stone weirs and plant-fibre nets. Many local towns, such as Bingara ("shallow crossing") and Barraba ("camp by the riverbank"), derive their names from the Aboriginal words connected to the landscape, usually associated with water. The region holds significant intangible value, as evidenced by ceremonial bora grounds, art sites, and carved trees (Sahukar, Gallery, Smart, & Mitchell, 2003).

6.4.1.1 PREVIOUS ARCHAEOLOGICAL ASSESSMENTS

Previous archaeological assessments on the North West Slopes indicates that Aboriginal cultural heritage sites are predominantly open occupation areas, often represented by scatters of stone artefacts and culturally modified trees (AHIMS Database). Other features such as burials, earth mounds, hearths, ceremonial rings, axe-grinding grooves, rockshelters and rock art, have also been recorded in the region.

- Scarred or carved trees may still be found where mature Eucalypt or Cypress Pine trees remain, though unlikely due to prior agricultural disturbances and tree clearing;
- Stone artefact scatters and isolated finds could occur across the entire site, particularly on well-drained, level ground within 200 m of water sources, as several creeks run through the area (including Sugarloaf Creek);
- Burial sites are unlikely, given the region's acidic soils which do not preserve organic materials like bone;
- Freshwater shell middens are unlikely, as these are typically located within 100 m of permanent water sources;
- Earthern features such as mounds and hearths, along with ceremonial rings, are typically found on level ground near water sources, but they are unlikely to be encountered due to prior agricultural disturbances; and
- Sites reliant on specific rock formations, such as rockshelters or rock art, are also very unlikely given the local geology, and minimal rock overhangs or caves. However, axe-grinding grooves may be present on sandstone surfaces, with nearby deposits.

While this predictive model helps identify areas where sites related to tangible cultural heritage sites may be found, it does not account for sites of intangible significance, such as ceremonial or dreaming locations, which are often associated with landscape features.

Consultation with local Aboriginal parties is essential to ensure significant cultural sites are identified and protected.

Soil mapping indicates the Project Area is found within the Fullwoods Hill soil landscape.

This landscape contains red-brown chromosols, dark brown silty loam, yellow and brown solodic soils and brown heavy clay soils (Banks, 2001). 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 outlined below.

A previous Aboriginal Cultural Heritage study was conducted for the Werris Creek Coal Mine in 2004, located approximately 24 km west of the Project Area. The study involved an AHIMS site register search, which identified one site within a 1 km radius of the mine, the Narrawolga Axe Grinding Grooves (29-2-0005) (Archaeological Surveys & Reports Pty Ltd, 2004) (Landskape, 2010). Additionally, two other sites, both stone artefact scatters, were identified within a 5 km radius. The primary archaeological survey for the mine site, conducted by John Appleton in 2004, re-identified the AHIMS site, originally recorded in 1964. The site consists of at least 25 axe grinding grooves located on sandstone slabs. In consultation with the Nungaroo LALC, a management plan was created for the removal, relocation, and protection of the Narrawolga Axe Grinding Grooves via an Aboriginal Heritage Impact Permit (AHIP). The relocation took place in 2007, with the site being stored adjacent to the mine of 'Eurunderee' property. No other cultural heritage sites were identified in the study area (Landskape, 2010).

In 2002 Patrick Gaynor participated in a survey of the State Forests and travelling stock reserves in the Tamworth region with the Walhallow LALC. During which, multiple culturally modified scar trees were recorded in the Doona State Forest (45 km west of Project Area). Followed by further investigations of the area in 2010 by Umwelt Heritage for BHP, who recorded multiple artefact scatters and grinding grooves.

A cultural heritage assessment was conducted for the AGL Dubbo to Tamworth natural gas pipeline (McDonald, 1998), identifying 98 Aboriginal sites along the 226.2 km survey area (approximately 50 km north-west from Project Area). The majority of these were open camp sites (40) and culturally modified scar trees (36). Of the recorded sites, 65 were not affected by the pipeline, while mitigation measures including realigning the pipeline, were required for 33 sites of high significance.

In collaboration with the Tamworth LALC, a survey conducted as part of the Tamworth Aboriginal and Archaeological Study (Wilson and McAdam, 2000). The surveyors identified numerous sites primarily artefact scatters of varying densities, consisting of materials such as chert, argillite, hornfels, quartz, and greywacke. Culturally modified trees and Kamilaroi walking tracks were also noted.

6.4.2 AHIMS SEARCH RESULTS

Heritage NSW managed the Aboriginal Heritage Information Management System (AHIMS) database, which holds information on previously recorded Aboriginal sites in NSW. An extensive search of the AHIMS database was conducted on 24 October 2024, using the details provided in **Table 6-7**.

TABLE 6-7 AHIMS DATABASE SEARCH DETAILS

Item	Detail
Client Service ID	943297
Datum	GDA Zone 56

Item	Detail
Number Sites	0

No registered sites are located within the boundary of the Project Area, however the lack of sites does not indicate that no sites are present but rather that a lack of, or limited archaeological survey has occurred to date within the Project Area. Cultural heritage and landform sensitivity mapping and the results from previous archaeological reports from the region demonstrate that areas of high and moderate potential exist within the Project Area (refer **Figure 6-3**).

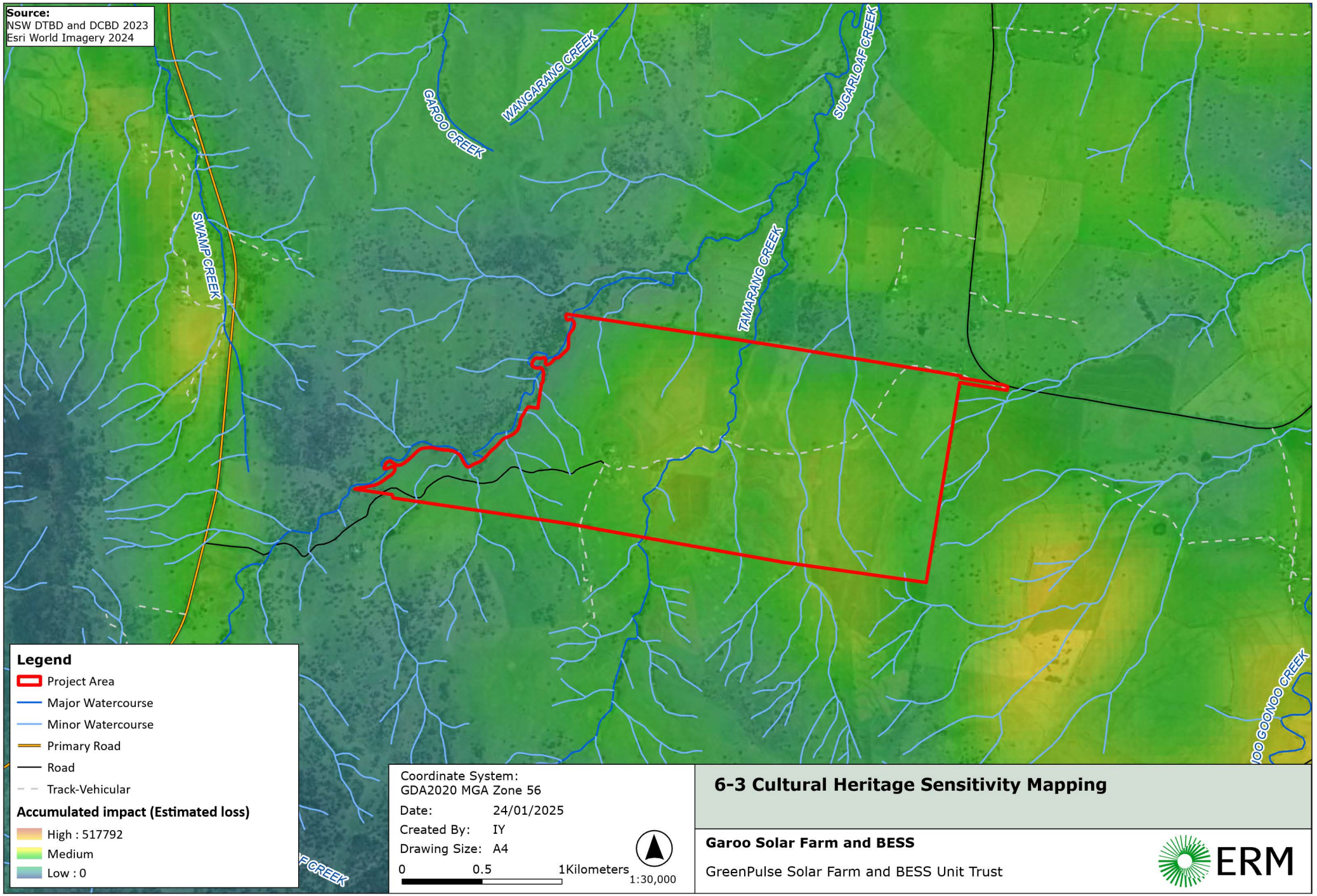
The results of the AHIMS search is located in **Appendix D.**

6.4.3 ASSESSMENT APPROACH

Based on the results of soil mapping, AHIMS mappings and the results of previous reports, this preliminary desktop assessment has determined that it is likely 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. The following recommendations are therefore provided:

- 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, 2010a), and Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010b); and
- 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, 2010a).

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.



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6.5 HISTORICAL HERITAGE

6.5.1 EXISTING ENVIRONMENT

John Oxley explored the Nandewar Bioregion in 1818, and by the 1830s, colonial settlers began occupying the land for cattle grazing. The 1850s gold rush led to the growth of towns like Barraba and Bingara, with gold and asbestos mining supporting their economies. Tamworth, established by the Australian Agricultural Company in 1832, grew rapidly with urban development, becoming Australia's first town to use electric lighting in 1888. Railways further boosted towns like Quirindi, turning them into wheat production hubs. By 1990, many softwood forests in the region were designated as state forests.

The New England Highway adjacent to the Project Area was surveyed in the mid-18th century, constructed to reach the prime wool growing areas of the New England region. It was originally known as the Great Northern Road until 1928, and is a main thoroughfare from north Newcastle, New South Wales to Yarraman, Queensland (Department of Transport, Roads & Maritime Services, 2016). Early Parish Maps indicate the properties making up the Project Area were owned by various landholders by the early 1900s. Historical aerial photography shows that the homestead and dam in the centre of Lot 2 DP1108524 were present by the mid-1970s. The area continues to be used for agricultural purposes.

6.5.2 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 for the Environment 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 National Heritage List contains natural, historic, and Indigenous places deemed to be of outstanding heritage significance to Australia. Before a site is included on the list, a nominated place is assessed against nine criteria by the Australian 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 4 October 2024. The search indicates that there are no SHR-listed items within or in close proximity to the Project Area. The Werris Creek Railway Station, yard group and moveable relics is a SHR-listed item (ID 01285) that is located approximately 23 km west of the Project Area.

Tamworth Regional Local Environmental Plan 2010

A search of the Tamworth Regional LEP 2010 was conducted on 4 October 2024. The search identified no locally heritage listed sites within the Project Area. The search noted one locally listed heritage item located approximately 15 km from the Project Area, as detailed in **Table 6-9.**

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 4 October 2024. There are no Section 170 heritage places located within or in close proximity to the Project Area.

6.5.3 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. The RNE compiled between 1976 and 2003 by the Australian Heritage Commission.

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 an archive of a non-statutory information on the Australian Heritage Database.

A search of the Australian Heritage Database was undertaken on 4 October 2024. This search identified no RNE listed places within or in close proximity to the Project Area. The closest RNE place, the Wallabadah Cemetery and Common Woodland Remnant (ID 101069) is located 14 km south-west of 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 4 October 2024 indicated there are no National Trust listed properties within or near the Project Area.

6.5.4 HISTORIC HERITAGE SUMMARY

Table 6-8 provides an overview of the statutory and non-statutory heritage listings identified within or near the Project Area.

TABLE 6-8 NON-INDIGENOUS HERITAGE SITES SUMMARY

Site Name	Register	Item ID	Description	Distance to Project Boundary	Significance Level
Goonoo Goonoo Homestead and Associated Outbuildings	Tamworth Regional LEP 2010	I125	Goonoo Goonoo is one of the most historic stations in New South Wales being closely tied to the development of the pastoral industry of the State and to the early history of the Northern Coalfields.	~15 km	Local
Werris Creek Railway Station, yard group and movable relics	State Heritage Register	01285	Railway Station	~23km	State

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.

6.5.5 ASSESSMENT APPROACH

Preliminary assessment has shown there are no registered 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 'Goonoo Goonoo Homestead and Associated Outbuildings (Tamworth Regional LEP ID I125) located approximately 15 km north of the Project Area.

While no registered historic heritage items are located within the Project Area, several historic structures have been identified within historic aerials. 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 due diligence 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.

6.6 HAZARDS AND RISKS

6.6.1 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 solar 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 PHA 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 BESS 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.

6.6.2 BUSHFIRE

6.6.2.1 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 Rural Fire Service (RFS) Bushfire Prone Land mapping indicates that the Project Area is within a designated bushfire prone area (refer to **Figure 6-4**) designated as Vegetation Category 3 (including but not limited to grasslands and freshwater wetlands) under the NSW RFS Guide for Bush Fire Prone Land Mapping (RFS, 2015). However, a review of the National Parks and Wildlife Services (NPWS) Fire History (Wildfires and prescribed Burns) indicates there is no recorded history of bushfire within the Project Area (NSW DCCEEW, 2024).

The Project Area is characterised by an agricultural landscape that has a gradual north-south slope with low-lying ridges present on the eastern and western boundaries. The site contains sparse vegetation with cropping's of trees along the western and northern boundaries of the Project Area.

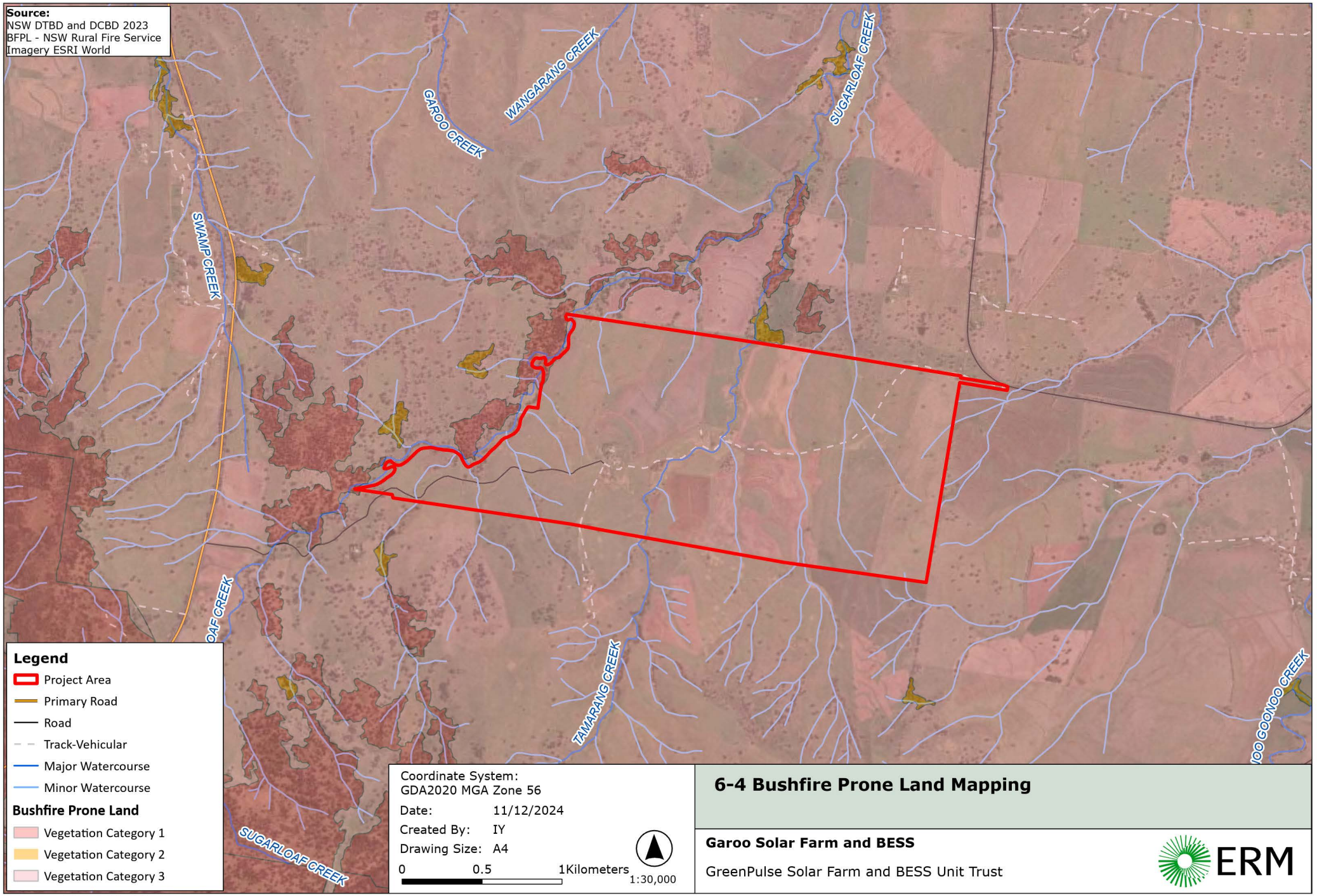
6.6.2.2 ASSESSMENT APPROACH

The EIS will include a Bushfire Risk Assessment and will aim to identify potential hazards and risks associated with bushfires / use of potential bushfire prone land. The assessment will aim to demonstrate that the proposed solar farm 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* (NSW RFS, 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, land managers and the community.



6-4 Bushfire Prone Land Mapping

Garoo Solar Farm and BESS

GreenPulse Solar Farm and BESS Unit Trust

ERM

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6.6.3 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 existing transmission lines and proposed substations. 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 solar farm electrical infrastructure. While adverse health effects from exposure to extremely low frequency 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.

6.6.4 AVIATION

A preliminary review of Aircraft Landing Areas (ALAs) was undertaken of the Project Area and its surrounding regions. No airports were identified within 20 km of the Project Area.

The closest regional airports are located in the town of Tamworth and Dubbo:

- Tamworth Regional Airport, approximately 50 km north;
- Westpac Rescue Helicopter, approximately 50 km north; and
- Dubbo Regional Airport (DRA) approximately 200 km southwest.

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 solar panel layout for glare hazard presented by the layout in relation to existing approach paths, runway thresholds and air traffic control (if required) and recommended mitigation measures.

6.7 MINING AND EXPLORATION TITLES

6.7.1 EXISTING ENVIRONMENT

Mining is a minor industry in the Tamworth Regional LGA, generating approximately 0.3% ($23.9 million) of the region’s economic output in 2022/23, and employing 1.2 % of the community in 2021 (ABS, 2021). There is only one major operating mine within Tamworth Regional LGA, the Unimin-Attunga Limestone mine, which is located approximately 22 km north of Tamworth.

There are no exploration titles within the Project Area, or within 5 km of the Project Area Assessment Approach

6.8 TRAFFIC AND TRANSPORT

6.8.1 EXISTING ENVIRONMENT

The Project Area is located approximately 370 km northwest from Sydney, NSW, and approximately 40 km (by road) south of Tamworth NSW and 14 km west of Wallabadah NSW.

Access to the Project Area during construction and operation is expected via an access track from Garoo Road to the northeastern section of the Project Area. This track is currently unsealed and therefore approximately 70 m will require upgrading.

Garoo Road is a municipal local road that starts from Lindsay's Gap Road and runs in a general north-west alignment eventually connecting to the New England Highway. Garoo Road is a sealed road with a reserve width of approximately 6 m and with single lanes in each direction, accommodating low volumes of traffic in each direction.

An alternate access route would be to access Garoo Rd via a right turn from New England Highway and head east south on Garoo Road towards the Project Area. This will be subject to assessment in the EIS phase.

The TfNSW Restricted Vehicle Access Map for the area surrounding the Project indicates that both the New England Highway and Garoo Road are approved B-Double routes.

6.8.2 ASSESSMENT APPROACH

The Project may require upgrades to roads along the transport route. The details and specifications of these upgrades will be dependent 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.

A detailed TTIA, including a Transport Route Assessment, will be prepared to inform the EIS. It 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' (Austroads, 2022) and 'Austroads Guide to Traffic Management' (Austroads, 2020). The scope of the TTIA will 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;
- Assessment of the potential impacts of the proposed works on residences and access ways; and
- Determination of required mitigation measures.

6.9 SOCIAL

This section provides an overview of the first phase Social Impact Assessment (SIA) undertaken for the Project, found in **Appendix E**. The first phase SIA aligns with the DPHI, Social Impact Assessment Guideline for State Significant Projects (SIA Guideline) (DPIE, 2023a) and DPHI's Technical Supplement: Social Impact Assessment Guideline for State Significant Projects (SIA Technical Supplement) (NSW DPHI, 2023).

The first phase SIA involves the scoping and preliminary assessment of the Project, identifies the level of assessment to be applied, and sets further parameters for the second phase SIA (the assessment report to be appended to the EIS) (DPIE, 2023a). Accordingly, this first phase SIA includes:

- Defining the Project's Social Locality;
- Describing the profile of the community in a preliminary social baseline;
- Preliminary assessment of potential social impacts to inform Project refinement; and
- Outlining the approach that will be undertaken to complete the second phase SIA.

6.9.1 EXISTING ENVIRONMENT

The Project site is located approximately 380 km from Sydney and 40 km south of Tamworth town near the southern boundary of Tamworth Regional LGA and adjacent to Liverpool Plains LGA (as shown in Figure 6-5 of **Appendix E**). The Project site is mainly accessible via New England Highway and secondary roads including Lindsays Gap Road and Garoo Road.

6.9.2 COMMUNITY PROFILE

This first phase SIA draws on both 2016 and 2021 ABS datasets (i.e. latest available) for the purposes of providing a socio-economic baseline analysis. **Appendix E** provides an overview of key demographic characteristics of the Project relating to socio-economic status and vulnerability. **Appendix E** also shows that Tamworth Regional LGA is relatively disadvantaged, and Liverpool Plains LGA is experiencing greater levels of disadvantage. The SA1 level Socio-Economic Indexes for Areas (SEIFA) data reveals that the SA1 containing the Project is relatively advantaged, particularly when compared to the other SA1s and LGAs comprising the Social Locality.

Appendix E shows that as of 2021 there were a total of 18,388 people employed in relevant occupations across the Social Locality and a total labour force of 54,440 people. This data suggests there is potential for the Project to source workers locally, thereby reducing the social impacts associated with worker influx and accommodation. However, this will require further investigation during the second phase SIA.

6.9.3 SOCIAL INFRASTRUCTURE OVERVIEW

Table 6-9 shows that Tamworth Urban Centre and Locality (UCL) is likely to provide the majority of goods and services to support the Construction and Operation phases of the Project. Social infrastructure comprises schools and other education institutions, medical services, emergency services, recreational facilities and community organisations. Due to their proximity, Werris Creek, Quirindi, Wallabadah and Nundlewill UCLs will provide additional support during the Construction and Operation phases of the Project.

TABLE 6-9 SUMMARY OF SOCIAL INFRASTRUCTURE

Services and Organisations	Tamworth SUA	Werris Creek UCL	Quirindi UCL	Wallabadah UCL	Nundle UCL
Health					
Hospitals	2	1	1	0	0
Medical Centres / Dental	17	1	4	0	0
Family and Education					
Childcare	20	1	2	0	1
Primary schools	16	2	2	1	1
Secondary schools	5	0	1	0	0
Tertiary education facilities	5	0	1	0	0
Recreation and Community					
Swimming Pools	3	1	0	0	1
Sporting facilities	21	1	0	0	1
Fitness Centers	18	1	2	0	0
Shopping Centers	8	0	0	0	0
Post Offices	10	1	1	1	1
Libraries	6	1	1	0	1
Place of worship	13	0	4	1	1
Emergency Services					
State Fire Emergency	2	1	1	0	0
Police	2	1	1	0	1
Ambulance	2	0	1	0	0

The preliminary desktop assessment has determined that the social infrastructure within the Social Locality will likely be sufficient to the meet the demands during the Construction and Operation phases of the Project. The second phase SIA will further investigate the capacity of social infrastructure in the Social Locality and will draw on engagement activities undertaken with relevant stakeholders, including local Governments, local businesses and the wider community.

6.9.4 POTENTIAL SOCIAL IMPACTS ASSESSMENT APPROACH

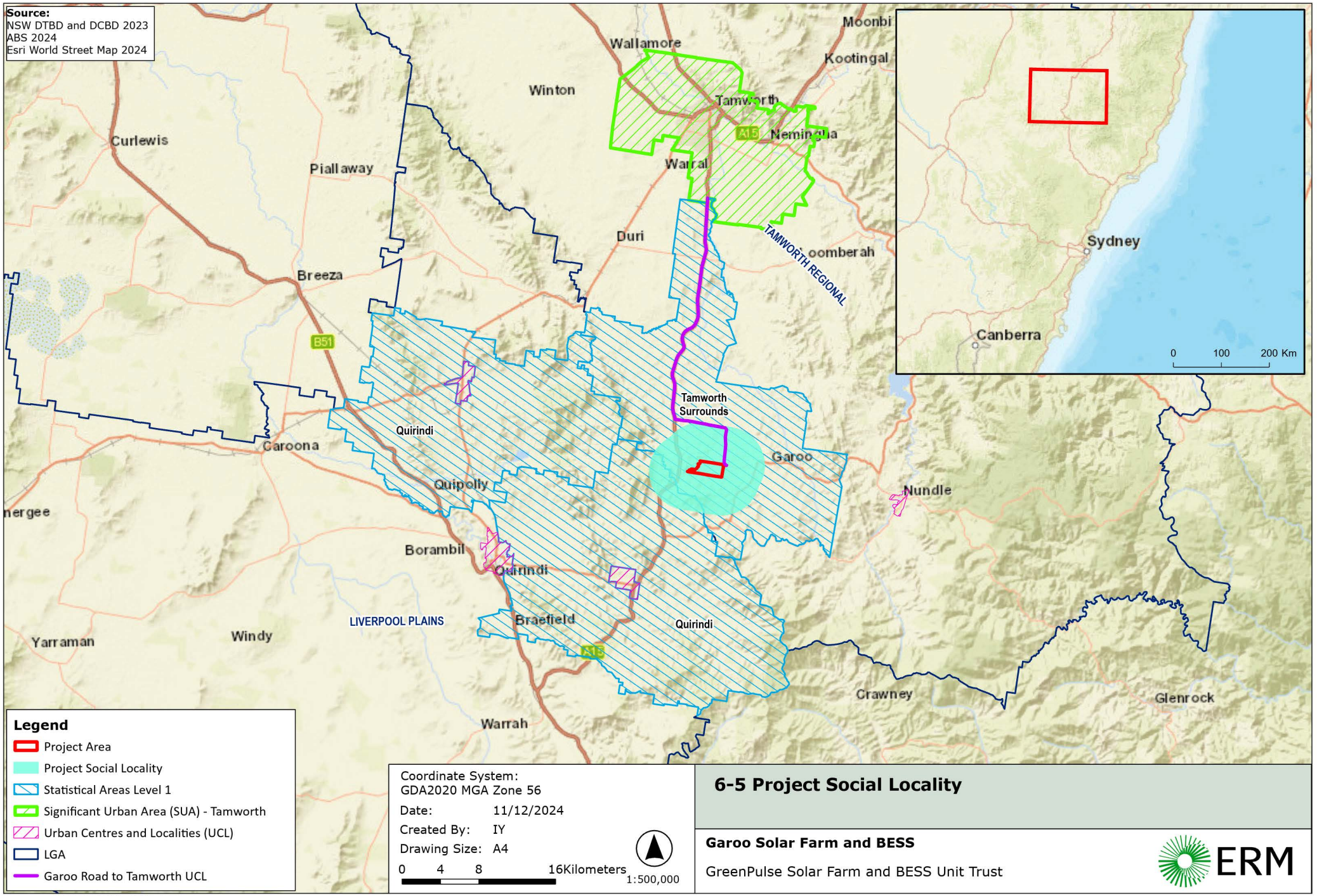
The desktop analysis of social impacts in **Table 6-10** has revealed a range of positive and negative social impacts that will be assessed in detail in the second phase SIA.

The negative social impacts identified were mainly to local amenity and landscape and land use changes, whereas positive impacts identified were local employment and procurement opportunities, and community benefits. The identified potential impacts will be ground-truthed, supplemented by stakeholder feedback, and reviewed against any changes associated.

TABLE 6-10 PRELIMINARY SOCIAL IMPACT ASSESSMENT

Description of Impact	Impact Categories	Impact Influence	Project Phase	Level of Assessment
Employment and Procurement				
Increased demand for labour in the Social Locality (generates direct and indirect employment opportunities)	Livelihoods	Positive	Construction	Detailed Assessment
Increased demand for labour in the Social Locality leading to skill shortages/ reduced labour availability for local services and/or businesses	Livelihoods	Negative	Construction	Detailed Assessment
Increased demand for goods and services in the Social Locality (stimulates local economies)	Livelihoods	Positive	Construction	Detailed Assessment
Increased demand for goods and services in the Social Locality (creates shortages)	Livelihoods	Negative	Construction	Detailed Assessment
Diversification of income streams for host landowners	Livelihoods	Positive	Life of the Project	Detailed Assessment
Local Disruptions				
Disruptions to agricultural activities / farming practices (e.g. activities may limit access and cause temporary inconveniences for the operation of rural properties, such as stock movements, paddock access, etc.)	Livelihoods	Negative	Life of the Project	Detailed Assessment
Increased vehicular movement from workers employed by the Project, and the transportation of materials and equipment to site, increasing the potential for accidents and wear and tear on road infrastructure	Health and Wellbeing	Negative	Construction	Detailed Assessment
Interruptions to daily life, such as changes in traffic conditions (e.g. diversions for school buses, road closures, changes to public vehicular access), utility disruptions, etc.	Way of Life Access	Negative	Construction	Detailed Assessment
Impacts associated with noise, vibration, and dust, which may cause impacts or disruptions to community health.	Health and Wellbeing Surroundings	Negative	Construction	Detailed Assessment
Changes to public vehicular access in the vicinity of the Project Area have the potential to impact community access	Access	Negative	Life of the Project	Detailed Assessment

Description of Impact	Impact Categories	Impact Influence	Project Phase	Level of Assessment
Land Use and Landscape				
Perceived impacts on land and/or property values (i.e. a decrease in land values)	Livelihoods	Negative	Operation	Detailed Assessment
Visual impact through altered rural character/changes to rural amenity (i.e. loss of scenic views and negative changes to visual amenity, glare from solar panels)	Way of Life Surroundings	Negative	Life of the Project	Detailed assessment
Altered landscape has the potential to impact tangible and intangible Aboriginal heritage	Culture	Negative	Life of the Project	Detailed Assessment
Accommodation and Worker Influx				
Increased demand / pressures on housing and accommodation potentially resulting in a shortage and/or increased cost of living	Way of life	Negative	Construction	Detailed Assessment
Increased demand and pressure on social, emergency, community, and recreational services and/or facilities including health care	Access Way of Life	Negative	Construction	Detailed Assessment
Stakeholder and Community				
Development of a Community Benefit Fund (or similar Project-specific community benefit sharing scheme), which may generate positive outcomes for the local community (e.g. support of local community groups, scholarships, etc.)	Livelihoods Culture	Positive	Life of the Project	Detailed Assessment



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6.10 WATER RESOURCES

6.10.1 EXISTING ENVIRONMENT

6.10.1.1 SURFACE WATER

The Project Area is located within the Namoi Catchment which covers an area of 42,000 km^2. Elevations across the catchment vary from over 1,500 m to the south and east, to approximately 100 m on the alluvial floodplain of the lower catchment, west of Narrabri. The catchment supports a range of water users including local councils, water utilities, dryland agriculture, livestock grazing and forestry.

There are three major water storages in the catchment area: Keepit Dam, Split Rock Dam and Cheffey Dam. Keepit Dam is the largest, with a capacity of 426,000 megalitres, and serves as the major irrigation storage in region. Split Rock Dam is the second largest dam with a capacity of 397,000 megalitres, which augments the supply from Keepit Dam and supplies users along the Manilla River. The Cheffey Dam, with a capacity of 62,000 megalitres, regulates flow of the Peel River and also augments water supply to Tamworth. There are also smaller dams within the catchment area providing town water supplies. The Cheffey Dam is the closest to the Project Area, located approximately 14 km northeast.

The Namoi catchment contains areas of high environmental value, including the Pilliga Scrub and Lake Goran. The Pilliga Scrub is the largest remaining dry sclerophyll forest west of the Great Dividing Range in NSW, whilst Lake Goran is listed as a wetland of national significance. Castlereagh, Gwydir, Macleay, Manning, Hunter, Barwon-Darling, and Macquarie-Bogan Catchments are the surrounding catchments of the Namoi catchment.

Tamarang Creek is the only named watercourse within the Project Area, flowing in a south to north direction through the central region of Project Area. Tamarang Creek is a tributary of Sugarloaf Creek, which traverses the western boundary of the Project Area, flowing north until it meets the Goonoo Goonoo Creek. There are additional minor unnamed creeks within the Project Area, all of which also flow in a south to north direction, merging with either Tamarang or Sugarloaf Creek. One of these minor creeks, located in the eastern section of the Project Area is included within the indicative distribution of the threatened freshwater fish species, Southern Purple Spotted Gudgeon (*Mogurnda adspersa*). This species is listed as endangered under the *Fisheries Management Act 1994*. Sugarloaf Creek is also associated with the indicative distribution of the Southern Purple Spotted Gudgeon.

There are no wetlands of international importance or nationally important wetlands within the Project Area. The watercourses present within the Project Area and the surroundings are presented in **Figure 6-6.**

6.10.1.2 GROUND WATER AND GROUND WATER DEPENDENT ECOSYSTEMS

Review of the Australian Groundwater Explorer revealed there are six groundwater bores within the Project Area. These are detailed in **Table 6-11**.

TABLE 6-11 GROUNDWATER BORES IN THE PROJECT AREA

BoreID	Bore Depth (m)	Drilled Date	Purpose	Status
GW038431	60.9	01-04-1974	Stock and domestic	Unknown
GW062830	60.9	01-04-1986	Water supply	Unknown
GW044519	Unknown	Unknown	Stock and domestic	Functioning
GW055378	45.7	01-01-1981	Water supply	Unknown
GW043143	60.9	01-04-1974	Stock and domestic	Unknown
GW044518	24.4	Unknown	Stock and domestic	Unknown

The Project Area is not mapped as 'Groundwater Vulnerability'. Groundwater investigations are suggested further during the EIS for groundwater impact assessments. A water management plan is also required to be submitted in the EIS stage.

Groundwater Dependent Ecosystems (GDEs) rely on access to groundwater to maintain water requirements for plants and animals. No aquatic, terrestrial or subterranean GDEs were mapped withing the Project Area, and the probability of GDEs has not been identified. Assessment and investigation of GDEs will be considered during the EIS. A map of the local hydrology present within the Project Area and its surroundings is provided in **Figure 6-6.**

6.10.1.3 FLOODING

The Project Area has an elevation ranging from 566 – 640 m, with the land sloping up from Tamarang Creek. This creek is the only major watercourse within the Project Area, with Sugarloaf Creek traversing the western boundary. Some smaller creeks also present within the or in close proximity of the Project Area. The built components of the Project Area re limited to one residential property, farming infrastructure and isolated buildings such as sheds.

A review of the NSW Flood Data Portal managed by the DPHI and the NSW State Emergency Service (SES) determined that there were no available flood maps or flood studies for the immediate project area. There are no current flood maps available in the Tamworth Regional LEP which incorporates the Project Area, however, flood studies have been undertaken in Nundle and Woolomin, 15 km east from the Project Area.

6.10.1.4 WATER USE

The Project will require water for construction purposes (e.g. concrete mixing and standard dust suppression measures) and can be sourced from groundwater bores or purchased from associated landowners, adjacent landowners or Mid-Western Regional LGA. Water use may be subject to licenses under the *Water Management Act 2000*.

6.10.2 ASSESSMENT APPROACH

The Flooding and Hydrology Assessment will assess:

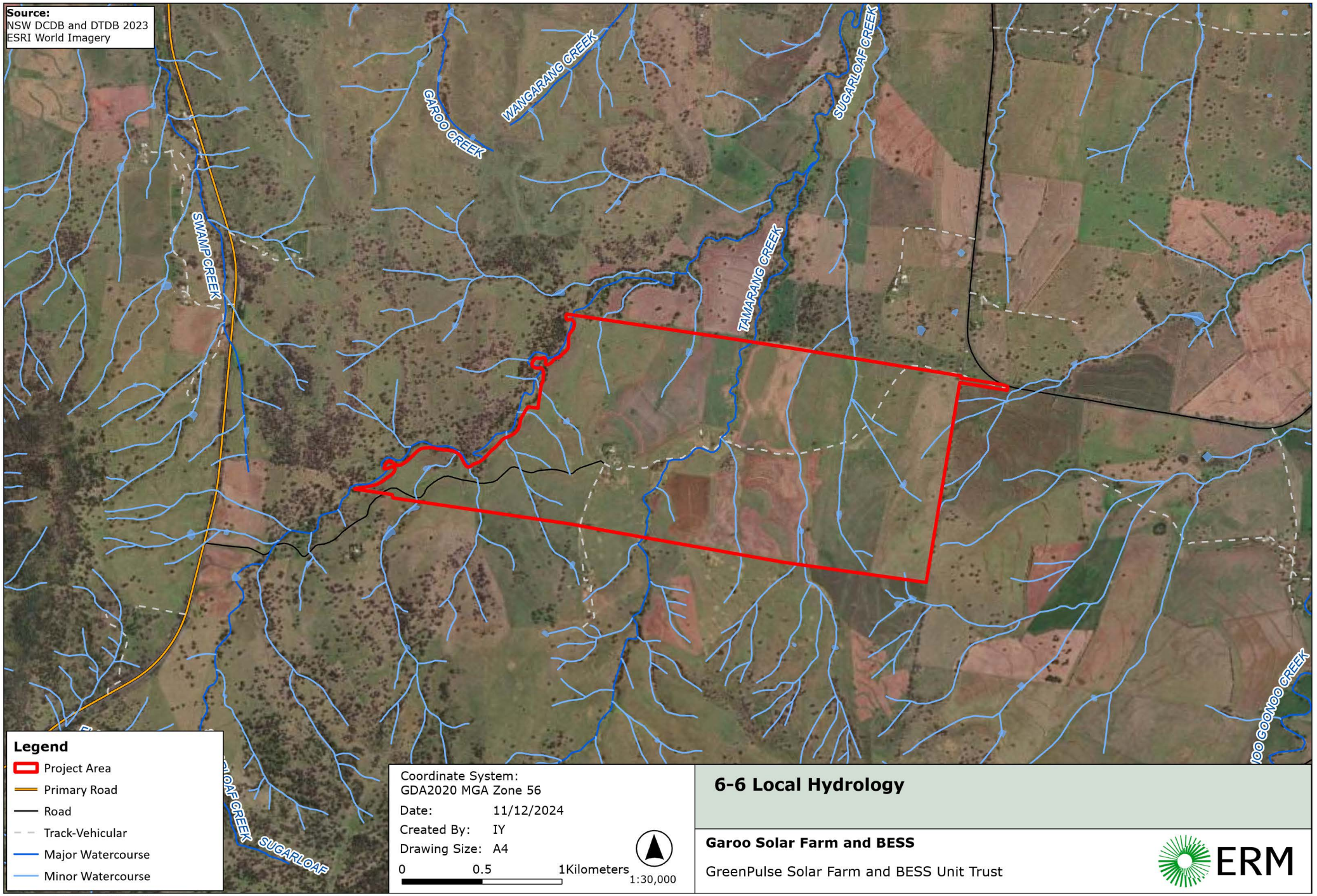
- Existing flood behaviour through review of existing available data, developing computer models and defining flood levels, depths, velocities and flood hazard category for the Project Area for existing topographic conditions; and
- Post development flood behaviour, including quantifying flood levels,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

A Water Impact Assessment will be undertaken 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, minimization 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 licenses under the *Water Management Act 2000* will be required. All required licenses 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);
- Relevant Water Sharing Plans (DPI Water); and
- Controlled Activities - Guidelines for Watercourse Crossings on Waterfront Land (DPE, 2022e).



6-6 Local Hydrology

Garoo Solar Farm and BESS

GreenPulse Solar Farm and BESS Unit Trust

ERM

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6.11 LAND RESOURCES

6.11.1 EXISTING ENVIRONMENT

The Land and Soil Capability (LSC) assessment scheme gives an indication of the land management practices that can be applied to a parcel of land without causing degradation to the land and soil at the site and to the off-site environment (OEH, 2012).

A preliminary review of the LSC Mapping data for NSW (DPE, 2020c) suggests that the Project Area is within multiple LSC Classes:

- *Class 4 – Moderate to severe limitations;*
- *Class 5 – Severe limitations; and*
- *Class 6 – Very severe limitations.*

A map of soil classes in the vicinity of the Project Area is provided in **Figure 6-7.**

A search of the Australian Soil Classification (ASC) Soil Type Map of NSW (DPE, 2017) reveals that the site is dominated by Chromosol soils, which are non-sodic, texture-contrast soils that are among the most widespread soils used for agriculture in Australia

A review of Biophysical Strategic Agricultural Land (BSAL) data (DPE, 2013) showed that there are no areas of BSAL mapped within the Project Area, with the closest BSAL area located 2.3 km east.

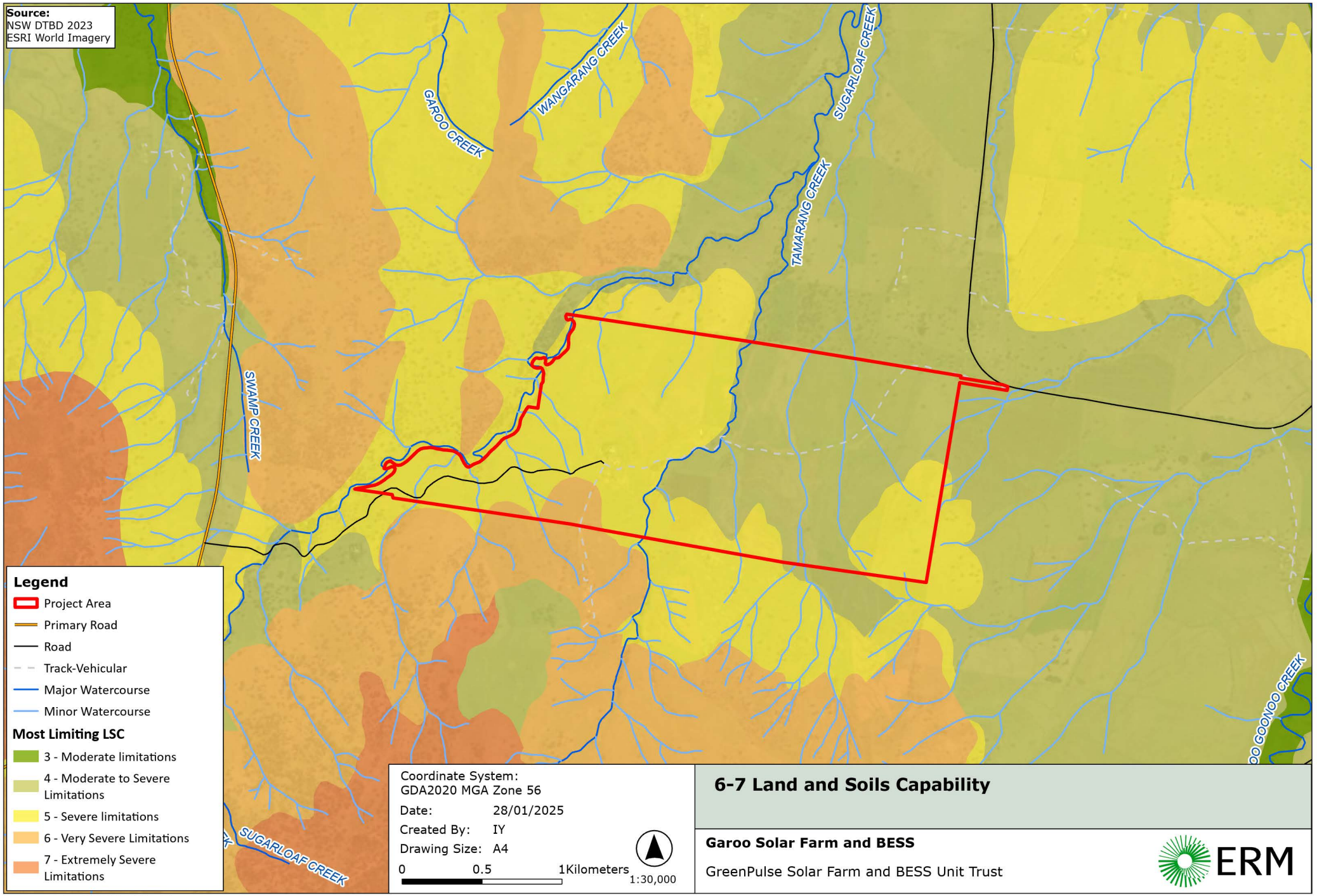
6.11.2 ASSESSMENT APPROACH

The *Large-Scale Solar Energy Guideline* has been prepared by DPE to provide further guidance on the process for assessing impacts on agricultural land and principles and encourage development on land with limited agricultural productivity (DPE, 2022a). The guideline was published by the NSW DPE in August 2022.

The Project EIS will follow the approach to agricultural impact assessment as detailed in Appendix A of the guideline. Figure 4 of Appendix A of the *Large-Scale Solar Energy Guideline* provides a flow chart outlining various levels of assessment.

As the Project Area is on land zoned RU1, is not mapped BSAL, and is predominantly mapped as LSC Class 4, a Level 2 Reduced Agricultural Impact Assessment is required which includes:

- Project description, including nature, location, intensity and duration of the project;
- Regional context;
- Site characteristics and land use description;
- Land Use Conflict Risk Assessment (LUCRA);
- Impacts on agricultural land; and
- Measures to mitigate potential impacts on agricultural land and minimise land use conflict.



6-7 Land and Soils Capability

Garoo Solar Farm and BESS

GreenPulse Solar Farm and BESS Unit Trust

ERM

Solar_and_BESS_NSW_G001_R6.aprx

6.12 AIR QUALITY

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.

The EIS will 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:

- Australian National Greenhouse Accounts Factors (Australian Government DCCEEW, 2023); and
- NSW Climate Change Policy Framework (NSW Government, 2021).

6.13 WASTE MANAGEMENT

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

6.14 CUMULATIVE IMPACTS

The Cumulative Impact Assessment Guidelines (CIA Guidelines) for State Significant Projects (DPE, 2022C) provides a framework for assessing and managing project-level cumulative impacts. A Cumulative Impact Assessment will be undertaken as a component of the EIS in accordance with the CIA Guidelines.

6.14.1 SCOPE OF ASSESSMENT

In accordance with the CIA Guidelines, the Project has considered past, present and reasonably foreseeable future SSD projects, and only included the types of development specified in Section 3.4 of the CIA Guidelines.

The CIA will focus on the construction and operational impacts of the Project in conjunction with other nearby projects, including traffic routes, noise and visual amenity, and social impacts such as availability of workforce, workers accommodation, goods and services, and health and wellbeing.

6.14.2 STUDY AREA

The initial Study Area encompassed a 50 km radius of the Project Area, however, the scale of cumulative impacts exists at different scales. The Study Area for traffic related cumulative impacts will consider surrounding developments with potentially overlapping construction periods that would utilise the New England Highway within vicinity of the Project. Social and economic cumulative impacts will focus on developments that rely on the workforce and accommodation within the Tamworth Regional LGA and surrounding LGAs.

A Study Area of 2-2.5 km radius of the Project Area will be adopted to assess the potential noise and visual amenity cumulative impacts associated with nearby projects, while other aspects such as ecology, heritage, hydrology and hazards will be limited within the Project Area.

6.14.3 TIME PERIOD

The Project is proposed to commence construction in 2026, and commissioning and operation is anticipated from 2028 onwards (refer **Section 3.3**). The potential cumulative impacts associated with the staging of the Project are outlined in **Table 6-12.**

TABLE 6-12 CUMULATIVE IMPACTS AND TIMEFRAMES

Project Phase	Estimated Timeframe	Likely Scale of Impact	Duration of Impact	Potential Cumulative Impacts
Assessment	2024	Minor	Temporary	• Social – community health and wellbeing.
Approval	2026	Minor	Temporary	• Social – community health and wellbeing.
Construction	2026 – 2028	Moderate	Temporary	• Social – community health and wellbeing. • Amenity – visual. • Amenity – noise. • Amenity – air quality. • Transport and traffic. • Other environmental (biodiversity and heritage).
Operation	2028 – 2058	Minor	Ongoing during operations	Amenity – visual.
Decommissioning	Post 2058	Moderate	Temporary	• Social – community health and wellbeing. • Amenity – visual. • Amenity – noise. • Amenity – air quality. • Transport and Traffic.

6.14.4 PROJECTS TO ASSESS

The relevant proposed, approved, under construction and operational SSDs known at the time of finalisation of this Scoping Report that will be assessed as part of the CIA include the following projects:

- Hills of Gold Wind Farm;
- Middlebrook Solar Farm; and
- Lambruk Solar Farm.

The specifications of these nearby SSDs and the potential overlap with the Project have been outlined in **Table 2-1** and **Figure 2-1**.

6.14.5 ASSESSMENT APPROACH

The assessment type required for cumulative impacts associated with surrounding renewable energy SSDs and the Project is outlined in **Table 2-1**.

Consideration of cumulative impact is also provided in the Scoping Summary Table (**Appendix A)**. As per the DPHI CIA Guidelines, **Table 6-14** provides a summary of the cumulative impacts to be assessed.

Further assessment of potential cumulative impacts associated with traffic, noise, visual and social matters will be undertaken as part of the EIS and will inform the CIA. The environmental management and monitoring measures associated with the Project during the EIS phase will minimise cumulative impacts.

6.14.6 KEY UNCERTAINTIES

The key uncertainties associated with the CIA are the timeframes of the nearby SSDs, and the potential for overlap of the construction phases. For a well-rounded approach to the cumulative impacts of the Project, the CIA will assume all the projects could be in construction simultaneously.

TABLE 6-13 CUMULATIVE IMPACT ASSESSMENT APPROACH

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.
No Assessment required	No potential overlap in impacts between a future project and the proposed project that would warrant any consideration in the cumulative impact assessment

TABLE 6-14 CUMULATIVE IMPACT ASSESSMENT SCOPING SUMMARY TABLE

Project	Project Status	Distance from Project	Potential overlap between impacts of Project and impact of other projects			
			Traffic and Transport	Amenity – Noise, Visual and Air Quality	Social Impacts	Other
Middlebrook Solar Farm	Under assessment	25 km	Potential overlap in traffic and transport impacts between this project and the proposed Project. Further assessment required.	No overlap of noise, visual or air quality impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	No overlap of other environmental impacts between this project and the proposed Project.
Lambruk Solar Farm	Under assessment	37.6	Potential overlap in traffic and transport impacts between this project and the proposed Project. Further assessment required.	No overlap of noise, visual or air quality impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	No overlap of other environmental impacts between this project and the proposed Project
Hills of Gold Wind Farm	Approved	48.8	Potential overlap of traffic and transport impacts between this project and the proposed Project.	No overlap of noise, visual or air quality impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	No overlap of other environmental impacts between this project and the proposed Project

7. CONCLUSION

The preliminary environmental assessment undertaken for this Scoping Report finds the Project Area to be suitable for the Project for the following reasons:

- It has access to existing transmission lines, which will allow for the renewable energy generated from the Project to be supplied to the region;
- There a number of proposed renewable energy projects located within the region and within a radius of 50 km to the Project Area;
- It can be accessible via Garoo Road;
- The Project will allow for existing grazing activities to continue within the Project Area; and
- The Project will contribute to diversifying the local economy and creating new employment opportunities.

The 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 constraint to the development, or where detailed assessment is required. These assessments are listed in **Table 7-1**.

TABLE 7-1 PROPOSED ASSESSMENT

Level of Assessment	Aspect
Detailed (potential constraint)	• Biodiversity – Terrestrial flora and fauna. • Heritage – First Nations.
Detailed	• Amenity – Visual. • Access - Traffic and Transport. • Land Resources - Land capability.
Standard	• Aviation. • Amenity – Noise and vibration. • Heritage – Historic. • Hazards and Risks – bushfire and environmental hazards. • Social – surroundings, livelihoods. • Water Resources – hydrology and surface water management. • Air Quality. • Waste Management.

The EIS will be prepared in accordance with the SEARs to be issued by DPHI 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

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
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

[1] 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).
[2] 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).
[3] 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 [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
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)	Section 6.4
Detailed	Amenity – Landscape and Visual	Moderate	Direct Cumulative Perceived	Sensitive (receptors, townships, communities)	Likely	Yes	Specific	• Landscape Institute and Institute of Environmental Management and Assessment, Guidelines for Landscape and Vidual Impact Assessment Third Edition (2013)	Section 6.1

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
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) • Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2013) • Austroads Guide to Road Design (Austroads, 2022) • Austroads Guide to Traffic Management (Austroads, 2020).	Section 6.8
Standard	Social Impacts	Moderate	Direct Indirect Cumulative Perceived	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 (DPIE, 2021c).	Section 6.6

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
Standard	Amenity – Noise	Moderate	Direct Cumulative Perceived	Sensitive (receptors)	Likely	Yes	General	• 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 • Road Noise Criteria Guideline (RNCG) 2022 (TfNSW, 2022a) • Noise Mitigation Guideline (NMG) 2022 (TfNSW, 2022b) • Noise Guide for Local Government (NGLG) 2013 (NSW EPA, 2013).	Section 6.2

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
Standard	Hazards and Risks Resilience and Hazards SEPP	Low	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) • NSW Risk Criteria for Land Use Safety Planning (DoP, 2011)	Section 6.6
Standard	Aviation	Low	Direct	Sensitive (potential impact on recreational aviation)	Likely	No	Specific	• The Civil Aviation Regulation 1988 • The Civil Aviation Safety Regulations 1998	Section 6.6.4

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
Standard	Hazards and Risks – Bushfire	Low	Direct Indirect	Sensitive (safety, environmental values)	Likely	No	General	• Planning for Bushfire Protection 2019 – NSW Rural Fire Service (RFS, 2019)	Section 6.6.2
Standard	Heritage – Historic	Low	Direct Indirect	Sensitive (heritage values)	Likely	Yes	Specific	• Historical Archaeology Code of Practice (Heritage Council, 2006)	Section 6.5
Standard	Air Quality	Low	Direct Indirect	Sensitive (local air quality)	Likely	No	General	• Australian National Greenhouse Accounts Factors (Australian Government DCCEEW, 2023) • NSW Climate Change Policy Framework (NSW Government, 2021).	Section 6.12
Standard	Land Resources (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)	Section 6.9

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
								• Site Investigations for Urban Salinity (OEH, 2002) • Large-Scale Solar Energy Guideline (DPE, 2022a)	
Standard	Water Resources	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) • Guidelines for Watercourse Crossings on Waterfront Land (DPI Water, 2012) • Floodplain Risk Management Guidelines (Department of Environment and Climate Change, 2016)	Section 6.8

Level of Assessment	Matter	Scale of Impact [1]	Nature of Impact [2]	Sensitivity of receiving environment[3]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
								• Floodplain Development Manual: The management of flood liable land (NSW Government, 2005).	
Standard	Hazards and Risks – Health - Electromagnetic Field	Low	Direct Perceived	Sensitive (safety)	Likely	No	General	• National Health and Medical Research Council advice • Large-Scale Solar Energy Guideline (DPE, 2022a).	Section 6.6.3
Standard	Waste Management	Low	Direct Indirect	Sensitive (environmental values, safety)	Likely	No	General	• Waste Classification Guidelines (NSE EPA, 2014).	Section 6.13

APPENDIX B PRELIMINARY VISUAL ASSESSMENT, MOIR, 2024

moir STUDIO

Garoo Solar Farm and BESS

Preliminary Visual Impact Assessment

We at Moir Studio acknowledge the traditional custodians of the lands and waters of Australia - most notably the Awabakal Nation in which our office resides and the Kamilaroi Nation, on whose traditional land this Project resides. As a practice, we recognise First Nations' ongoing contribution to Country and deep spiritual connection to Place. We pay our respects to Elders both past and present.

Garoo Solar Farm and BESS

Preliminary Visual Impact Assessment

Prepared for
ERM

Project Number
2639

Revision	Date	Author	Checked	Comment
A	16/12/2024	AK	AR	Report for Review

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Contents

1.0 Introduction

1.1 Introduction

ERM have commissioned Moir Landscape Architecture Pty Ltd (trading as Moir Studio) to prepare a Preliminary Visual Impact Assessment (PVIA) of the proposed Garoo Solar Farm and BESS (the Project) on behalf of Jinko Power Australia, Bright Path Renewables (the Proponent).

The purpose of this PVIA is to provide a preliminary assessment of the potential visual impacts associated with the Project. This PVIA will form part of the Scoping Report seeking the Secretary's Environmental Assessment Requirements (SEARs) in order to prepare an Environmental Impact Statement (EIS).

The PVIA for the Project has been prepared in accordance with the following documents:

- *Large-Scale Solar Energy Guideline* (referred to hereafter as 'the Guideline') developed by the Department of Planning, Housing and Infrastructure (November, 2024)
- *Technical Supplement for Landscape Character and Visual Impact Assessment, Large-Scale Solar Energy Guideline* (referred to hereafter as 'the Technical Supplement') developed by the Department of Planning, Housing and Infrastructure (November, 2024)

1.2 Professional Experience

The Technical Supplement states: '*Professional assessment skills are critical to an effective landscape character and visual impact assessment. Applicants must engage relevant professionals (for example, landscape architects, architects, environmental planners, geographers or other visual assessment specialists) with demonstrated experience and capabilities*'.

Moir Studio is a professional design practice and consultancy specialising in Landscape Architecture, Urban Design and Landscape and Visual Impact Assessment. Our team has extensive experience undertaking Landscape and Visual Impact Assessments for large-scale infrastructure and renewable energy projects. In the context of our knowledge and with guidance from the Guideline and the Technical Supplement, we have developed methodologies to ensure a comprehensive and qualitative assessment of the Project.

Recent experience includes the preparation of LVIAs for the following solar farm projects of similar scale:

- Bendemeer Solar Farm LVIA (Bendemeer, NSW)
- Richmond Valley Solar Farm LVIA (Casino, NSW)
- Blind Creek Solar Farm Project LVIA (Bungendore, NSW)
- Glenellen Solar Farm LVIA (Glenellen, NSW)
- Oxley Solar Farm LVIA (Castledoyle, NSW)
- Stubbo Solar Farm LVIA (Stubbo, NSW)

1.3 Overview of VIA requirements for Scoping Phase

The Technical Supplement states: *"The scoping report must include a visual impact analysis that identifies public viewpoints and private receivers that require assessment in the environmental impact statement. Applicants should also use this process to identify where to focus consultation with landowners and the local community."*

The following provides a brief overview of the requirements for the visual impact analysis part of the scoping report:

1.4.1 Study Area

The first step of the scoping stage is for the applicant to identify two visual study areas of:

- 2.5 km from the proposed development for public roads
- 4 km from the proposed development for other private receivers and public viewpoints.

1.4.2 Viewshed Mapping

Use viewshed mapping to identify areas from which the project could be visible. This process eliminates the need to assess viewpoints within the study areas that have no line of sight to the development.

1.4.3 Identifying potentially affected viewpoints and receivers

The last step is to identify public viewpoints and private receivers that would have line of sight to the project and sit within the study areas.

1.4 Report Structure

The following provides an overview of the report structure:

Project Overview Section 2.0

Defining the Study Area Section 3.0

Viewshed Mapping Section 4.0

Simple Assessment Section 5.0

Summary & Next Steps Section 6.0

2.0 Project Overview

2.1 Regional Context

The Project will be located on a 368-hectare land in Garoo, approximately 14 km northeast of Wallabadah and 40 km south of Tamworth, within the Tamworth Regional Local Government Area (LGA), adjacent to the Liverpool Plains LGA. Surrounding townships include Quirindi approximately 25 km southwest and Werris approximately 26 km northwest of the Project Site.

2.2 Project Site

The Project Site (refer to **Figure 01**) is situated at the base of a ridgeline, with significant undulations in the terrain. The land is cleared of vegetation and is used primarily for agricultural activities. Several creeks and waterways run within the Study Area, including Tamarang Creek, which runs across the Project Site, Sugarloaf Creek, running adjacent to the west boundary of the Project Site . The Goonoo Goonoo Creek runs 2.5 km east of the Project Site joining into Sandy Creek, which runs approximately three (3) km southeast of the Site.

The Project Site is located east of the New England Highway and is accessed through Garoo Road off the Lindsays Gap Road.

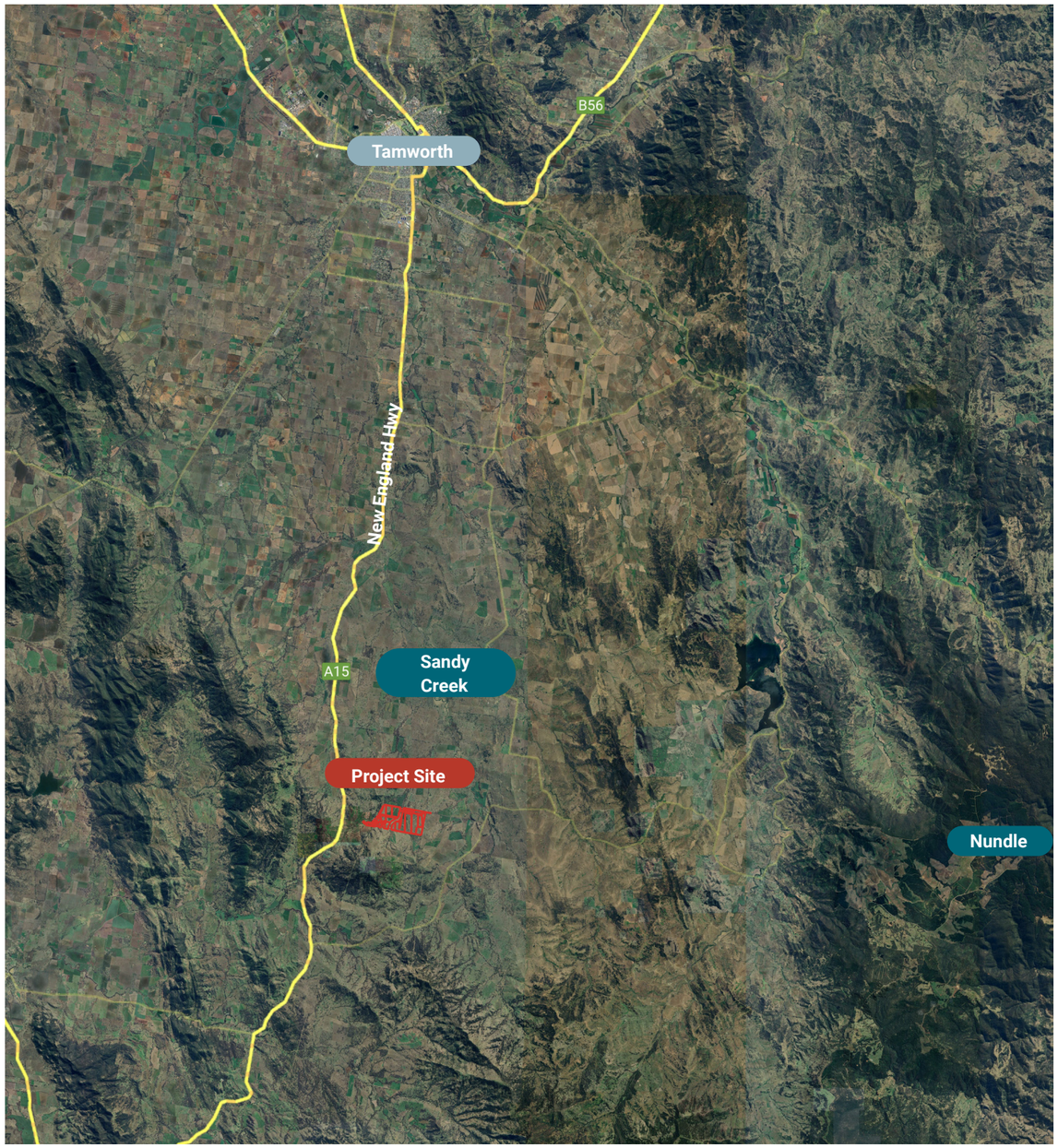


Figure 01 Regional Context
Basemap Source - Google Earth, 2024

2.3 The Project

The Project involves constructing, operating, and decommissioning a grid-scale solar energy generation facility with a Battery Energy Storage System (BESS) and associated infrastructure. It will be located on 368-hectare (ha) agricultural land in Garoo, NSW, within the Tamworth Regional LGA, approximately 40 kilometres (km) south of Tamworth, with the total Development Area being 319.5 ha within the Project Area.

The Project will involve the development of a 155 megawatts (MW) alternating current (AC) solar photovoltaic (PV) with mounted solar arrays.

Within the Development Area, a centralised large-scale BESS is proposed for the Project. The BESS will have a capacity of 360 MW/ 1,440 MWh for storage. The BESS is proposed to be located within the Project Area, near the intersection of the existing 330 kV transmission line with the existing train line.

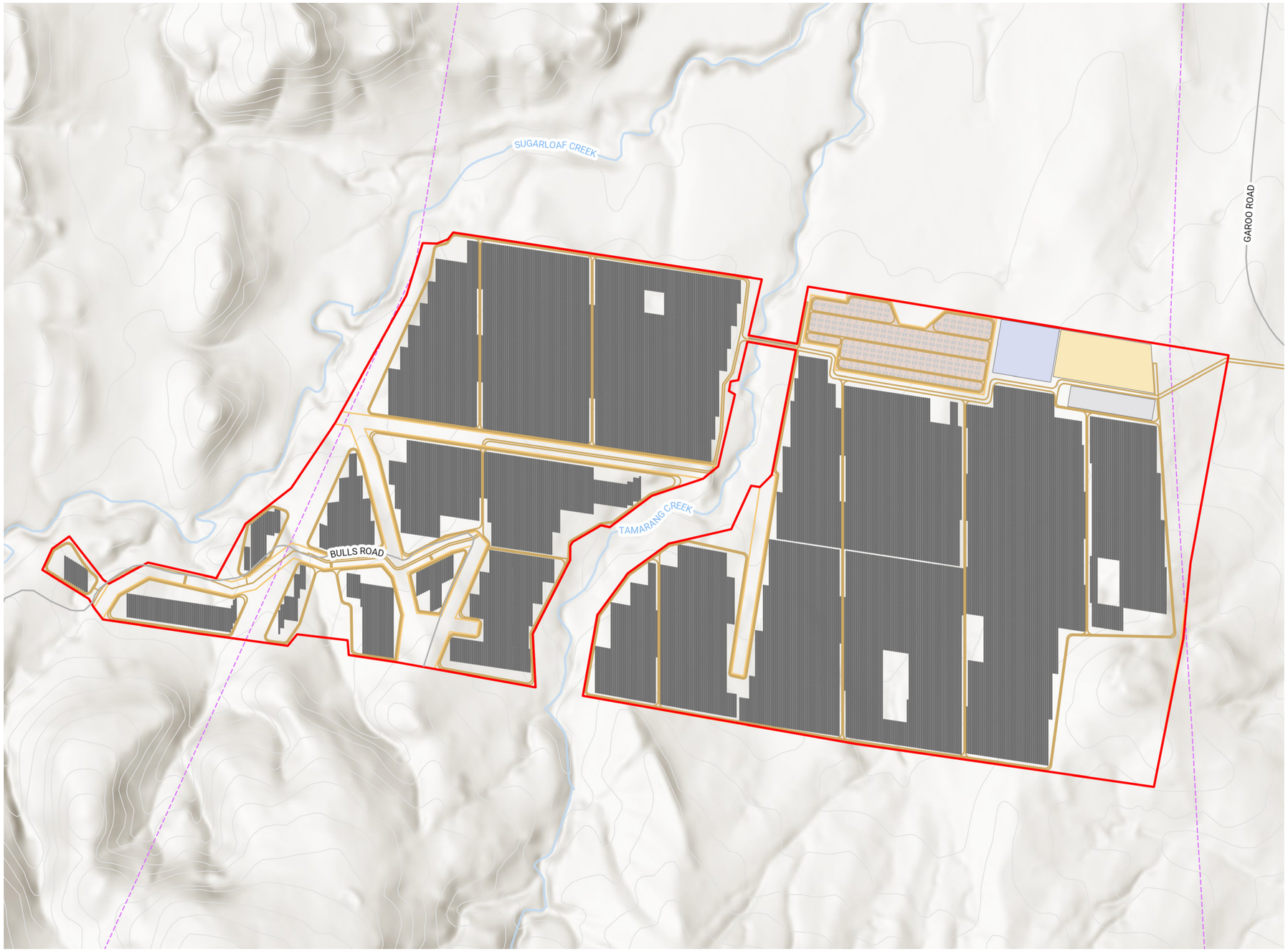
The Project includes the following key components:

- **Photovoltaic Array**: The solar array will consist of approximately 270,000 solar panels installed in regular arrays consisting of single-axis tracker systems. The panels are expected to reach a maximum height of 2.9 m above ground at full tilt, with a minimum panel clearance of 0.4 m from the ground. The arrays will be at an estimated horizontal height of 1.5 m at zero (0) degrees.
- **Battery Energy Storage System (BESS)**: The BESS is proposed on the northwest section of the Project Site providing 360 MW / 1,440 MWh. The BESS area is proposed adjacent to a proposed substation and parking area, with an approximate footprint of 14 ha. It will comprise of associated electrical equipment for providing connection to the existing transmission line.
- **Power Station**: Upto 44 Power Conversion Units (PCU) for the solar farm and 142 PCUs for the BESS Plant are proposed, measuring approximately 2.8 m (W) x 1.5m (H) x 1.5 m (D).
- **Substation**: The Project proposal comprises of an onsite substation, including 330 kV switching station and associated structures, adjacent to the BESS and laydown and parking area.
- **Ancillary infrastructure**: This includes access roads, bridges, internal transmission, fencing, storage, laydown areas, and other ancillary facilities necessary for the operation. The Project also comprises Permanent Operations and maintenance (O&M) and associated infrastructures.

The Project will occur on a portion of the 368-hectare site, surrounded by creeks, including Tamarang Creek running across the Project Site, with a proposed bridge accross the creek. The proposed Development Footprint and layout will be assessed in detail during the EIS phase.

This PVIA uses the maximum tilt position of 2.9 m for the solar panels to ensure a worst-case scenario. The actual height of the panels will vary throughout the day as they track the sun, and it is unlikely that the panels will reach their maximum tilt for extended periods.

The final layout and project details, including the BESS design, solar panel configuration, and other infrastructure, will be finalised after further assessments and during the EIS phase.



Project Layout

Refer to Section 2.3

LEGEND

- Project Boundary
- Internal Roads and Bridges
- Fences
- Internal Roads
- Transgrid Substation Area
- Customer Substation
- BESSLayout
- Laydown and Parking Area
- BESS Area
- Development Area (PV Array)
- Waterways
- Contour
- Electrical Transmission Lines
- Roads

0 0.2 0.4 0.8 1.2 km

Figure 02 **Project Layout**

Basemap Source - ArcGIS, 2024

2.4 The Solar (PV) Array

The PV Array will be the most significant component of the Project. It will comprise approximately 462,644 PV Modules installed on single-axis tracking structures (refer to **Figure 03**). Each of the PV module is 2.4 m x 1.1 m in size with the modules spaced at a distance of 5.8 m apart in the solar array.

The tracking system structure axis runs from north to south, enabling the PV modules to follow the sun's path from the east in the morning through to the west in the afternoon, maximising energy production throughout the day. A backtracking function ensures that the module rows are not shading each other. The operational rotation range of the tracking system is typically +/- 60 degrees from the horizontal position. The maximum height of the PV modules above natural ground is up to **2.9 m**, as shown in **Figure 03**.

The final number of PV module arrays and tracker designs will depend on detailed design, equipment availability and commercial considerations. These dimensions may alter based on site constraints such as all geotechnical and topographic conditions, boundaries, riparian zones, existing vegetation and access tracks. The assessment has been completed using the worst-case scenario with the panels assumed at their highest pitch.

Throughout the report, the PV Array is referred to as the Development Footprint.

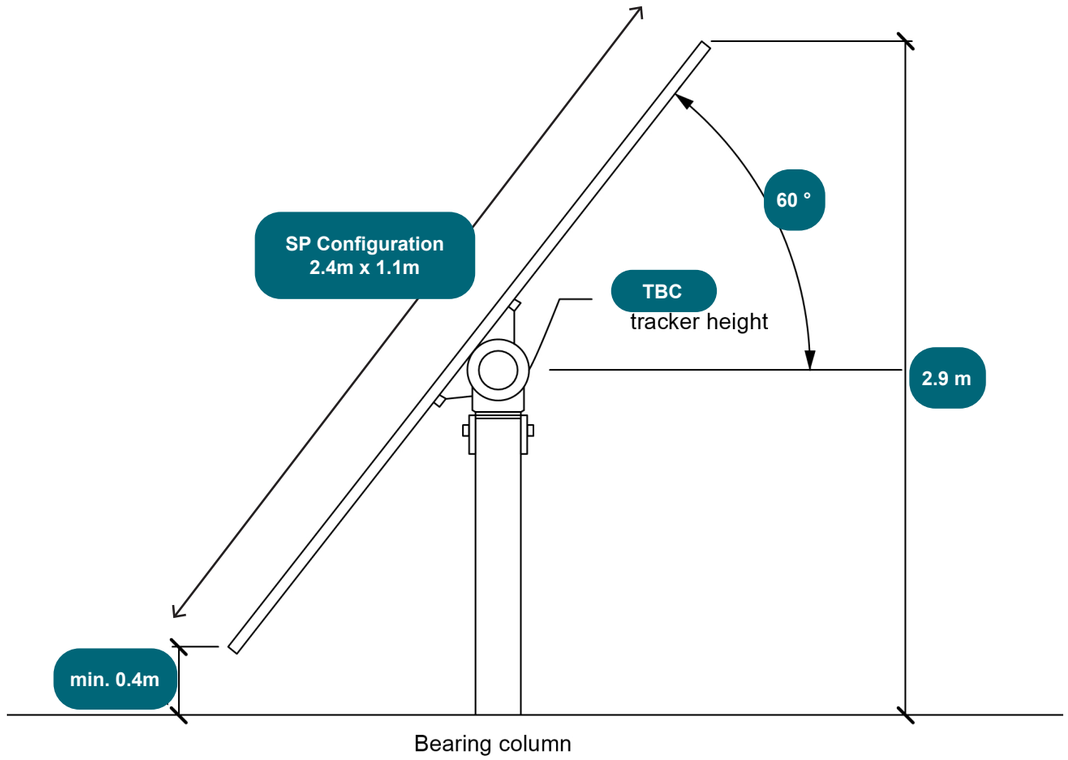


Figure 03 Solar Panel Parameters

3.0 Defining the Study Area

3.1 Defining the Study Area & Identify Receptors

The first step of the scoping stage is to identify two visual Study Areas of:

- **2.5 km** from the proposed Development Area for public roads; and
- **4 km** from the proposed Development Area for other private receivers and public viewpoints.

The Technical Supplement states: *The calculations can be based on either the project area, or the development footprint depending on the level of information available at the time. A more refined approach that uses the development footprint, may result in less viewpoints requiring assessment.*

For the purpose of this report, the Study Area has been based on the de velopment footprint. The following sections outline the identified elements within the two defined Study Areas.

3.1.1 2.5 km from the Proposed Development for public roads

A number of public roads have been identified with 2.5 km from the Development Area. These roads include:

- Bulls Road
- Garoo Road
- New England Highway

Representative viewpoint locations have been selected for roads identified within the 2.5 km study area. 10 viewpoints have been selected for assessing the potential visibility of the Project using simple assessment tool.

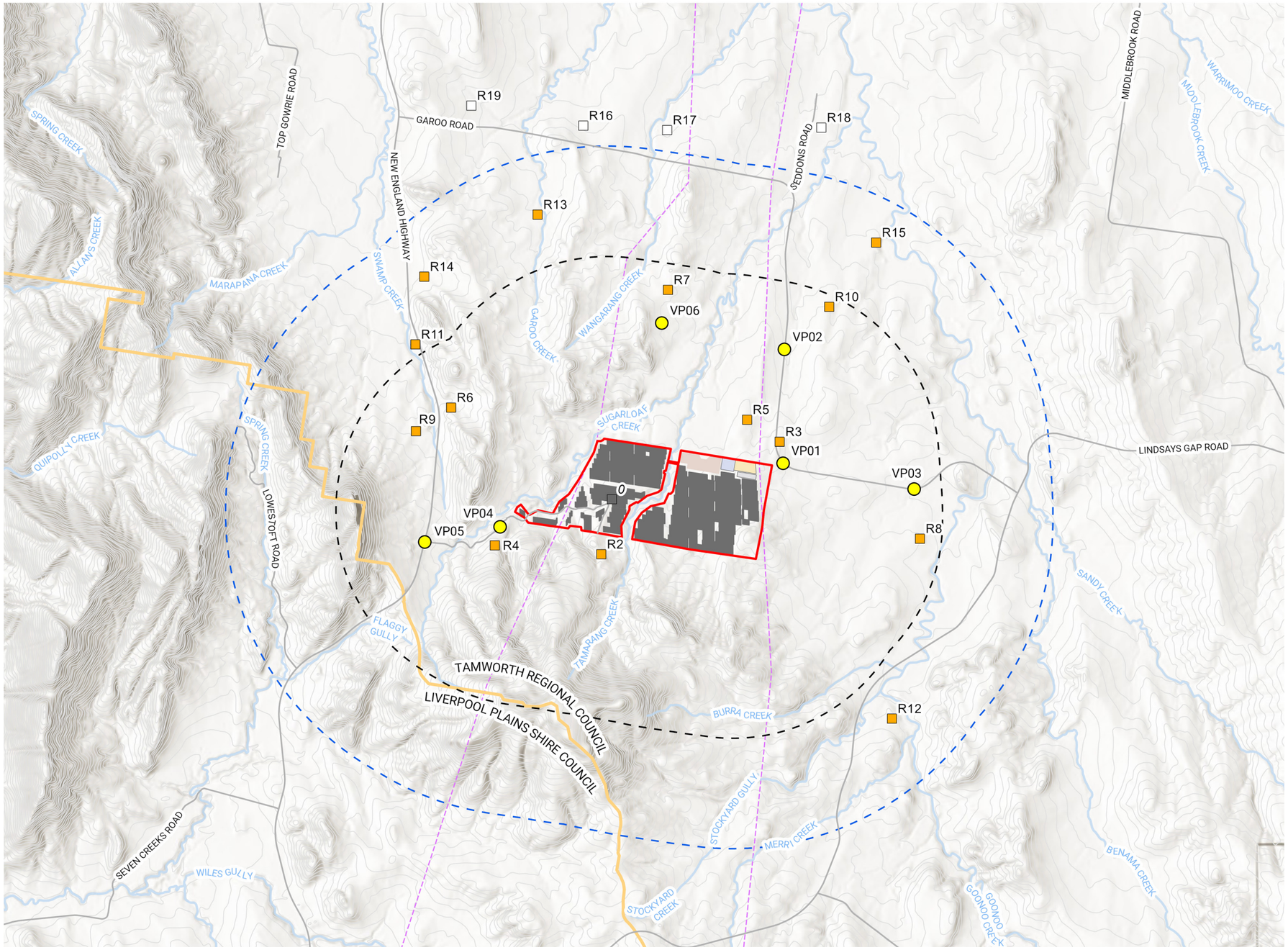
3.1.2 4 km from the proposed development for other private receivers and public viewpoints

In accordance with the Technical Supplement, other public and private viewpoints within 4 km of the Project Area must be identified and assessed. 14 non-associated dwellings were identified within 4 km of the Project with potential to view the Project (refer to **Figure 04** and **Table 01**).

The calculations can be based on either the project area, or the development footprint depending on the level of information available at the time. A more refined approach that uses the development footprint, may result in less viewpoints requiring assessment.

Non-Associated Dwellings Identified within 4km	
Dwelling ID	Distance to Project (m)
R2	309
R3	441
R4	547
R5	563
R6	1,664
R7	2,144
R8	2,206
R9	1,763
R10	2,349
R11	2,648
R12	3,108
R13	3,211
R14	3,305
R15	3,417

Table 01 Dwellings identified within 4 km of the Development Footprint



Study Area

Refer to Section 3.0

LEGEND

- Non Associated Dwellings outside Study Area
- Associated Dwelling
- Non-Associated Dwelling
- Roads
- Project Boundary
- Transgrid Substation Area
- Customer Substation
- Laydown and Parking Area
- BESS Area
- Development Area (PV Array)
- 2.5 km from the Development Area
- 4 km from the Development Area
- Local Government Area
- Waterways
- Electrical Transmission Lines
- Contour
- Public Viewpoints

Figure 04 **Study Area**

Basemap Source - ArcGIS, 2024

4.0 Viewshed Mapping

4.1 Viewshed Mapping

A viewshed map identifies all areas from which a development may be viewed. Viewshed mapping has been undertaken using geographic information systems (GIS) that account for topography and line of sight between viewpoints and the Project. The purpose of the viewshed map is to eliminate further the need to assess viewpoints that fall below the lines in the Simple Assessment Tool if the analysis shows there is intervening terrain that would block the line of sight to a particular viewpoint.

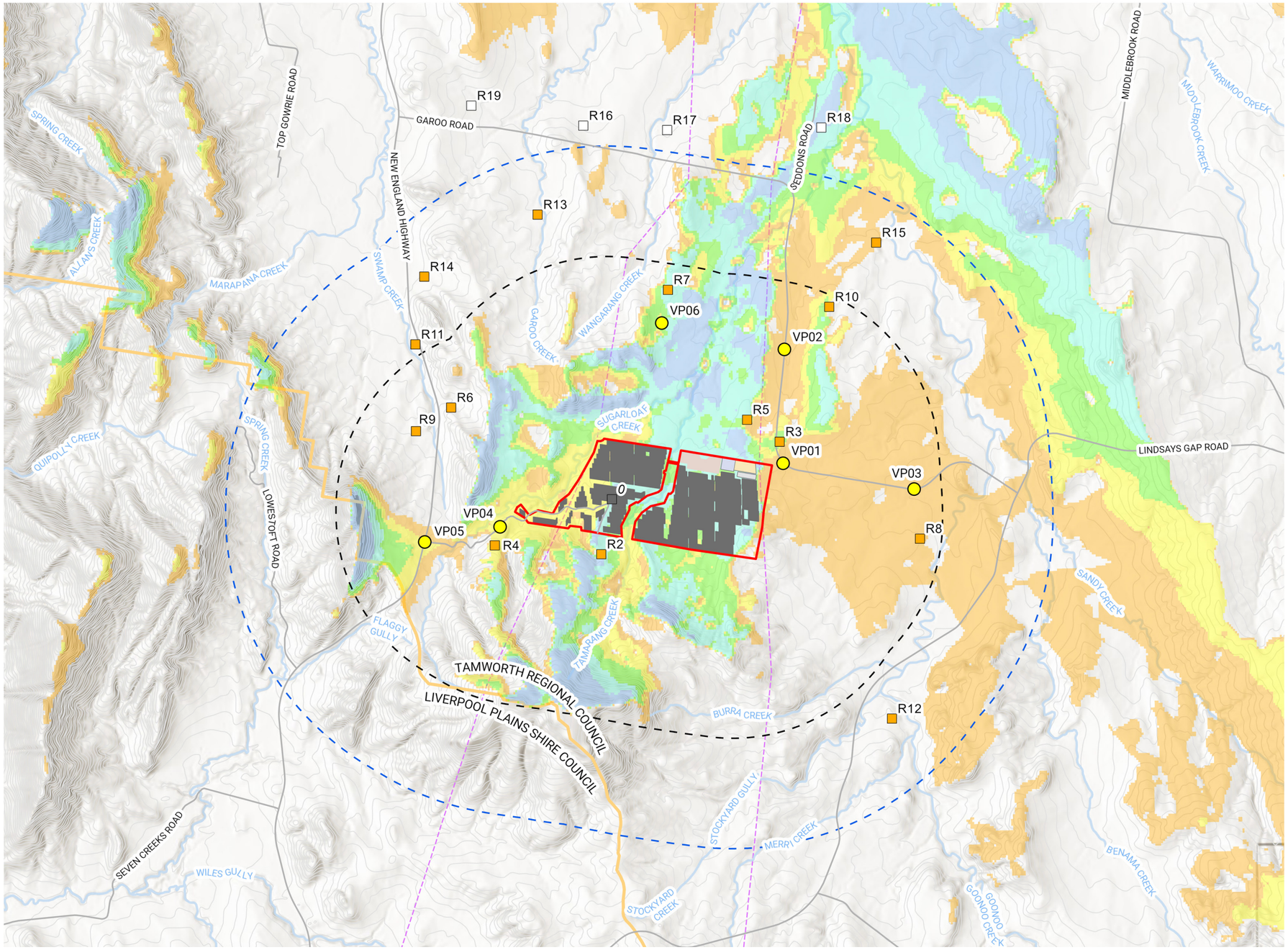
Viewshed mapping was undertaken to eliminate viewpoint locations that will not have a line of sight to the proposed solar panels (refer to **Figure 05**). It is important to note that the viewshed map provides an assessment based on topography alone and does not take into account intervening elements such as vegetation and structures. Therefore, the viewshed map represents a theoretical worst-case scenario.

Viewshed mapping has been undertaken at a height of 4 m for a worst case scenario, taking into consideration any significant undulations in the topography within the Project Site.

Summary of Viewshed Map

The following provides a summary of the viewshed map assessment:

- A total of 14 non-associated dwellings were identified within the Study Area (4.0 km from the Development Area).
- Out of these, six (6) non-associated dwellings to the northwest and southeast of the Project within the 4.0 km of the Study Area have no theoretical visibility of the Project due to intervening topography.
- East of the Project, within the Study Area has the highest potential visibility of the Project due to a relatively flat topography.
- Land to the south, northwest and north of the Project has minimal potential visibility of the Project.
- Bulls Road and Garoo Road have high potential visibility towards the Project within the 2.5 km Study Area.
- Due to the intervening topography, the southwest, southeast, far west, and northwest portions of the Study Area have little to no theoretical visibility of the Project.



Viewshed Mapping

Refer to Section 4.1

LEGEND

- Public Viewpoints
- Non Associated Dwellings outside Study Area
- Associated Dwelling
- Non-Associated Dwelling
- Roads
- Project Boundary
- Transgrid Substation Area
- Customer Substation
- Laydown and Parking Area
- BESS Area
- Development Area (PV Array)
- 2.5 km from the Development Area
- 4 km from the Development Area
- Local Government Area
- Waterways
- Electrical Transmission Lines
- Contour

Extent of Project visible based on viewshed map

- 81-100% Visibility
- 61-81% Visibility
- 41- 60% Visibility
- 21 - 40% Visibility
- 1% - 20% Visibility

0 0.5 1 2 3 4 km

Figure 05 **Viewshed Analysis Mapping**

Basemap Source - ArcGIS, 2024

4.2 Reverse Viewshed Mapping

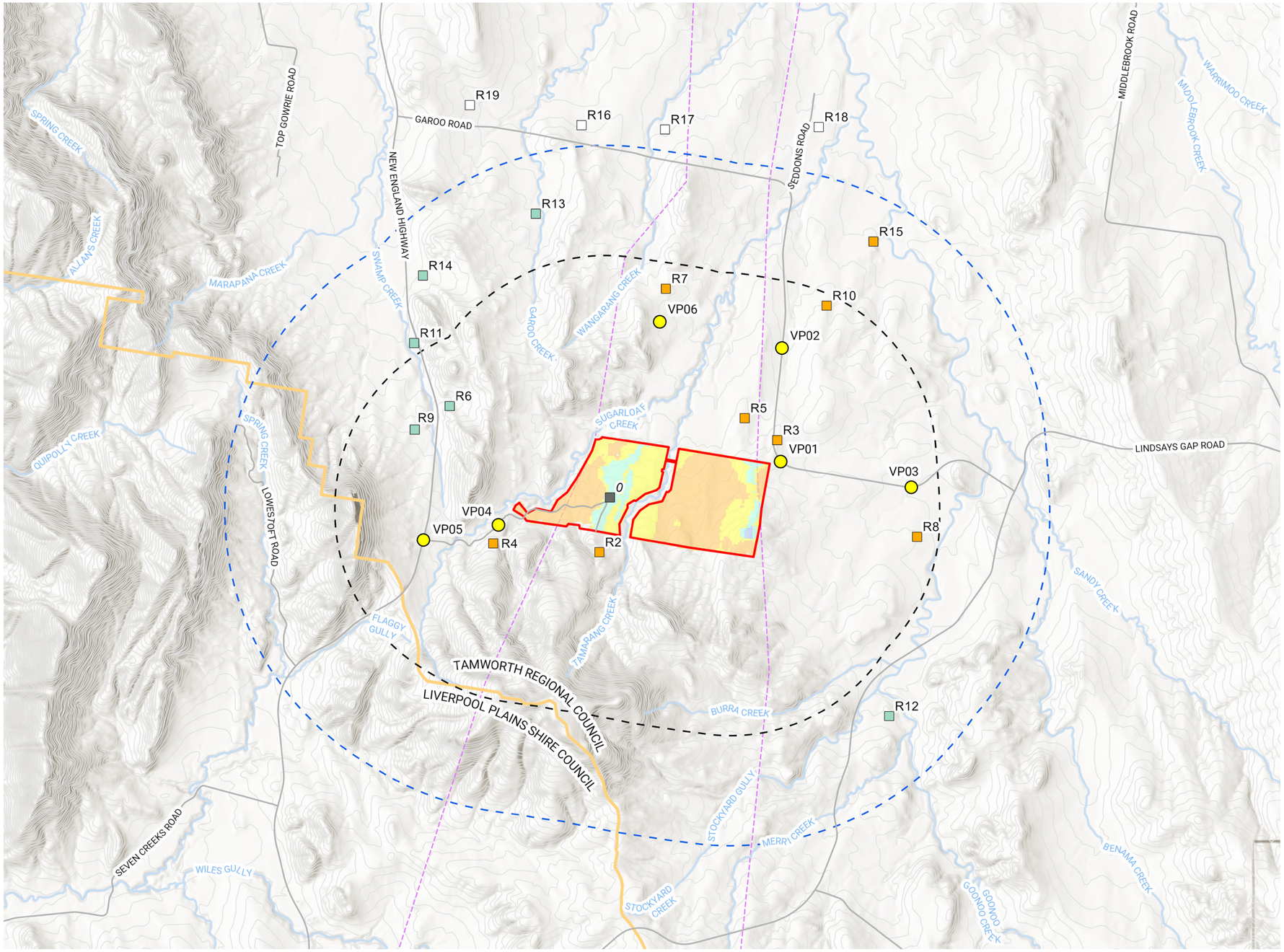
The Technical Supplement states: *"Applicants should also consider undertaking a reverse viewshed analysis. This can be a useful tool to refine project design to reduce any significant impacts. It can also be used to communicate the visibility of certain parts of the project and aid consultation with the community. This analysis should be used to highlight parts of the project that can be seen from the greatest number of viewpoints."*

Figure 06 represents a reverse viewshed map that takes into account the **eight (8)** non-associated dwellings identified within 4.0 km of the development footprint with a theoretical line of sight to the Project. This figure shows parts of the development footprint that are likely to be visible from these non-associated dwellings. This assessment also represents a bare ground scenario, i.e., a landscape without intervening elements such as vegetation and structures. Therefore, the reverse viewshed map represents a theoretical worst-case scenario.

4.2.1 Summary of Reverse Viewshed Map

The following provides a summary of the reverse viewshed map assessment:

- Based on the reverse viewshed mapping, the majority of the Project will be viewed by up to 2 non-associated dwellings within the 4.0 km of the Project. Very limited areas within the Project Site have the potential to be viewed by up to six (6) dwellings and only a very small part to the east within the Project Site has the potential to be viewed by eight (8) dwellings.
- The Project has the lowest theoretical visibility from the west, north and south areas of the Project Site, with some areas in the west and east with the highest potential visibility of the Project.



Reverse Viewshed Mapping

Refer to Section 4.2

LEGEND

- Public Viewpoints
- Non Associated Dwellings outside Study Area
- Non Associated Dwellings with no line of sight due to topography
- Associated Dwelling
- Non-Associated Dwelling
- Roads
- Project Boundary
- 2.5 km from the Development Area
- 4 km from the Development Area
- Local Government Area
- Waterways
- Electrical Transmission Lines
- Contour

Number of Dwellings with visibility based on Reverse Viewshed map

- 1 < 2 Dwellings
- 2 < 4 Dwellings
- 4 < 6 Dwellings
- 6 < 8 Dwellings

Figure 06 **Reverse Viewshed Mapping**

Basemap Source - ArcGIS, 2024

5.0 Simple Assessment

5.1 Overview of the Simple Assessment Tool

The Technical Supplement specifies that: *"All public viewpoints and private receivers identified in the scoping report need to be assessed in some level in the environmental impact statement. A full visual impact assessment is not required if features completely obstruct the view of the project. In such cases, the applicant must provide evidence that intervening topography, screening, or structures would eliminate any impact."*

The next steps of assessment are to undertake a visual impact assessment for the private and public recievers identifed through the previous steps in this PVIA. The Technical Supplement states that the *"level of a visual impact assessment required for private receivers and public viewpoints should be proportionate to the likely impacts of the development. Applicants can begin by carrying out a simple assessment using desktop data and high-level assumptions. They should conduct further assessment if impacts are likely to be moderate or higher."*

Although not required until the EIS stage of the Project, Moir Studio have commenced the simple assessment to the private receivers to assist the proponent in identifying receivers requiring further assessment.

The simple assessment tools are employed to identify viewpoints requiring intermediate and detailed assessment in the Environmental Impact Statement (EIS). These tools can help eliminate viewpoints that are unlikely to experience significant impacts. The determination of impact is based on the vertical and horizontal field of view a development is likely to occupy from each viewpoint. This is influenced by factors such as distance, height, elevation changes, and the width of the proposed project (DPHI, 2022).

Figure 07 provides an overview of the requirements of the Simple Assessment (in accordance with the Technical Supplement) and where these have been addressed in this report. For the purpose of this report, the Simple Assessment Tools have been applied to the Development Footprint.

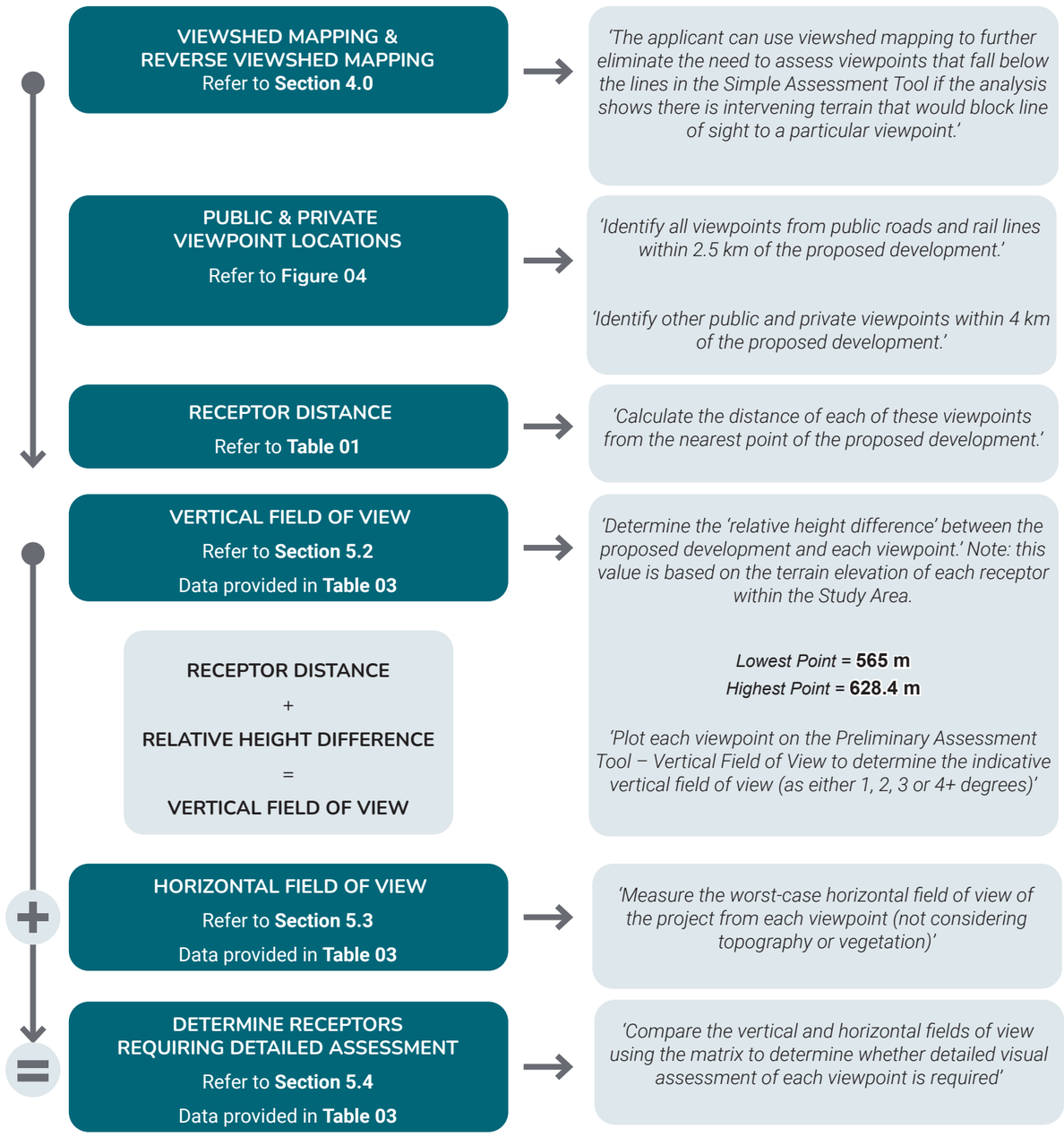


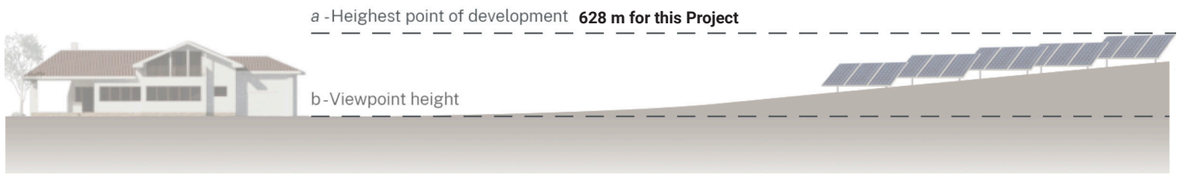
Figure 07 Overview of Simple Assessment Tools
Source - Adapted from DPHI, 2022

5.2 Vertical Field of View Calculation

Figure 08 below illustrates how the vertical field of view is calculated for each viewpoint location. Once calculated, these points are added to the DPHI-provided spreadsheet document to determine the vertical field of view of either **1, 2, 3, or 4 degrees**, which is derived from the value combined with the receptor distance. Where the spreadsheet document identifies the field of view to be 0, the value is rounded to 1 degree.

Project located above and below viewpoint (a - c)

Project located above viewpoint (a - b)



Project located below viewpoint (b - c)

Figure 08 Vertical Field of View Calculations

Source - DPHI, 2022

5.3 Horizontal Field of View Calculation

Figure 09 below illustrates how the horizontal field of view is calculated for each viewpoint location. For the purpose of this report, the horizontal field of view has been calculated based on the Development Footprint to provide a worst-case scenario assessment.

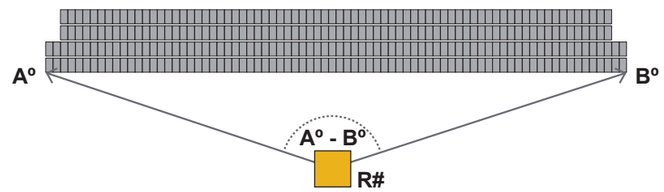


Figure 09 Horizontal Field of View Calculations

Source - Adapted from DPHI, 2022

5.4 Assessment Requirements

Once the horizontal and vertical field of view are established, the following table can be used to determine whether or not further assessment is required for the receptor

Horizontal FOV	1° Vertical FOV	2° Vertical FOV	3° Vertical FOV	4° + Vertical FOV
1 - 10 °	No assessment required	No assessment required	No assessment required	No assessment required
11 - 20 °	No assessment required	No assessment required	No assessment required	Assessment required
21 - 30 °	No assessment required	No assessment required	Assessment required for all viewpoints except road / rail	Assessment required
31 - 40 °	No assessment required	Assessment required for all viewpoints except road / rail	Assessment required for all viewpoints except road / rail	Assessment required
42 - 50 °	No assessment required	Assessment required for all viewpoints except road / rail	Assessment required	Assessment required
51 - 60 °	No assessment required	Assessment required for all viewpoints except road / rail	Assessment required	Assessment required
61 - 70 °	No assessment required	Assessment required	Assessment required	Assessment required
71 - 130 °	Assessment required for all viewpoints except road / rail	Assessment required	Assessment required	Assessment required
130 ° +	Assessment required	Assessment required	Assessment required	Assessment required

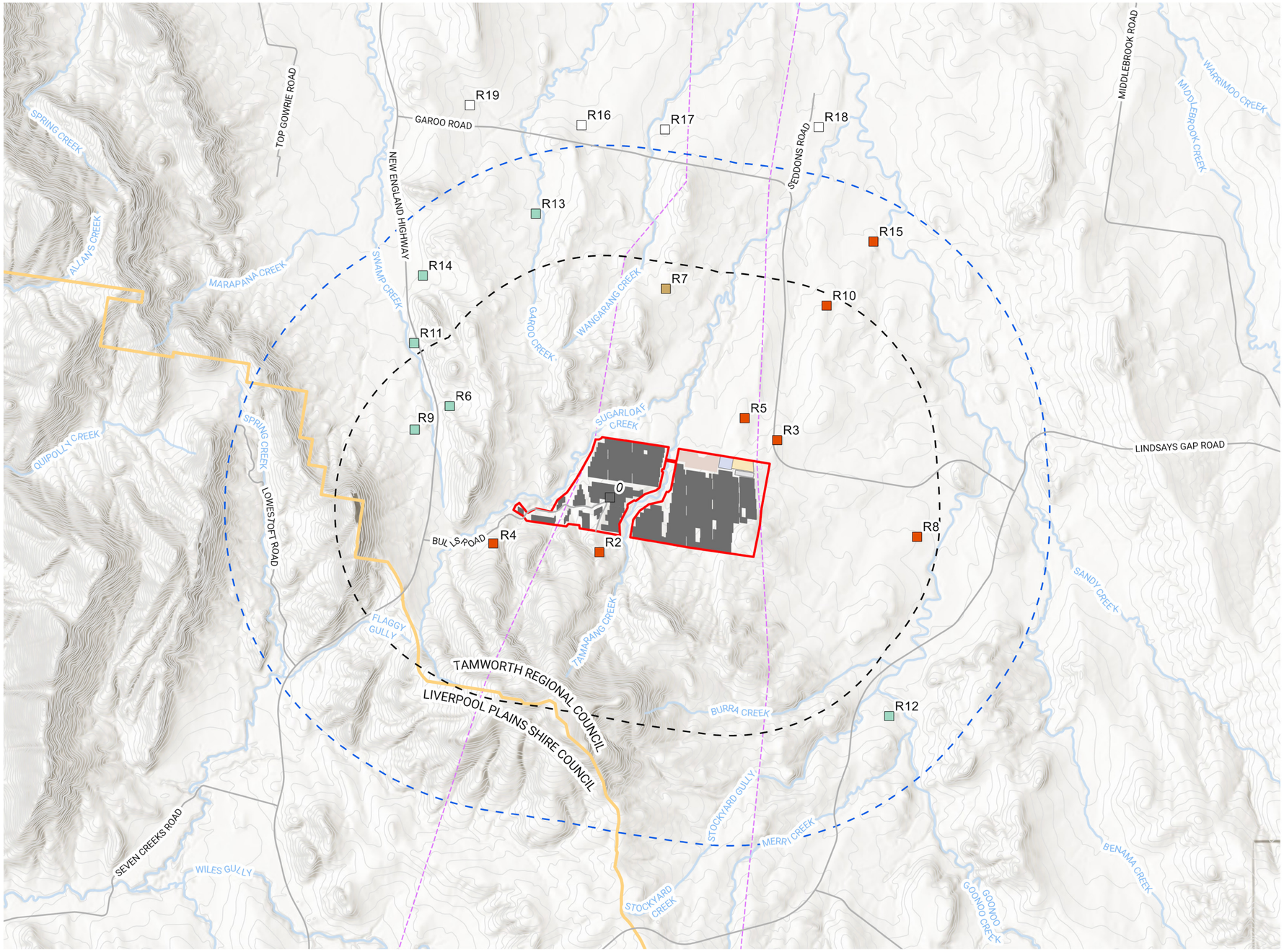
Table 02 **Assessment Requirements**
Source - Adapted from DPHI, 2022

5.5 Results of Simple Assessment Tool

A total of eight (8) non-associated dwellings were identified within 4.0 km of the Development Footprint, with a line of sight to the Project. Of these eight (8) non-associated dwellings, the simple sssessment identified seven (7) non-associated dwellings that require further assessment in accordance with the Guidelines (refer to **Table 03** and **Figure 10**).

SIMPLE ASSESSMENT TOOL (NON-ASSOCIATED DWELLINGS)						
Dwelling ID	Line of sight?	Receiver Elevation (m)	Distance to Project (m)	Vertical Field of View	Horizontal Field of View	Assessment Requirements
R2	Yes	654	309	4	158	Assessment Required
R3	Yes	572	441	4	80	Assessment Required
R4	Yes	653	547	4	64	Assessment Required
R5	Yes	566	563	4	115	Assessment Required
R6	No	626	1664	-	-	No Assessment Required
R7	Yes	567	2144	1	66	No Assessment Required
R8	Yes	546	2206	2	32	Assessment Required
R9	No	625	1763	-	-	No Assessment Required
R10	Yes	535	2349	2	45	Assessment Required
R11	No	593	2648	-	-	No Assessment Required
R12	No	566	3108	-	-	No Assessment Required
R13	No	550	3211	-	-	No Assessment Required
R14	No	581	3305	-	-	No Assessment Required
R15	Yes	505	3417	2	34	Assessment Required

Table 03 **Results of Simple Assessment Tool - Private Recievers**



Private Receptor Simple Assessment Results

Refer to Section 5.5

LEGEND

- Non Associated Dwellings - Further Assessment Required based on Simple Assessment
- Non Associated Dwellings - No Further Assessment Required based on Simple Assessment
- Non Associated Dwellings outside Study Area
- Non Associated Dwellings with no line of sight due to topography
- Associated Dwelling
- Roads
- Project Boundary
- Transgrid Substation Area
- Customer Substation
- Laydown and Parking Area
- BESS Area
- Development Area (PV Array)
- 2.5 km from the Development Area
- 4 km from the Development Area
- Local Government Area
- Waterways
- Electrical Transmission Lines
- Contour

Figure 10 **Results of Simple Assessment for Private Receptors**

Basemap Source - ArcGIS, 2024

6.0 Summary and Next Steps

6.1 Summary of Findings

The following provides an overview of the findings of the PVIA:

- Two study areas were applied based on the requirements of the Technical Supplement
    - The 2.5 km study area identified a number of low use roads and 10 locations were selected from these roads as representative viewpoint locations.
    - A total of 14 non-associated dwellings were identified within the 4 km study area.
- Viewshed analysis determined that eight (8) of the 14 non-associated dwellings within the 4 km Study Area would have a theoretical line of sight to the project (due to undulating topography).
- A reverse viewshed analysis was undertaken and determined that very limited areas of the Project Site would be theoretically visible from non-associated dwellings within the 4km Study Area. Majority of the Project would be potentially visible by upto two (2) dwellings.
- The application of the simple assessment tools indicates that seven (7) of these dwellings will require a detailed visual impact analysis in the Environmental Impact Statement (EIS) phase.
- Due to the undulating topographic characteristics of the surrounding landscape, the majority of the Project is expected to have very limited visibility from various directions, particularly from west, northwest and southwest. The relatively lower undulation in the topography, east of the Project Site, there would be highest potential visibility of the Project from these areas.
- Preliminary desktop analysis of the landscape character suggests that intervening vegetation, including surrounding tree cover and roadside plantings, will likely fragment and reduce direct views of the Project from nearby dwellings and roadways. Scattered patches of dense vegetative cover around the ridglines, particularly towards the southwest and northwest of the Project will likely screen views of the Project.

6.2 Next Steps

A Landscape Character and Visual Impact Assessment (LCVIA) will be prepared in accordance with the Guideline and the Technical Supplement. During the preparation of the LCVIA, detailed site investigations will be undertaken from areas identified in the preliminary assessment as having potential visibility towards the Project.

Specialised modelling tools and visualisations (including photomontages) will be developed to illustrate potential views of the Project from key public and private viewpoints identified through this report. In addition site inspections will be undertaken from key public viewpoints identified as requiring further assessment.

The LCVIA will include an assessment of the landscape and visual impact resulting from all associated infrastructure and ancillary structures, and consideration of cumulative impacts of nearby infrastructure. Further assessment will be undertaken to assess potential impacts of glint and glare using industry standard methodology.

The cumulative impacts of surrounding renewable energy projects will be assessed as part of the Landscape Visual Impact Assessment (LVIA) to evaluate potential effects on the broader regional landscape character. A detailed analysis of the visual and landscape impacts from these projects will be carried out during the Environmental Impact Statement (EIS) phase.

On-site and off-site visual landscape mitigation strategies will be developed in response to the assessment and community consultation. The purpose of the mitigation strategies will be to ensure the Project is integrated into the existing landscape and to mitigate identified visual impacts to an acceptable level.

APPENDIX C PRELIMINARY BIODIVERSITY ASSESSMENT, ERM, 2024

Garoo Solar Farm and BESS

Preliminary Biodiversity Assessment

PREPARED FOR
GreenPulse Solar Farm and BESS Unit Trust

DATE
17 December 2024

REFERENCE
0751705

DOCUMENT DETAILS

DOCUMENT TITLE	Garoo Solar Farm and BESS
DOCUMENT SUBTITLE	Preliminary Biodiversity Assessment
PROJECT NUMBER	0751705
DATE	17 December 2024
VERSION	03
AUTHOR	Mikki Gourlis
CLIENT NAME	GreenPulse Solar Farm and BESS Unit Trust

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
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Final	03	M.Gourlis	L.Boyle	L.Baker	17/12/2024	

SIGNATURE PAGE

Garoo Solar Farm and BESS

Preliminary Biodiversity Assessment

0751705

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym	Description
ALA	Atlas of Living Australia
ASC	Australian Soil Classification
BAM	Biodiversity Assessment Method 2020
BAM-C	Biodiversity Assessment Method Calculator
BC Act	*Biodiversity Conservation Act 2016*
BCS	Biodiversity, Conservation, Science Division
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BOS	Biodiversity Offsets Scheme
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERM	Environmental Resources Management Australia Pty Ltd
GIS	Geographical Information Systems
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS Act	*Local Land Services Act 2013*
MNES	Matters of National Environmental Significance
MW	Megawatt ac
MWh	Megawatt hour
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NVR Map	Native Vegetation Regulatory Map
PBA	Preliminary Biodiversity Assessment
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SEARS	Secretary's Environmental Assessment Requirements
SEED	Sharing Enabled Environmental Data
SSD	State Significant Development

Acronym	Description
SVTM	State Vegetation Type Map
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
VIS	Vegetation Information System

1. ASSESSMENT OVERVIEW

GreenPulse Solar Farm and BESS (GreenPulse) (The Proponent) proposes to construct and operate the Garoo Solar Farm and Battery Energy Storage System (BESS) (the Project), a renewable energy development situated in the rural locality of Garoo, New South Wales (NSW) within the Tamworth Regional Local Government Area (LGA). The Project involves the construction, operation and decommissioning of an alternating current solar farm, a BESS and associated supporting and ancillary infrastructure. The project proposes to construct and operate a solar farm of up to 155 Megawatt (MW) and a BESS with 360 MW / 1,440 Megawatt hour (MWh) storage capacity.

Environmental Resources Management Australia Pty Ltd (ERM) has prepared this Preliminary Biodiversity Assessment (PBA) on behalf of the Proponent. Preliminary biodiversity site investigations were undertaken across an area of 368 hectares (ha), referred to as the Project Area. This PBA has been prepared with the purpose of overviewing the Project Area biodiversity values and providing a foundation for detailed project design and the preparation of a Project Biodiversity Development Assessment Report (BDAR).

1.1 APPLICABLE LEGISLATION AND POLICIES

The Proponent is seeking State Significant Development (SSD) Consent under Division 4.7, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project. The Proponent has engaged 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, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs).

The SEARs will guide the preparation of an Environmental Impact Statement (EIS) for the Project. If the Project is determined SSD, Part 7 of the Biodiversity Conservation Act 2016 (BC Act) will apply to the Project which identifies the mandatory preparation of a BDAR, unless a successful Biodiversity Development Assessment Report (BDAR) Waiver is obtained (s7.14 of the BC Act). A BDAR Waiver is not being requested for this Project. Thus, a BDAR completed in accordance with the Department of Planning, Industry and Environment's (DPIE) Biodiversity Assessment Method 2020 (BAM) will be prepared to accompany the Project EIS.

1.2 BIODIVERSITY OFFSETS SCHEME

Biodiversity Credits are used in the Biodiversity Offsets Scheme (BOS) to resolve residual impacts of a project on biodiversity values. Biodiversity credits are calculated through the application of the BAM for:

- Unavoidable impacts on biodiversity through the clearing of native vegetation and habitat for the development site; and
- Predicted gain in biodiversity values at a biodiversity stewardship site also known as a conservation area.

This PBA is not a BDAR. The focus of the PBA is the broad characterisation of relevant biodiversity values likely to occur within the Project Area. A BDAR will be prepared as part of the EIS. The BDAR will be used to determine the number of biodiversity credits required to offset the Project's residual and unavoidable impacts. A biodiversity stewardship site does not form part of this PBA.

1.3 THE BIODIVERSITY ASSESSMENT METHOD

The BAM comprises of three stages of assessment. This PBA only considers the relevant elements of Stages 1 and 2 of the BAM. The key elements of Stage 1 of the BAM applied in this assessment are listed in **Table 1-1**.

TABLE 1-1 STAGE 1 OF THE BAM

Aspect	Description
Establishing the Site Context	• Identification of the Project Area • Identification of landscape features including Interim Biogeographic Regionalisation for Australia (IBRA) bioregions and subregions, bodies of water, habitat connectivity, geographical features of significance, areas of outstanding biodiversity values, and NSW (Mitchell) landscapes. • Assessment of native vegetation cover on the Project Area • Identification of Category 1 – Exempt Land
Assessing Native Vegetation, Threatened Ecological Communities and Vegetation Integrity	• Review of existing databases for information on native vegetation communities • Mapping of the native vegetation on the Project Area, including ground cover and tree canopy cover • Identification of plant community types (PCTs) • Completing accepted methods of plot-based vegetation surveys (BAM Plots) • Identification of threatened ecological communities (TECs) that are associated with identified PCTs • Mapping of native vegetation zones and assessment of vegetation integrity.
Assessing Habitat Suitability for Threatened Species	• Identification of predicted Ecosystem Credit Species, Species Credit Species and Dual Credit Species • Assessing habitat suitability and habitat constraints within the Project Area for predicted species • Scoping of proposed field surveys to address relevant candidate species.
Identifying Prescribed Additional Biodiversity Impacts	• Identification of prescribed direct, and indirect impacts on the habitat of threatened species, including geographical features of significance, human-made structures, and non-native vegetation, habitat connectivity, waterbodies, and potential vehicle strike.

Stage 2 of the BAM outlines the requirements for assessing the impacts on biodiversity values identified in Stage 1. It follows the mitigation hierarchy principles of avoid, minimise and offset. This stage is also used to determine the number and class of biodiversity credits required to offset any remaining impacts to biodiversity that are unavoidable.

1.3.1 CHANGES TO THE BAM

Clause 6.31 of the Biodiversity Conservation Regulation 2017 (BC Regulation) outlines how an Accredited Assessor can address changes to the BAM that occur whilst preparing a BDAR for a Project. This Clause is reproduced below for clarity:

6.31 Changes in biodiversity assessment method

(1) If the biodiversity method is changed, a biodiversity assessment report may, during the designated period after the method is changed, be prepared on the basis of the method in force before the change, but only if the report states that it has been prepared on that basis.

(2) For the purposes of this clause, the designated period is—

(a) except as provided by this subclause—6 months, or

(b) in the case of a biodiversity development assessment report in respect of State significant development or State significant infrastructure—12 months, or

(c) in the case of a biodiversity certification assessment report for an application that is not a strategic biodiversity certification application—12 months, or

(d) in the case of a biodiversity certification assessment report for a strategic biodiversity certification application—12 months or such longer period as the Minister approves in a particular case.

The BAM refers to the Threatened Biodiversity Data Collection (TBDC) and NSW BioNet Atlas as resources that **must** be used in preparing a BDAR. A change in the content of these resources has the effect of changing the BAM when preparing a BDAR. Thus, such changes during the preparation of a BDAR for this Project after the date of this PBA may be interpreted as a change to the BAM. On this basis, and with reference to the specified designated periods above, the Accredited Assessor may prepare the BDAR on the basis of the methods in force before the change and in so doing will state this as the case in the BDAR.

This PBA contains site-based information capable of determining the Plant Community Types (PCTs) present within the Project Area, thus provides a sound basis for the generation of the Candidate Species applicable to the Project. Changes in the Candidate Species list after the publishing of this PBA may represent a change in the BAM for a BDAR in preparation and, for this reason, these additional species may be excluded from the assessment. The BDAR will state this if the circumstance arises.

A change to survey methods for Candidate Species specified in the TBDC during the preparation of the BDAR is also interpreted as a change to the BAM. The Accredited Assessor may choose to apply the survey methods in force before the change and, if so, the decision to do so will be stated in the BDAR.

1.4 BIODIVERSITY VALUES NOT ASSESSED

The BAM does not assess the following biodiversity values; therefore, these have been excluded from this PBA:

- Marine mammals;
- Wandering seabirds;
- Biodiversity that is endemic to Lord Howe Island; and
- Native vegetation and loss of habitat on category 1 exempt land (under Part 5A of the *Local Land Services Act 2013*) other than the additional biodiversity impacts under clause 6.1 of the BC Regulation.

A statewide draft Native Vegetation Regulatory (NVR) is available for review as of March 2024. The draft NVR Map identifies both Category 1 and 2 Land occurring within the Project Area. A Land Category Assessment (LCA) is being prepared by ERM and will propose land categorisation for the Project Area informed by desktop analysis, review of the draft NVR, and field surveys.

2. INTRODUCTION

The proponent proposes to construct and operate the Garoo Solar Farm and BESS (the Project). The Project is located within the Tamworth Regional LGA in the rural locality of Garoo NSW. The Proponent is seeking SSD Consent under Division 4.7, Part 4 of the EP&A Act for the Project.

This PBA provides details of initial desktop investigations aligned with the BAM framework and results from a field survey conducted in September 2024. This PBA focuses on the mapping of PCTs and the identification of associated threatened species and ecological community constraints across the Project Area. Additionally, this PBA outlines future survey and assessment requirements, with an approach to addressing residual impacts.

2.1 THE PROPOSAL

The Project is expected to involve the construction, operation and decommissioning of a solar farm, a BESS and associated infrastructure. The Project is located on the eastern side of the New England Highway, situated in the rural locality of Garoo NSW 2340. The Project Area covers a total area of approximately 368 ha and is shown in **Figure 2-1**.

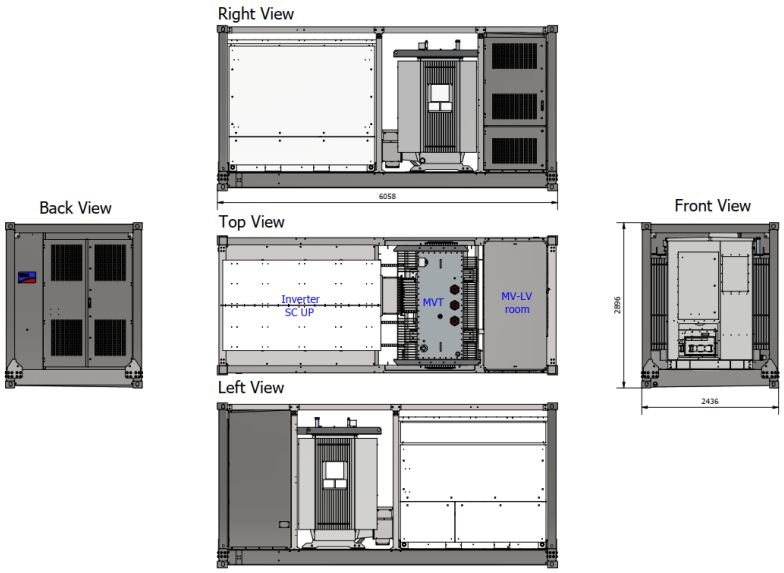
2.1.1 DEVELOPMENT OVERVIEW

The Project consists of a Solar Farm of up to 155 MW and BESS facility with 360 MW / 1440 MWh storage capacity.

A Development Footprint has been established, containing all areas of anticipated temporary and permanent disturbance. The Development Footprint covers 319.5 ha and has taken into account biodiversity values identified throughout this PBA. The indicative Project components and specification are outlined in **Table 2-1**, with the Development Footprint and indicative Project layout shown in **Figure 2-2**.

TABLE 2-1 PROJECT SPECIFICATIONS

Component	Feature	Specification
Energy generation	Solar Arrays	• Solar Photovoltaic (PV panels) • Maximum installed capacity up to 155 MW • Solar arrays mounted.
Power Conversion Units	Power Station (inverter, DC-AC transformer and associated equipment	• Up to 44 Power Conversion Units (PCU) for the solar farm and 142 PCUs for the BESS Plant with the same brand and technology, measuring approximately 2815 millimetres (mm) / 1588 mm / 1588 mm (W / H / D). Refer to the basic closed door configuration below.

Component	Feature	Specification
		
Electrical Reticulation Network	On-site substation and Switching Station	• New high voltage substation including 330 kV switching station, BESS substation and associated structures. • Maximum occupied area of 145 m x 450 m for all facilities. • Proposed location within the Project Area near the intersection of the existing 330 kV transmission line, subject to final design.
	Internal electrical reticulation network (Medium Voltage)	• Electrical reticulation will generally follow rows of panels and internal access routes to reach the step-up substation (33 / 330 kV) for the Project. • The Project will connect into the substation (33 / 330 kV) on-site directly via underground cables (33 kV, internal reticulation voltage). • The Project will be connected to the Grid by Switching Station (330 kV) located on-site boundary.
	BESS	• 360MW / 1,440 MWh storage capacity. • Approximate footprint of 14 ha. • Associated electrical equipment providing connection to the existing 330 kV transmission network.
Access Roads	Access to site	• Access to the Project Area will be from Garoo Road, subject to assessment in the EIS phase. • Internal access tracks
Ancillary activities and infrastructure	Construction and Operation infrastructure	• Temporary on-site infrastructure, including construction compounds, concrete batching plants, borrow pits, and laydown and storage areas • Permanent Operations & Maintenance (O&M) and associated infrastructure; • Proposed location to be within development footprint of the proposed solar farm. Design and locations to be confirmed during EIS preparation.

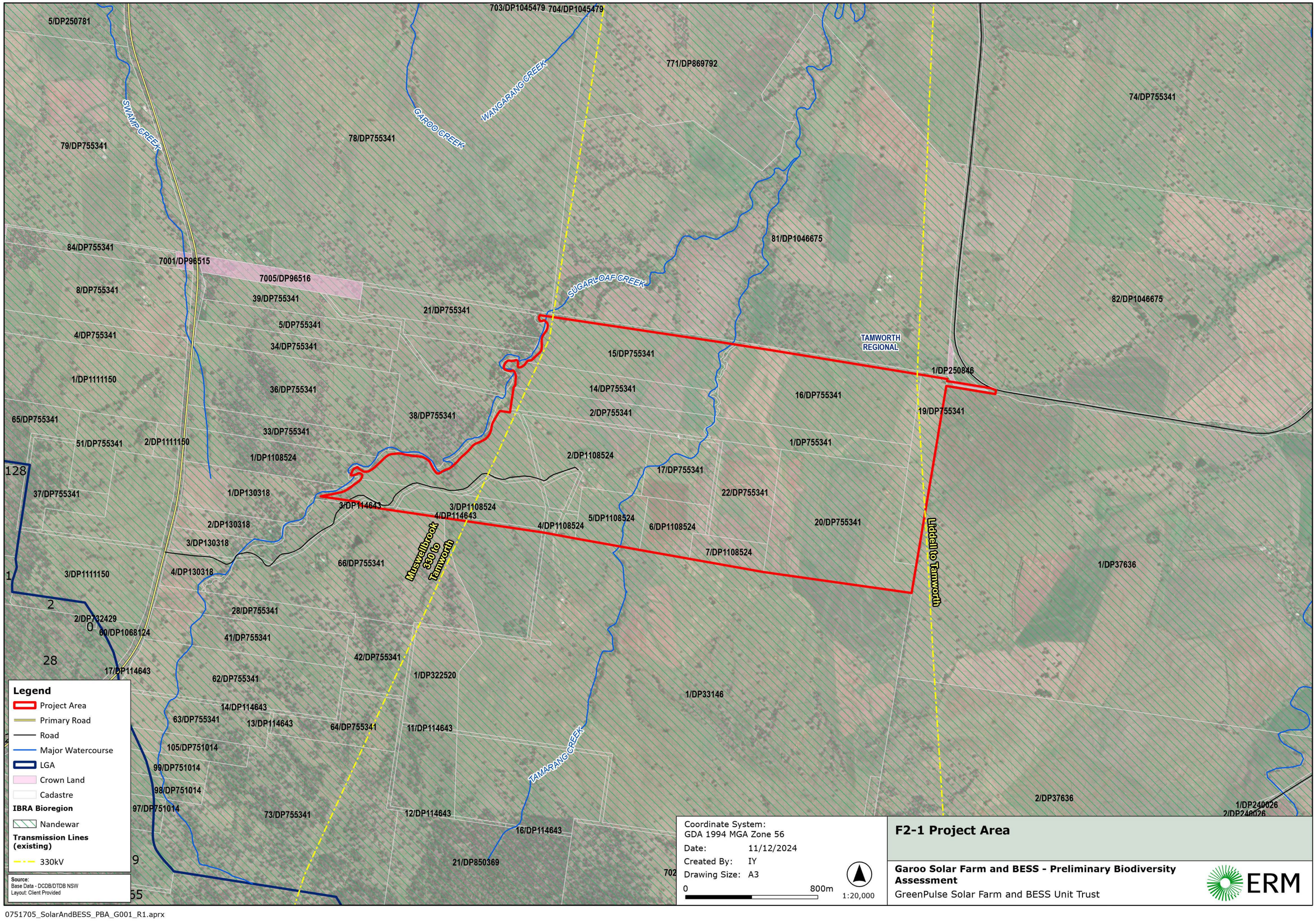
2.1.2 PROJECT AREA

The Project Area is the area of land to which Stage 1 of the NSW BAM has been applied for the purposed of biodiversity assessment. This includes the extent of land included within the indicative project layout and Development Footprint for the BESS and solar farm facility.

The Project Area for this assessment is shown in **Figure 2-1** and detailed in **Table 2-2** below.

TABLE 2-2 PROJECT AREA DESCRIPTION

Feature	Description
Locality	Eastern side of the New England Highway, Garoo NSW 2340.
Local Government Area	Tamworth Regional Council.
Lot/DP	Lot 1, 2, 14 ,15 ,16 ,17, 19, 20, 22: 755341 (Freehold). Lot 2, 3, 4, 5 ,6 ,7: 1108524 (Freehold). Lot 3, 4: 114643 (Freehold). Lot 1: 250846 (Crown Land).
Land Zone	RU1: Primary Production.
Current Land Use	Primary Agriculture (grazing and cropping).



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Legend

- Access Point
- Project Area
- Transmission Lines (existing)
- Local Road
- Local Track-Vehicular
- Major Watercourse

Development Footprint

- Development Footprint
- Restricted Area
- Maintained existing water dams
- BESS Area
- BESS Container
- Customer Substation Area
- Inverter Station
- Laydown & Parking Area
- Mounting structure
- Mounting structure - Half Table
- PCS Station
- Transgrid Substation Area
- Bridge Crossing the Creek
- Culvert Crossing the Creek
- Fences
- Internal Access Tracks
- Over HeadLine Interconnection
- Underground Trench - MV & DC
- Underground Trench -MV

SUGARLOAF CREEK

Muswellbrook 330 to Tamworth

Liddell to Tamworth

TAMARANG CREEK

Source:
Base Data - DCDB/DTDB NSW
Layout: Client Provided

Coordinate System:
GDA2020 MGA Zone 56

Date: 30/01/2025

Created By: IY

Drawing Size: A3

0 400m

1:11,000

F2-2 Preliminary Project Layout

Garoo Solar Farm and BESS - Preliminary Biodiversity Assessment

GreenPulse Solar Farm and BESS Unit Trust

ERM

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2.2 METHODS

This section outlines the methods used to prepare this PBA.

2.2.1 SITE CONTEXT

2.2.1.1 LANDSCAPE FEATURES

Landscape features were identified through desktop review and confirmed through field investigations. The following has been identified in accordance with the BAM:

- Interim Biogeographic Regionalisation of Australia (IBRA) regions and subregions;
- Native vegetation extent and cleared areas within the Project Area (in ha);
- River, streams, estuaries, wetlands and other waterbodies;
- Connectivity features; and
- Areas of geological significance and soil hazard.

The following databases and publicly available resources were reviewed as a part of this assessment:

- Online Threatened Biodiversity Data Collection (TBDC), including NSW BioNet Atlas, Vegetation Information System (VIS) Database and threatened biodiversity profiles;
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) to identify Matters of National Environmental Significance (MNES), with the potential to occur within the locality of the Project Area. Accessed 16 September 2024 provided in **Appendix A** of this report;
- NSW Sharing Enabled Environmental Data (SEED) Portal to identify Mitchell Landscapes, hydrology mapping and IBRA version 7 mapping;
- NSW eSPADE Soils and Land Mapping;
- Australian Soil Classification (ASC) soil type map of NSW version 4.5;
- NSW Department of Primary Industries (DPI) Fisheries key fish habitat mapping; and
- Atlas of Living Australia database.

Observations made during the initial site visits were used to verify the desktop review findings where applicable, with future surveys to be completed in accordance with the BAM.

2.2.1.2 LAND CATEGORISATION

Under the LLS Act, land is categorised as either:

- Category 1 – Exempt Land; or
- Category 2 – Regulated Land.

The criterion for classifying these lands is provided in Section 60 I of the LLS Act.

Areas of Category 2 – Regulated Land (native vegetation) were initially identified through review of the Transitional Native Vegetation Regulatory (NVR) Map. The Transitional NVR map also defines unclassified lands. For these areas, an Accredited Assessor under Section 6.10 of the *Biodiversity Conservation Act 2016* (BC Act) may apply relevant land categorisation guidelines to determine a site-based land categorisation for the purposes of preparing a BDAR.

A LCA is being prepared by ERM and will propose land categorisation for the Project Area informed by desktop analysis, review of the transitional NVR and draft NVR and field surveys.

2.2.2 NATIVE VEGETATION TYPES, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

2.2.2.1 EXISTING INFORMATION

A desktop review was conducted to determine the PCTs and TECs that have the potential to occur on the Project Area. The following resources were reviewed:

- NSW State Vegetation Type Map (SVTM) C2.0M2.0 (December 2023);
- PMST access 16 September 2024; and
- Online Threatened Biodiversity Data Collection (TBDC) including the vegetation information system (VIS).

2.2.2.2 MAPPING NATIVE VEGETATION EXTENT

The NSW SVTM was used to initiate the mapping of native vegetation on the Project Area. The mapping was refined following surveys completed by ERM Ecologists between 24 and 28 of September 2024, through the implementation of rapid vegetation assessment, LCA transects and vegetation integrity plots (BAM Plots).

Refined mapping has been used to support this assessment and additional field surveys will be used to inform further refinements to the mapping during the EIS phase of works.

2.2.2.3 PLOT BASED VEGETATION SURVEY

BAM plots are required in accordance with Section 4.2.1 of the BAM. These plots are used to calculate the vegetation integrity score (VIS) of a plant community. During the preliminary field surveys, BAM Plots were completed. Each BAM plot consisted of a central 50 m transect and a 20 m by 20 m plot. The following data was collected within each plot:

- Identification of all flora species present within the plot area;
- Stratum layers in which species occur;
- Growth form of species;
- Abundance rating of each species;
- One 1000 m^2 (20 m by 50 m) plot to assess function attributes (number of hollow bearing trees, stem size class, tree regeneration and length of logs); and
- Five 1 m^2 plots to assess average leaf litter cover, bare earth, cryptogam, and rock cover.

The location of all BAM Plots was recorded using GIS software and given a unique identification for ease of assessment.

The floristic composition of the Project Area has been investigated based on 25 BAM Plots collected during the following survey events:

- Spring 2024 (24 September – 28 September 2024).

Survey locations are provided in **Figure 2-3**.

2.2.2.4 SCATTERED TREE ASSESSMENT

Scattered trees across the Project Area were assessed in accordance with section B.1 of the BAM. Under the BAM, scattered trees are defined as species listed in the tree growth form group that:

a) have a percent foliage cover that is less than 25% of the benchmark for tree cover for the most likely plant community type and are on category 2-regulated land and surrounded by category 1-exempt land on the Native Vegetation Regulatory Map under the LLS Act, or

b) have a DBH of greater than or equal to 5 cm and are located more than 50 m away from any living tree that is greater than or equal to 5 cm DBH, and the land between the scattered trees is comprised of vegetation that are all ground cover species on the widely cultivated native species list or exotic species or human-made surfaces or bare ground, or

c) are three or fewer trees that have a DBH of greater than or equal to 5 cm and are within a distance of 50 m of each other, that in turn, are greater than 50 m away from the nearest living tree that is greater than or equal to 5 cm DBH and the land between the scattered trees is comprised of vegetation that are all ground cover species on the widely cultivated native species list, or exotic species or human-made surfaces or bare ground.

Survey locations are provided in **Figure 2-3**.

2.2.3 LISTED FLORA AND FAUNA

2.2.3.1 EXISTING INFORMATION

A desktop review was undertaken to identify potential flora and fauna listed under the NSW BC Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The reviewed utilised the following resources:

- TBDC, including BioNet Atlas, Vegetation Information System and threatened biodiversity profiles;
- PMST to identify EPBC Act listed threatened and migratory species with the potential to occur within the locality of the Project; and
- NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) Important Habitat Mapping.

Assessments completed in accordance with the BAM 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 for species credits.

- Ecosystem credit species are considered likely to have suitable habitat on the Project Area (currently mapped as the Project Area for the Project) and must be assessed for impacts, including measures taken to avoid, minimise and mitigate impacts. These species are referred to as 'predicted species' in the BAM-C and the assessor must calculate ecosystem credits to offset any residual impacts; and

- Candidate species are likely to have suitable habitat on the Project Area (currently mapped as the Project Area for the Project). They are referred to as 'candidate species' in the BAMC and will require further assessment.

In some circumstances the TBDC may identify a threatened species that requires assessment for ecosystem credits and species credits (referred to as dual credit species). For dual credit species, part of the habitat is assessed as a species credit (e.g., breeding habitat or land mapped on an important habitat map for a species). The remaining habitat components for the species are assessed as an ecosystem credit (e.g., foraging habitat).

Review of the BioNet Atlas and the BAM-C, as informed by site-based survey across the Project Area, was conducted to produce an indicate candidate species list to inform this preliminary biodiversity assessment. This will form the basis for guiding the specifications for survey effort to be completed to inform a Project BDAR.

2.2.3.2 FIELD SURVEYS

Two survey events have been completed within the Project Area to date. The details of the survey event can be found in **Table 2-3** and **Table 2-4**. Survey locations are provided in **Figure 2-3**.

Currently, survey effort within the Project Area is sufficient to support the Scoping Report and EPBC Act referral, however it is acknowledged that further survey effort will need to be undertaken as part of the preparation of the BDAR in accordance with the BAM.

TABLE 2-3 SURVEY TIMING

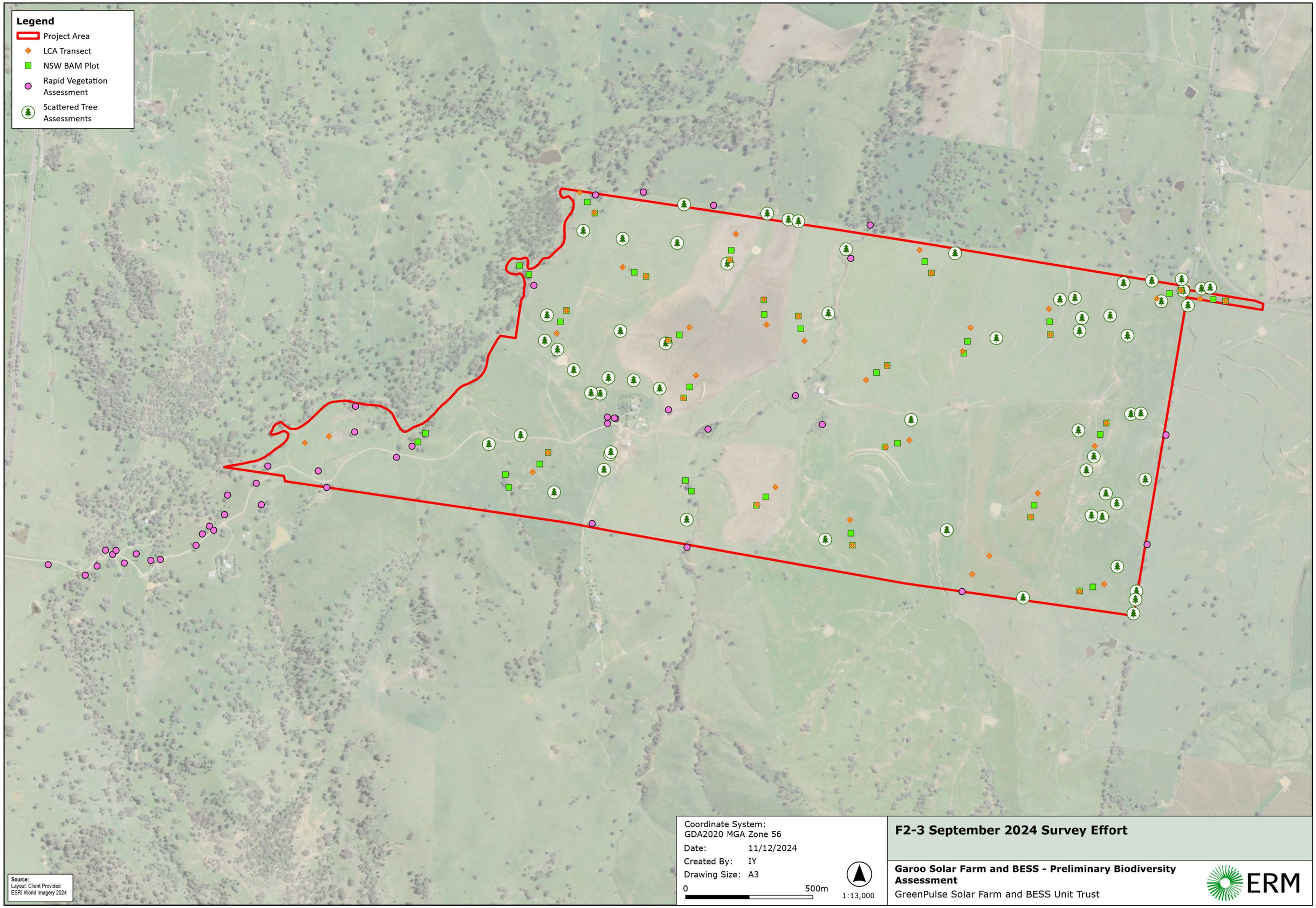
Survey	Dates	Target	Work Completed by:
Spring 2024 01	24/09/24-28/09/24	• Habitat Quality Assessment • Rapid Vegetation Assessments • BAM Plots • Scattered Tree Assessments • LCA Transects • Opportunistic fauna observations	• Lorena Boyle – Senior Ecologist, BAM Accredited Assessor • Mikki Gourlis – Ecologist • Jemma Boyce – Ecologist • Sophie Draganic - Ecologist
Spring 2024 02	28/10/24- 1/11/24	• Targeted Amphibian Surveys • Targeted Reptile Surveys • Threatened Flora Transect Surveys	• Daniel Thompson – Ecologist • Amy Parks - Ecologist

[1]Stands of native vegetation, areas of native vegetation recruitment, Water sources with emergent vegetation, fallen/standing dead timber and logs, hollow bearing trees, large stick nests, mistletoe presence and abundance, rocky areas.

TABLE 2-4 FIELD SURVEY EFFORT COMPLETED TO DATE

Method	Target species	Applicable Guidelines	Effort	Comment
BAM plots	All flora species	The Biodiversity Assessment Method (NSW Government, 2020)	25 BAM plots conducted	Potential to require additional BAM plots during future survey events.
Rapid Vegetation Assessments	All flora species- conducted in order to verify PCTS	The Biodiversity Assessment Method 2020 (DPE, 2020)	36 rapid vegetation assessments conducted, mostly focused on areas along Bulls Road where road upgrades will be required and just outside the Project Boundary.	Rapid vegetation assessments were conducted throughout the site to gather high level information on vegetation composition, dominant flora species and note features of interest, to support vegetation mapping.
Habitat Quality Assessments	• Barking Owl & Masked Owl • Bush Stone-curlew • Painted Honeyeater • South-eastern Glossy Black-Cockatoo • Eastern Cave Bat • Large Bent-winged Bat • Large-eared Pied Bat • Grey-headed flying-Fox • Little Eagle • Square-tailed Kite • White-bellied Sea-Eagle • Koala • Pink-tailed Legless Lizard	-	9 medium stick nests recorded 3 rocky outcrop polygons recorded 54 hollows recorded	Habitat quality assessments were completed at a high-level to identify areas of potential habitat for threatened and protected fauna species. No large stick nests or Mistletoe were recorded.

Method	Target species	Applicable Guidelines	Effort	Comment
Scattered tree assessments	All trees that meet the Scattered Tree definition in the BAM	DPIE (2020) Biodiversity Assessment Method 2020 Operational Manual- Stage 1	62 scattered trees recorded	Surveys completed in full All scattered trees covered
LCA transects	Category 1 – Exempt Land	Conducted in accordance with the OEH Interim Grasslands and other Groundcover Assessment Method.	23 transects completed	Surveys completed in full No additional LCA transects are required
Targeted Amphibian Surveys	Tusked Frog (*Adelotus brevis*) Booroolong frog (*Litoria booroolongensis*)	DPIE (2022) NSW Survey Guide for Threatened Frogs.	Seven locations were surveyed over four nights.	Surveys completed in full No target species were found.
Targeted Reptile Surveys	Pink-tailed Legless Lizard (*Aprasia parapulchella*)	NSW DPE (2020) Threatened reptiles Biodiversity Assessment Method survey guide.	Three areas containing suitable rocky habitat were surveyed over four afternoons.	Surveys completed in full. No target species were found.
Flora Transects	*Prasophyllum sp. Wybong* Silky Swainson-pea (*Swainsona sericea*)	NSW DPIE (2020) Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment method.	Surveys were carried out in areas of suitable habitat (PCT 599, excluding scattered trees).	Surveys completed in full No target species were found.



F2-3 September 2024 Survey Effort

Garoo Solar Farm and BESS - Preliminary Biodiversity Assessment

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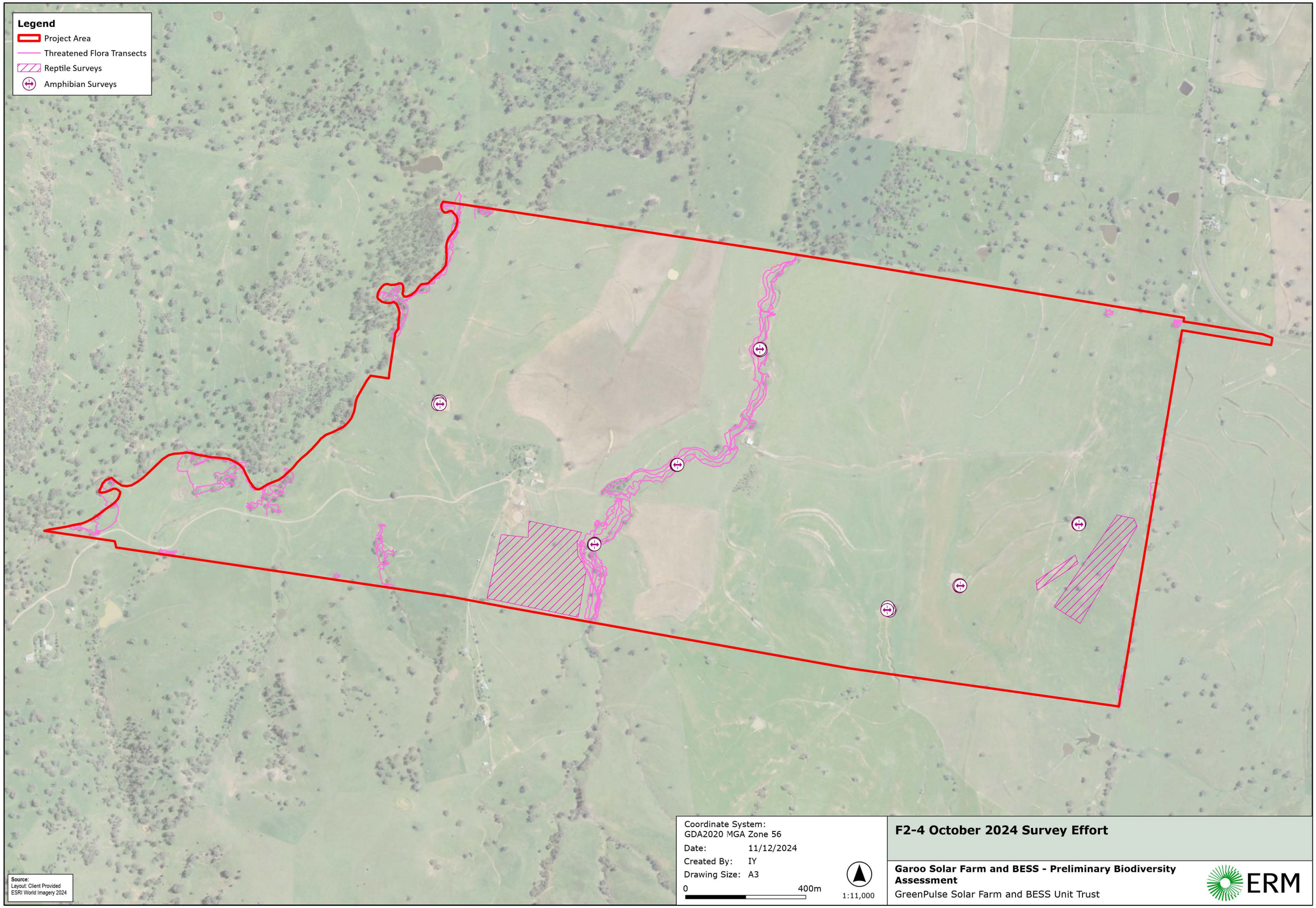

F2-4 October 2024 Survey Effort

Garoo Solar Farm and BESS - Preliminary Biodiversity Assessment

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2.2.3.3 LIKELIHOOD OF OCCURRENCE

Consistent with the accepted approach for biodiversity assessment, a likelihood of occurrence assessment was undertaken for the Project Area, informed by desktop sources and the initial field survey results. Desktop sources identified several fauna and flora species listed under the EPBC Act that have been recorded previously or are predicted to occur within a 10 km buffer of the Project Area (the locality). The likelihood of occurrence approach refines the desktop generated list using site-specific and specific-species habitat information.

The assessment ranks the likelihood of the species occurring within the project boundary through analysis of species distribution information and the presence of specific habitat attributes as identified through the desktop analysis and field survey. The criteria applied are outlined in **Table 2-5**.

TABLE 2-5 Likelihood of Occurrence Criteria

	Preferred habitat exists	Suitable habitat exists[2]	Habitat does not exist[3]
Recent[1] records within the Project Area	Known	Known	Known
Recent records in the Locality[4]	Likely	Potential	Unlikely
No records within the Locality, but the Project Area is within known distribution	Potential	Potential	Unlikely
No records in the Locality, and the Project Area is outside of distribution	Unlikely	Unlikely	Unlikely

1. Recent records are those that have been recorded in the last 20 years.
2. Habitat may be considered suitable, but not preferred because: some desired habitat features may be present, but not all; habitat may have poor connectivity; or habitat may be known to be disturbed.
3. Based on sources reviewed and/or field survey results.
4. 'Locality' refers to a 10 km buffer around the Project Area and is inclusive of the Project Area.

2.2.4 WEATHER CONDITIONS

Weather conditions observed during the spring survey period were appropriate for the survey of a variety of flora species, however due to heavy rain on the 27th September 2024, survey effort was restricted to a half day. Weather conditions and values that occurred on each day of the survey period were taken from Quirindi NSW Station 055049 which is approximately 30.8 km from the Project Area. Summary of the weather conditions present during the survey periods are shown in **Table 2-6**.

TABLE 2-6 WEATHER CONDITIONS DURING SITE SURVEYS

Date	Temperature (°C)		9 am Wind Speed (km/h)	Rainfall (mm)
	Min	Max		
24/09/2024	5.7	26.5	9	0.0
25/09/2024	10.7	26.4	9	0.0
26/09/2024	14.5	16.8	9	1.0
27/09/2024	9.6	16.8	15	26.6
28/09/2024	9.0	16.8	15	0.0
28/09/2024	9.0	21.1°C	15	0.0
28/10/2024	8.5	29.6	Calm	0.0
29/10/2024	12.3	28.8	9	0.0
30/10/2024	9.9	30.5	Calm	0.0
31/10/2024	10.2	31.3	Calm	0.0

2.3 AUTHORS AND CONTRIBUTORS

This report has been prepared by:

- Mikki Gourlis, Ecologist ERM, Bachelor of Zoology and Animal Science.

Reviewed by:

- Lorena Boyle, Senior Ecologist ERM, Bachelor of Zoology, BAM Accredited Assessor BAAS23027.

Field surveys were completed by:

- Mikki Gourlis, Ecologist ERM, Bachelor of Zoology and Animal Science;
- Lorena Boyle, Senior Ecologist ERM, Bachelor of Zoology, BAM Accredited Assessor (BAAS23027);
- Daniel Thompson, Ecologist ERM, Bachelor of Environmental Management;
- Amy Parks, Ecologist ERM, Bachelor of Environmental Science;
- Sophie Draganic, Ecologist ERM, Bachelor of Environmental Science and Management; and
- Jemma Boyce, Ecologist ERM, Bachelor of Biological and Environmental Science.

2.4 LICENCING

The flora surveys undertaken for this Preliminary Biodiversity Assessment were conducted under the NSW Scientific Licence SL100196 by ERM.

3. SITE CONTEXT

3.1 LANDSCAPE FEATURES

The landscape features of the Project Area, as required by sections 4.2 and 4.3 of the BAM are presented in **Table 3-1** below.

TABLE 3-1 LANDSCAPE FEATURES

Landscape Feature	Description
IBRA Bioregion and Subregion	The Project Area is located entirely within the Nandewar IBRA Bioregion and the Peel IBRA Subregion.
NSW (Mitchell) Landscape	The Project Area is located in the Nundle Hills Mitchell Landscape.
Rivers, Streams, Estuaries, and Wetlands	Tamarang Creek runs through the centre of the Project Area, running south to north, with Sugarloaf Creek bounding the western edge of the Project Area. The Fisheries NSW Spatial Data Portal (DPI) maps both Tamarang Creek and Sugarloaf Creek as Key Fish Habitat, with Sugarloaf Creek also mapped as suitable habitat for the threatened Southern Purple Spotted Gudgeon (*Mogurnda adspersa*), listed under the Fisheries Management Act 1994.
Habitat Connectivity	Native vegetation is present within the Project Area; however, this is highly fragmented due to historical clearing and current agricultural land uses. Vegetation along Tamarang Creek is largely fragmented, however vegetation along Sugarloaf Creek on the western boundary of the Project Area provides greater habitat connectivity. Both creeklines are anticipated to be avoided by the indicative Project layout.
Geological Feature if Significance	No discernible karsts, caves, cliffs or other geological features of significance occur on the Project Area.
Soil Hazard Features	Review of the eSPADE portal determined the following: • Mass movement hazard: 1 very slight to negligible limitation and 5 severe limitations • Structural decline hazard: 3 moderate limitations and 1 very slight to negligible limitations. • Water erosion hazard: 3 moderate limitations, 4 moderate to sever limitations, 5 severe limitations, 6 very severe limitations • Water logging hazard: 1 very slight to negligible limitations and 2 slight but significant limitations. • Wind erosion hazard: 1 very slight to negligible limitation
Areas of Outstanding Biodiversity Value	None present

3.2 NATIVE VEGETATION COVER

The native vegetation cover of the Assessment Area was determined in accordance with Section 3.2 of the BAM. The Assessment Area for a non-linear development is defined as a 1,500 m buffer applied to the Project Area. Native vegetation cover within the Assessment Area is used to inform the BAM-C in predicting Candidate Species relevant to the assessment. Native vegetation occurring within the Assessment Area was calculated using field-based survey results, in combination with data extracted from the recently published draft NVR Map.

Broad assumptions have been made in determining the extent of native vegetation cover as outlined below:

- Category 1 – Exempt lands (draft): These lands are likely to have been cleared in the past for cropping and other high intensity agricultural activities. While native vegetation may occur across lands in this category, it is likely to be substantially disturbed and may be cleared without any requirement for regulatory approvals;
- Category 2 – Vulnerable Regulated Land (In-Force): These lands, which include riparian zones and creek lines; and
- Category 2 – Regulated land (Draft): These lands are likely to comprise native vegetation cover as the predominant land use of the area (excluding cropping lands) is livestock grazing with limited pasture improvement. It has been assumed that the conservation value of the groundcover is at moderate.

The extent of native vegetation across the Assessment Area is summarised in **Table 3-2**, which includes the parameters used in the BAM-C for percentage of native vegetation cover and the cover class, which was found to be >10-30. The extent of native vegetation within the Assessment Area is shown in **Figure 3-1**.

TABLE 3-2 AREAS OF NATIVE VEGETATION

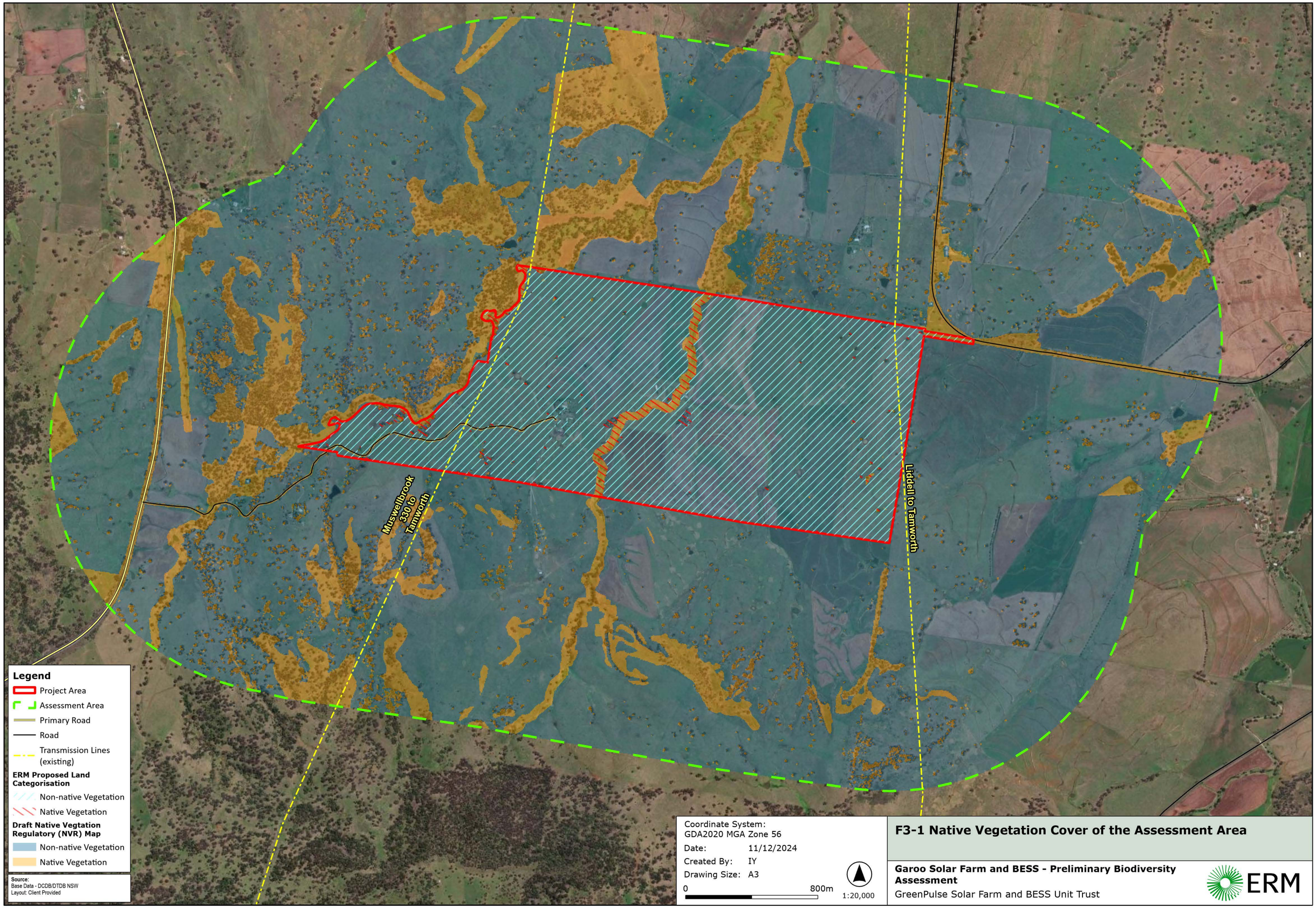
Aspect	Value
Assessment Area (ha)	2,533.66
Total Area of Native Vegetation Cover (ha)	429.22
Percentage of Native Vegetation Cover (%)	17%
Class (0-10, >10-30, >30-70, >70%)	>10-30

3.2.1 LAND CATEGORY ASSESSMENT

The development of the Solar farm and BESS will require assessment under the BAM, and the preparation of a BDAR to support the submission of the EIS. Part 6 Division 2 section 6.8 (3) of the NSW BC Act determines that the BAM is to exclude the assessment of the impacts of clearing of native vegetation on Category 1 - exempt land (within the meaning of Part 5A of the NSW Local Land Services Act 2013 (LLS Act)), other than prescribed impacts (e.g., impacts on the habitat of threatened species). This determination is repeated in section 1.5 (1)(d) of the BAM.

BAM accredited assessors may establish a reasonable approximation of land categorisation for the Environment Agency Head to consider. An outline of an evidence-based approach to identifying NVR map land categorisation, and the biodiversity assessment requirements in relation to Category 1 – exempt land, is provided in the guide Determining native vegetation land categorisation for application in the Biodiversity Offsets Scheme (State Government of NSW and DPE, 2023).

A LCA Report will be prepared separately to this PBA and will include the full details for the reasonable approximation of land categorisation for the Project Area.



F3-1 Native Vegetation Cover of the Assessment Area

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4. NATIVE VEGETATION, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

This section describes the PCTs present within the Project Area in accordance with the requirements of Section 4 of the BAM as listed below:

- Vegetation formation and class;
- Species relied upon for identification of vegetation type and relative abundance;
- Justification of evidence used to identify a PCT (as outlined in paragraph 5.2.1.12 of the BAM);
- TEC status (as outlined in paragraph 5.2.1.16 of the BAM); and
- Estimate percentage cleared value of PCT (as outlined in paragraph 5.2.1.16 of the BAM).

In this assessment, approximation of lands classified as Category 1-exempt vegetation have been made based on desktop resources, including the Draft NVR Map, and field based surveys.

4.1 AREAS OF NON-NATIVE VEGETATION

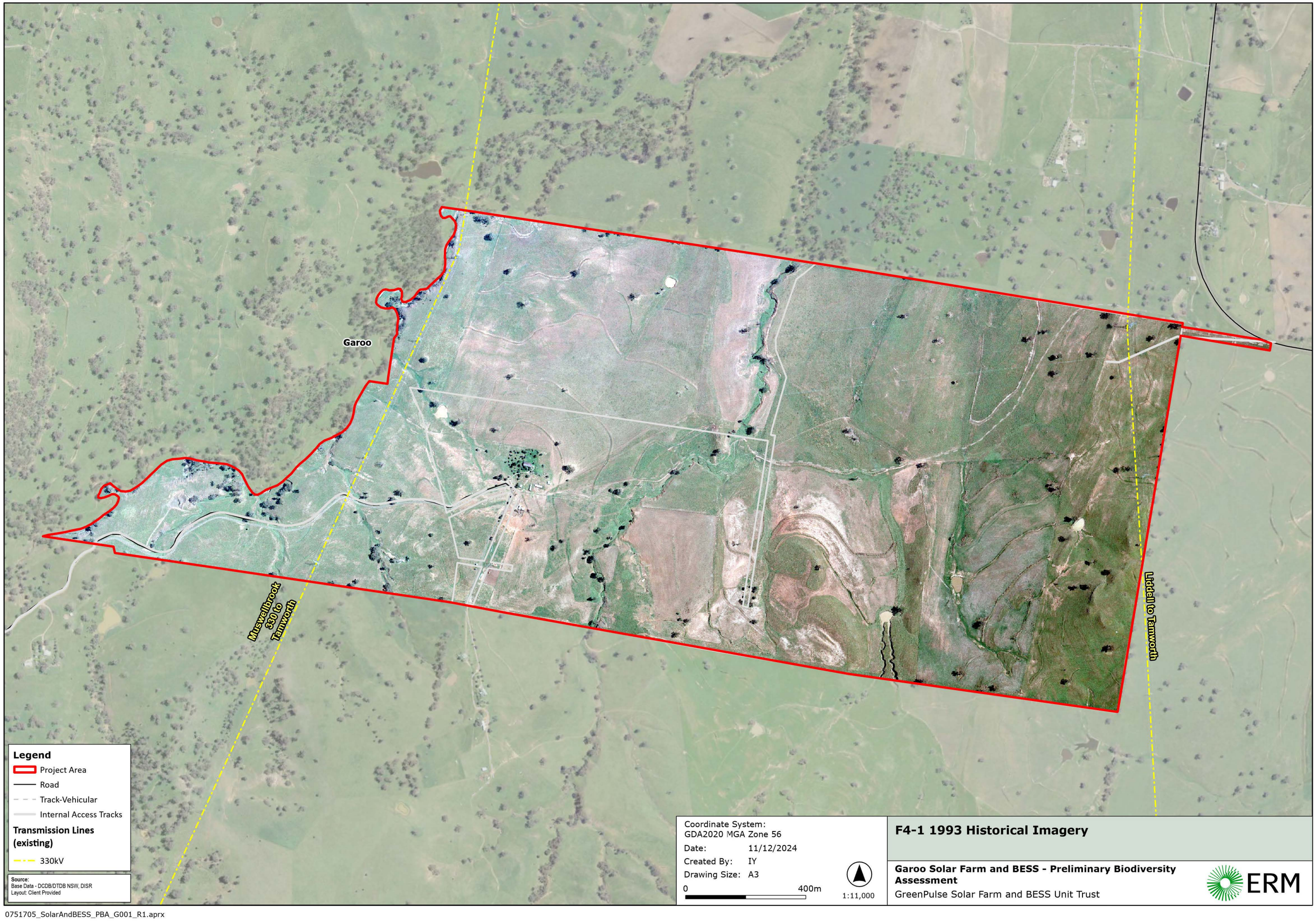
Areas of the Project Area are comprised of highly disturbed areas, dominated by non-native vegetation and grasslands. Review of historical imagery obtained through the Historic Image Viewer identified that the Project Area has a history of intensive agricultural activities such as cropping and pasture modification. Imagery from 1993 shows significant groundcover disturbance through agriculture machinery lines and tonal differences from adjoining groundcover (**Figure 4-1**).

The Draft Native Vegetation Regulatory Map (Draft NVR Map) identifies the majority Project Area as Category 1 – exempt land. Small areas of Category 2 – vulnerable regulated land have been identified, due to the presence of woody vegetation and creek lines that intercept the Project Area (**Figure 4-2**). The Draft NVR Map is currently under assessment and is not in-force, therefore requires confirmation through assessment outlined in *Determining native vegetation land categorisation for application in the Biodiversity Offsets Scheme 2023*.

A LCA is being prepared by ERM to propose the extent of:

- Category 1 – exempt land (areas of land previously cleared of native vegetation for agricultural activities); and
- Category 2 – regulated land (areas of land with native vegetation, riparian zones, and steep slopes).

This is to be informed by field investigation completed by ERM during the survey events outlined in **Section 2.2**. The results of this assessment are to be submitted to the NSW Biodiversity, Conservation, Science Division (BCS). The outcomes of this assessment will be considered as a part of the EIS.



F4-1 1993 Historical Imagery

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Garoo

SUGARLOAF CREEK

BULLS ROAD

Liddell to Tamworth

GAROO ROAD

Muswellbrook 330 to Tamworth

TAMARANG CREEK

Legend

- Project Area
- Internal Access Tracks
- Waterbodies
- Major Watercourse
- Minor Watercourse
- Local Road
- Track-Vehicular

Transmission Lines (existing)

- 330kV

Draft Native Vegetation Regulatory (NVR) Map

- Category 1 – Exempt (draft)
- Category 2 - Regulated Land (draft)
- Category 2 - vulnerable regulated land

Source:
Base Data - DCDB/DTDB NSW
Layout: Client Provided

Coordinate System:
GDA2020 MGA Zone 56

Date: 11/12/2024

Created By: IY

Drawing Size: A3

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F4-2 Draft Native Vegetation Regulatory Map 2024

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4.2 MAPPING PLANT COMMUNITY TYPES AND ECOLOGICAL COMMUNITIES

4.2.1 PLANTED VEGETATION

The Project Area was observed to contain patches of planted vegetation. These areas were assessed through rapid vegetation assessment opportunistically during the preliminary site survey.

Non-native plantings were largely identified as Peppercorn (*Schinus molle*), considered an environmental weed in NSW. Other ornamental plantings were observed around the residential dwellings.

Three patches of vegetation were identified as containing native plantings, with tree planting rows and remnant planting socks observed as shown in **Figure 4-3**. These areas will be assessed in accordance with the Streamlined Assessment Module – Planted Native Vegetation (Appendix D of the BAM), and in accordance with the recently released *Streamlined assessment module – planted native vegetation: Biodiversity Assessment Method operational manual* (NSW DCCEEW, 2024) to inform the Project BDAR.

Based on preliminary assessment, one patch is considered to form part of the mapped PCT 599 *Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion*. This patch is present as a mix of planted and remnant native vegetation. Remnant canopy species present include *Eucalyptus albens* and *Angophora floribunda*. The middle stratum also includes *Notolea microcarpa*. This vegetation exists within a disturbed mozaic of PCT 599, to which the aforementioned species form. The patch is dominated by plantings, however, has been assigned to PCT 599 based on the precautionary principal. This patch has been avoided by the Development Footprint

FIGURE 4-3 PLANTED NATIVE VEGETATION WITHIN PROJECT AREA

4.2.2 PLANT COMMUNITY TYPES WITHIN THE PROJECT AREA

Field surveys completed within the Project Area have determined the presence of the following PCT:

- PCT 599 Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion .

A total of 4 BAM plots were completed within PCT 599 in the Project Area and used to determine the vegetation community present.

Details supporting the identification of PCT 599 are included in **Table 4-1** below with vegetation mapping provided in **Figure 4-3**.

TABLE 4-1 PCT 599 BLAKELY'S RED GUM - YELLOW BOX GRASSY TALL WOODLAND ON FLATS AND HILLS IN THE BRIGALOW BELT SOUTH BIOREGION AND NANDEWAR BIOREGION

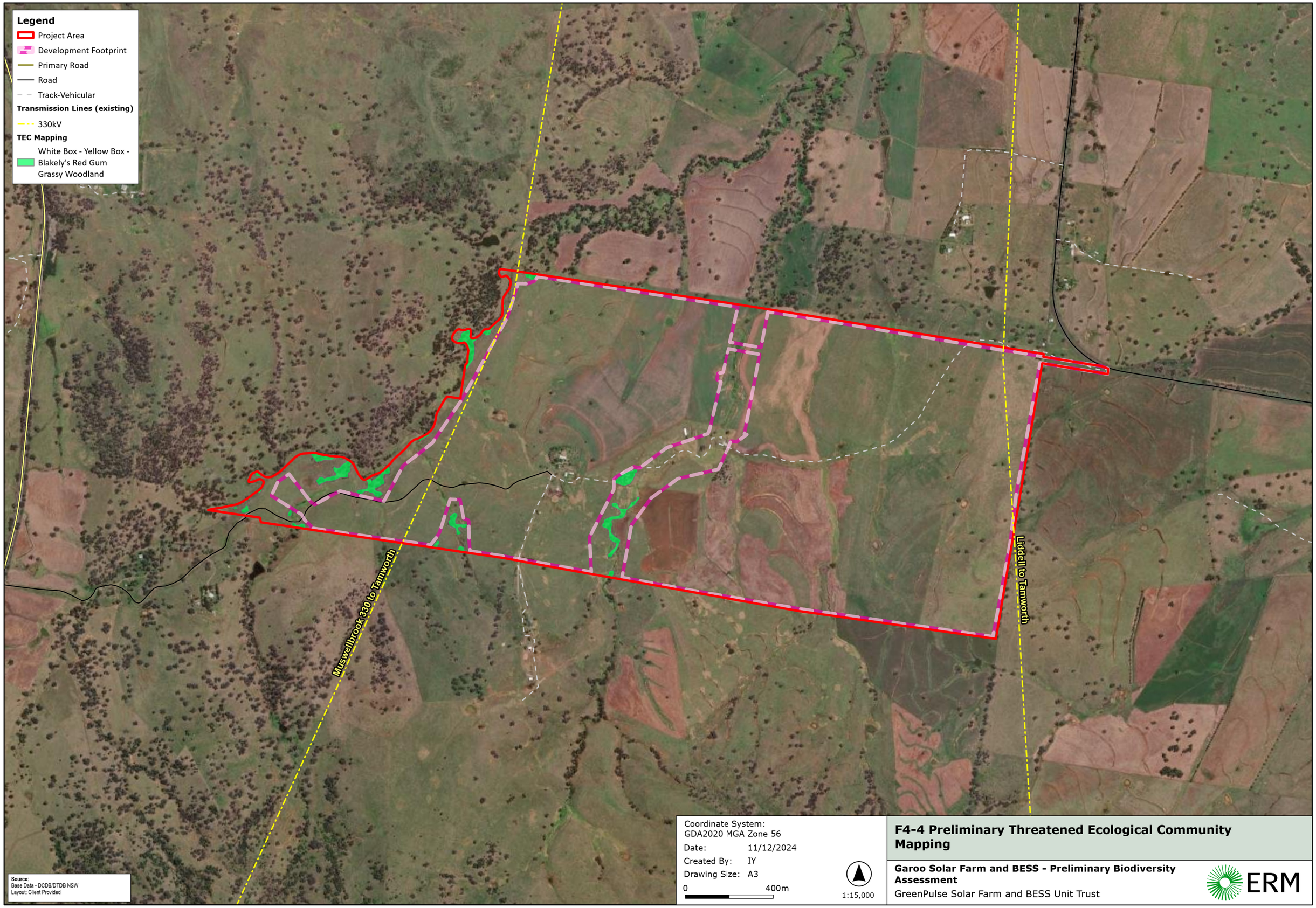
Aspect	Description
PCT ID and Name	599 Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion.
Vegetation Formation	Grassy Woodlands
Vegetation Class	Western Slopes Grassy Woodlands
Cleared Extent	0.8%
Vegetation Description (BioNet)	Tall woodland dominated by Blakelys Red Gum (*Eucalyptus blakelyi*) and Yellow Box (*Eucalyptus melliodora*) often with *Angophora floribubnda* on flats or White Box (*Eucalyptus albens*) on hills. The shrub layer is absent to sparse and includes species such as *Acacia implexa*, *Olearia elliptica subsp. elliptica, Geijera parviflora, Myoporum montanum*, or *Pimelea neo-anglica*. The ground cover is usually mid-dense to dense dominated by grasses and forbs. Grass species include *Aristida personata, Austrostipa verticillata, Themeda australis, Bothriochloa macra or Dichanthium sericeum*. Forb species include *Dichondra repens, Geranium solanderi, Hydrocotyle laxiflora, Rumex brownii, Scutellaria humilis, Hypericum gramineum, Senecio quadridentatus, Haloragis heterophylla, Dianella longifolia var. longifolia* and *Chrysocephalum apiculatum*. The sedges *Cyperus gracilis* or *Carex inversa* may be present along with the climbers *Glycine tabacina* or *Glycine clandestina*. Juncus and other wetland species occur in drainage depressions. Occurs on brown, red to black sandy loam to clay loam soils that may be either alluvial / colluvial or derived from fine-grained sedimentary or metamorphic substrates and sometimes volcanic rocks on valley flats, hillslopes in hills and low hills landform patterns. Widespread in the Nandewar Bioregion and on the eastern edge of the Brigalow Belt South Bioregion. Mostly cleared. Part of the grassy box-gum woodland TSC and EPBC Act listed EECs.

Aspect	Description
Vegetation Description within the Project Area	The PCT presents in four identified vegetation conditions within the Project Area, including open woodland, scattered trees, mixed vegetation, and derived grassland. The dominant canopy species observed across the site were *Eucalyptus albens* and *Angophora floribunda*, often presenting as scattered paddock trees and small remnant patches, with *E.blakelyi, E. melliodora, Callitris glaucophylla,* and *Brachychiton populneaus subsp. populneus* also present. Shrub species were largely absent, where present these included *Notolea macrocarpa* and *Olearia elliptica*. PCT 599 has been selected based on the assemblage of diagnostic species present despite the low prominence of *E.blakelyi* and *E. melliodora* in the landscape. The area has experienced historic grazing and intense agricultural activity and generally presents as disturbed.
Threatened Ecological Communities	EPBC Act and BC Act listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered)
Associated species found within BAM Plots	Species upper stratum: *Angophora floribunda, Eucalyptus albens, Eucalyptus melliodora,* and *Eucalyptus blakelyi* Species middle stratum: *Olearia elliptica subsp. elliptica* Species ground stratum: *Glycine tabacina, Carex inversa, Chrysocephalum apiculatum, Austrostipa verticillata, Bothriochloa decipiens, Geranium solanderi var. solanderi, Oxalis perennans, Chloris ventricosa, Lomandra filiformis subsp. Coriacea, Rumex brownii, Wahlenbergia communis, Urtica incisa, Einadia nutans subsp. Nutans,Asperula conferta* and *Carex incomitata.*

This PCT was found to occur in four distinct vegetation zones within the Project Area:

- Derived Grassland – areas mapped on the Transitional NVR as Regulated Land that do not correspond to the following vegetation zones;
- Scattered Trees – Native paddock trees that constitute the canopy species of PCT 599, considered scattered trees in accordance with section B.1 of the BAM;
- Woodland Formation – Patches of open woodland and scattered trees that do not meet the scattered tree criteria under section B.1 of the BAM; and
- Mixed Vegetation – A patch of vegetation containing a mix of native plantings and remnant diagnostic species for PCT 599.

The Development Footprint has been established avoiding all areas of Woodland Formation and Mixed Vegetation condition states of PCT 599.



Coordinate System:
GDA2020 MGA Zone 56

Date: 11/12/2024

Created By: IY

Drawing Size: A3

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F4-4 Preliminary Threatened Ecological Community Mapping

Garoo Solar Farm and BESS - Preliminary Biodiversity Assessment

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4.3 THREATENED ECOLOGICAL COMMUNITIES

TECs identified through desktop searches including the Protected Matters Search Tool (PMST) (**Appendix A**) and through associated PCTs within the Project Area were reviewed to identify any potential occurrence. The potential TECs considered are provided in **Table 4-2**.

TABLE 4-2 POTENTIAL TECS ACROSS THE PROJECT AREA

TEC	EPBC Act	BC Act	Likelihood to occur within Project Area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland/White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	CE	CE	**Known** – mapped in association with patches of PCT 599.
Weeping Myall Woodlands Endangered	E	E	The TEC is **unlikely** to occur. The Project Area is within the species distribution, however dominant key flora species in this community such as *Acacia pendula* are not present in the Project Area.
New England Peppermint (*Eucalyptus nova-angelica*) Grassy Woodlands, Critically Endangered	E	-	The TEC is **unlikely** to occur. The Project Area is within the distribution however suitable habitat was not present, as the Project Area was not dominated or co dominated by *Eucalyptus nova-anglica* or a *Poa sieberiana* dominated ground layer.
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland, Critically Endangered	CE	-	The TEC is **unlikely** to occur. The Project Area is within the species distribution. However, suitable landform and soils for this community are absent.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is discussed further in **Section 4.3.1**.

4.3.1 WHITE BOX – YELLOW BOX – BLAKELY'S RED GUM GRASSY WOODLAND

The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is listed as Critically Endangered under the EPBC Act and part of the national community is listed in NSW as the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions which is listed as Critically Endangered under the BC Act. The key criteria of the TEC have been assessed against areas of PCT 599 to determine presence within the Project Area. The term 'Box-Gum Woodlands' is used here onward to describe both the EPBC Act and BC Act listed communities.

The community generally presents as an open woodland with a canopy foliage cover of less than 30% consisting of *Eucalyptus albens* (White Box), *Eucalyptus melliodora* (Yellow Box) and/or *Eucalyptus blakelyi* (Blakely's Red Gum) and in some cases the grey boxes *Eucalyptus microcarpa* and *E. moluccana* can occur as co-dominants. A shrub layer is generally absent but can include *Acacia, Bursaria, Cassinia, Hibbertia, Lissanthe* and *Templetonia* species (DCCEEW 2023; NSW TSSC, 2020).

The ground cover is dominated by tussock grasses, especially *Themeda triandra* (Kangaroo Grass) and *Poa sieberiana* (Snow Grass), along with species of *Austrostipa, Aristida, Chloris, Cymbopogon, Dichanthium, Microlaena* and *Rytidosperma*. Between the tussocks there may be bare ground or a range of forbs from genera such as *Bulbine, Chrysocephalum, Dianella, Geranium, Goodenia, Lomandra, Pimelea* and *Stackhousia* (DCCEEW 2023; NSW TSSC, 2020).

The EPBC Act and BC Act listed communities have been assessed against the 5.46 ha of PCT 599 present within the Project Area. To be considered part of the EPBC Act listed TEC, patches must be assessed against the questions presented in **Table 4-3**, as per the field identification guidelines published by DEH, 2006. To be considered part of the BC Act listed TEC, patches must be assessed against the key characteristics present in **Table 4-4**, as per the field identification guidelines published by DECC NSW, 2007.

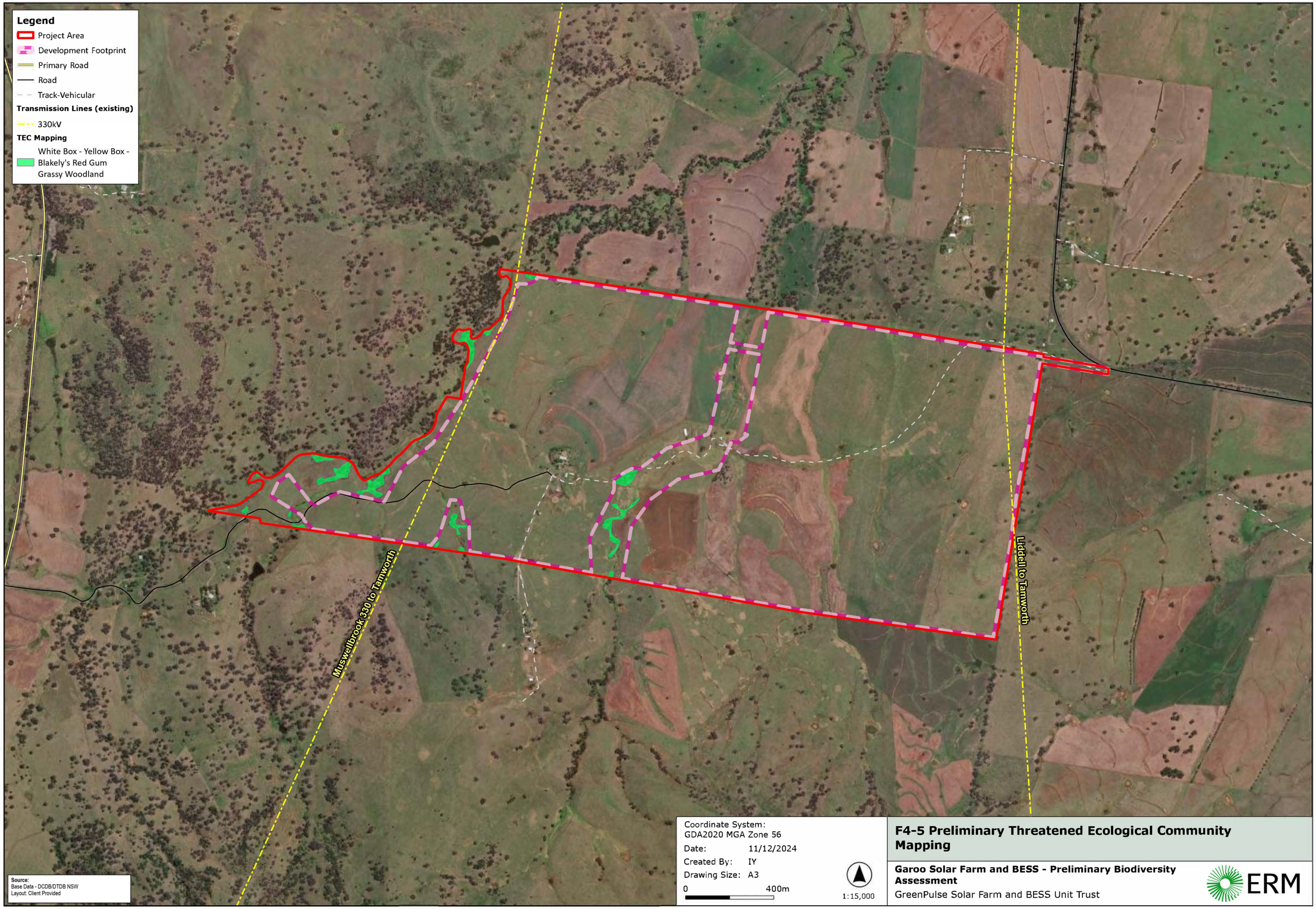
TABLE 4-3 BOX-GUM WOODLAND EPBC ACT TEC ASSESSMENT

Question	Response
Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum?	**Yes** – patches of PCT 599 within the Project Area are dominated or co-dominated by White Box, (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*) and/or Blakely's Red Gum (*Eucalyptus blakelyi*).
Does the patch have a predominately native understorey?	**Yes** – the understorey of patches of PCT 599 are comprised of predominately native species.
Is the patch 0.1 ha or greater in size?	**Yes** – patches of PCT 599 present within the Project Area meet the size criteria for the TEC. There are areas of associated PCT 599 that do not meet this criteria, and therefore were not mapped in association with the TEC.
There are 12 or more native understorey species present (excluding grasses) from the provided list, with at least one important species (Species list attained from: https://www.dcceew.gov.au/sites/default/files/documents/box-gum-species.pdf)	**Yes** - seventeen native understorey species (excluding grasses) from the species list is present and seven are considered important species: *Carex inversa, Dichondra repens, Einadia nutans, Rumex brownii, Geranium solanderi, Urtica incisa, Lomandra multiflora, Cotula Australis, Crassula sieberiana, Erodium crinitum, Acaena novae-zelandiae, Olearia elliptica, Lobelia purpurascens, Lomandra filiformis, Oxalis perennans, Plantago debilis* and *Wahlembergia sp.* Important species: *Desmodium varians*, *Asperula conferta, Zornia dyctiocarpa, Glycine tabacina*, *Hardenbergia violacea, Goodinea pinnatifolia* and *Chrysocephalum apiculatum.*
Determination of Presence	**Present**

TABLE 4-4 BOX-GUM WOODLAND BC ACT TEC ASSESSMENT

Question	Response
Is the site on the tablelands or western slopes of NSW?	Yes – the site is on the tablelands of NSW.
Does the site contain, or would the site have recently been likely to contain, White Box, Yellow Box or Blakely's Red Gum?	Yes – patches of PCT 599 within the Project Area are dominated or co-dominated by White Box, (Eucalyptus albens), Yellow Box (*Eucalyptus melliodora*) and/or Blakely's Red Gum (*Eucalyptus blakelyi*).
Is the ground layer mainly grassy?	Yes – the ground layer of PCT 599 is mainly grassy.
If the site has been degraded, is there potential for assisted natural regeneration of the tree layer or the understorey (e.g. by removing grazing, weeds, etc)?	Yes – the site is subject to grazing and areas mapped associated with the TEC would have potential for regeneration if land use practices changed.
Determination of Presence	**Present**

All areas mapped as PCT 599 on **Figure 4-4** form part of the BC Act listed TEC. Patches that correspond with the EPBC Act listed TEC have been avoided by the Development Footprint, and are presented in **Figure 4-5.**



Coordinate System:
GDA2020 MGA Zone 56

Date: 11/12/2024

Created By: IY

Drawing Size: A3

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F4-5 Preliminary Threatened Ecological Community Mapping

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5. LISTED SPECIES

The following sections identify the ecosystem credit species, species credit species and dual credit species as well as species listed under the EPBC Act and additional species relevant to the Project Area as identified through threatened species records.

No threatened and/or migratory flora or fauna species were detected during the field survey.

5.1 PRELIMINARY ECOSYSTEM SPECIES

Ecosystem credit species, also referred to as 'predicted species' are threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. The TBDC identifies the threatened species assessed for ecosystem credits. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.

The ecosystem credit species predicted to occur on or use areas of PCT 599 within the Project Area as advised by the BAM-C are listed in **Table 5-1**. Two ecosystem credit species have been excluded from further assessment due to habitat constraints.

TABLE 5-1 PRELIMINARY ECOSYSTEM SPECIES

Scientific Name	Common Name	BC Act	EPBC Act	Species retained
Anthochaera phrygia	Regent Honeyeater	CE	CE	Yes
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	Yes
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	No
Chalinolobus picatus	Little Pied Bat	V	-	Yes
Chthonicola sagittata	Speckled Warbler	V	-	Yes
Circus assimilis	Spotted Harrier	V	-	Yes
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	Yes
Daphoenositta chrysoptera	Varied Sittella	V	-	Yes
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Yes
Falco subniger	Black Falcon	V	-	Yes
Glossopsitta pusilla	Little Lorikeet	V	-	Yes
Grantiella picta	Painted Honeyeater	V	V	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	Yes
Hieraaetus morphnoides	Little Eagle	V	-	Yes
Hirundapus caudacutus	White-throated Needletail	-	V	Yes
Lathamus discolor	Swift Parrot	E	CE	Yes
Lophoictinia isura	Square-tailed Kite	V	-	Yes
Macropus dorsalis	Black-striped Wallaby	E	E	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Species retained
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	E	Yes
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)			Yes
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Yes
Neophema pulchella	Turquoise Parrot	V	-	Yes
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Yes
Petroica boodang	Scarlet Robin	V	-	Yes
Petroica phoenicea	Flame Robin	V	-	Yes
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	V	Yes
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Yes
Stagonopleura guttata	Diamond Firetail	V	V	Yes

5.2 PRELIMINARY CANDITATE SPECIES

'Species credit species', also referred to as 'candidate species', are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence. These species are identified in the TBDC. A targeted survey or an expert report is required to confirm the presence or absence of these species within areas of direct and indirect impacts when completing a BDAR. Alternatively, for a development, activity, clearing or biodiversity certification proposal only, the Applicant may elect to assume the species is present.

Review of the BAM-C provided a list of candidate species applicable to the Project area and are listed in **Table 5-2**. Where the Project Area does not meet the TBDC listed geographic or habitat requirement for a species, the species has been excluded from the candidate species list.

This Candidate Species list will form the basis for the preparation of the Project BDAR where required. Surveys as required under the BAM will be completed for all retained candidate species using 'in force' guidance available at the time of preparing this PBA.

TABLE 5-2 PRELIMINARY CANDIDATE SPECIES LIST

Scientific Name	Common Name	BC Act	EPBC Act	Recommended Survey Period	Retained for Further Assessment
Acacia atrox	Myall Creek Wattle	CE	-	Year round	Yes
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	September, October, November	Yes
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo (Breeding)	V	V	January, February, March, April, May, June, July, August, September.	Yes
Cercartetus nanus	Eastern Pygmy-possum	V	-	January, February, March, October, November, December.	Yes
Dichanthium setosum	Bluegrass	V	V	January, February, March, April, May, November, December	Yes
Hoplocephalus bitorquatus	Pale-headed Snake	V	-	January, February, March, November, December	Yes
Litoria booroolongensis	Booroolong Frog	E	E	October, November, December.	Yes
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	January, February, December.	Yes
Burhinus grallarius	Bush Stone-curlew	E	-	Year round	Yes
Ninox connivens	Barking Owl	V	-	January, February, March, April, May, June, July, August.	Yes
Petaurus norfolcensis	Squirrel Glider	V	-	Year round	Yes
Phascolarctos cinereus	Koala	E	E	Year round	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Recommended Survey Period	Retained for Further Assessment
Adelotus brevis - endangered population	Tusked Frog population in the Nandewar and New England Tableland Bioregions	EP	-	January, February, October, November, December	Yes
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	-	CE	September, October	Yes
Swainsona sericea	Silky Swainson-pea	V	-	September, October, November	Yes
Tylophora linearis	Tylophora linearis	V	E	January, February, March, April, May, October, November, December.	Yes
Tyto novaehollandiae	Masked Owl	V	-	January, February, March, April, May, June, July, August.	Yes
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V	V	January, February, March, November, December.	Yes
Vespadelus troughtoni	Eastern Cave Bat	V	-	January, November, December.	Yes
Euphrasia arguta	Euphrasia arguta	CE	CE	January, February, March, November, December	Yes
Digitaria porrecta	Finger Panic Grass	E	-	January, February	Yes
Callistemon pungen	Callistemon pungens	-	V	January, February, September. October, November, December	Yes
Thesium australe	Austral Toadflax	V	V	January, February, November, December	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Recommended Survey Period	Retained for Further Assessment
Picris evae	Hawkweed	V	V	January, February, November, December	Yes
Homopholis belsonii	Belson's Panic	E	V	January, February, March, April, December	Yes
Anthochaera phrygia	Regent Honeyeater	CE	CE	Year round	No
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	January, November, December	No
Haliaeetus leucogaster	White-bellied Sea-eagle	-	V	July, August, September, October, November, December	No
Hieraaetus morphnoides	Little Eagle (Breeding)	V	-	August, September, October	No
Lathamus discolor	Swift Parrot	E	CE	Year round	No
Lophoictinia isura	Square-tailed Kite (Breeding)	V	-	January, September, October, November, December	No
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)	V	V	October, November, December	No

5.2.1 HABITAT SUITABILITY

The preliminary survey event assessed the suitability of habitat features present for Candidate species. Where a TBDC habitat constraint is absent from a site, the associated candidate species can be excluded from assessment under the BAM.

Several hollows were observed across the Project Area, within scattered paddock trees and woodland patches. Hollows observed were suitable for use by hollow-dependent fauna species including parrots, cockatoos, owls and gliders.

Large stick nests suitable for candidate raptor species (Little Eagle, Square-tailed Kite and White-bellied Sea-eagle) were searched for at each scattered tree, and within patches of vegetation. No suitable nests were observed within the Project Area.

Rocky outcrops observed within Project Area have suitable loose rocks to support the Pink-tailed Legless Lizard (*Aprasia parapulchella*).

One candidate species, the Large Bent-winged Bat (*Miniopterus orianae oceanensis*), has been assumed unlikely to occur due to lack of suitable habitat present within the Project Area. This species relies on the presence cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding. Within the Project Area, such features were found to be absent.

Woodland areas were observed to contain suitable level of fallen/standing dead timber and logs to provide habitat for the Bush Stone-curlew (*Burhinus grallarius*), however this is absent from patches of planted vegetation. This habitat has been avoided by the Development Footprint.

Tamarang Creek was observed to be flowing with fringing vegetation present, constituting suitable habitat for the Booroolong Frog (*litoria booroolongensis*). The present creeklines and mapped farm dams also have potential to provide suitable habitat for the Tusked Frog (*Adelotus brevis*). Subsequently, surveys for these amphibian species were undertaken in October 2024, with no individuals observed.

Searches for Grey-headed Flying-fox (*Pteropus poliocephalus*) were undertaken, with no camps or individuals observed.

5.2.2 EXCLUDED SPECIES

Eight (8) candidate species have been excluded from the assessment across the Project Area. Exclusion from assessment is appropriate when one or more of the following factors is relevant to the species:

- Disturbance;
- Vagrancy;
- Geographical limitations; and/or
- Absence of habitat constraints.

Several listed species can be further excluded due to the absence of Important Habitat Maps where these are provided by the department, and through the preparation of an expert report. All species excluded from further assessment for the Project are listed in **Table 5-3** below.

TABLE 5-3 SPECIES EXCLUDED FROM FURTHER ASSESSMENT

Scientific Name	Common Name	Factor
Anthochaera phrygia	Regent Honeyeater	No Important Habitat Mapping present.
Chalinolobus dwyeri	Large-eared Pied Bat	Listed habitat constraint, site is not within 2km of rocky areas containing caves, overhangs, outcrops or crevices.
Haliaeetus leucogaster	White-bellied Sea-eagle	Listed habitat constraint, no living or dead mature trees within suitable habitat now suitable nest trees present.
Hieraaetus morphnoides	Little Eagle (Breeding)	Listed habitat constraint, no suitable nest trees identified.

Scientific Name	Common Name	Factor
Lathamus discolor	Swift Parrot	Listed habitat constraint, no Important Habitat Mapping present.
Lophoictinia isura	Square-tailed Kite (Breeding)	Listed habitat constraint, no suitable nest trees identified.
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)	Listed habitat constraints, no breeding camps identified.

5.3 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

5.3.1 THREATENED SPECIES

Review of the PMST (**Appendix A**) identified twenty-five (25) EPBC Act threatened species with the potential to occur within the refined Development Footprint.

A likelihood of occurrence assessment was conducted for these entities. The results are included in **Table 5-4** below.

TABLE 5-4 PROTECTED MATTER SEARCH TOOL THREATENED SPECIES

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Birds			
Anthochaera phrygia	Regent Honeyeater	CE	**Unlikely** The Development Footprint is within the species distribution, however there is a lack of records in the locality and the suitable habitat of woodlands and forest are not present.
Aphelocephala leucopsis	Southern Whiteface	V	**Unlikely** The Disturbance Footprint is within the species distribution. There is a lack of records in the locality and an absence of suitable woodland habitat.
Apus pacificus	Fork-tailed Swift	Mi	**Unlikely** The Development Footprint is within the species distribution. Limited habitat is present for the species and there is a lack of records in the locality.
Botaurus poiciloptilus	Australasian Bittern	E	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present in the Development Footprint.
Calidris acuminata	Sharp-tailed Sandpiper	V, Mi	**Unlikely** There are no records within the locality and the Development Footprint is outside of the species distribution.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Calidris ferruginea	Curlew Sandpiper	CE, Mi	**Unlikely** There are no records within the locality and the Development Footprint is outside the species distribution.
Callocephalon fimbriatum	Gang-gang Cockatoo	E	**Unlikely** There are no records in the locality, however the Development Footprint is within the species distribution. Areas of suitable habitat are not present.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	**Potential** There is a lack of records in the locality, however the Development Footprint is within the species distribution. Foraging habitat is absent, however hollow bearing scattered trees present across the site may provide breeding habitat.
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present in the Development Footprint.
Erythrotriorchis radiatus	Red Goshawk	E	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Falco hypoleucos	Grey Falcon	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	V, Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Grantiella picta	Painted Honeyeater	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat containing mistletoe are not present in the Development Footprint.
Hirundapus caudacutus	White-throated Needletail	V, Mi	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present in the form of farmland.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Lathamus discolor	Swift Parrot	CE	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat and feed trees are present on site, such as White Box (*E. albens).*
Melanodryas cucullate cucullata	South-eastern Hooded Robin, Hooded Robin (south-eastern)	E	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Suitable habitat is not present.
Neophema chrysostoma	Blue-winged Parrot	E	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site such as grasslands.
Polytelis swainsonii	Superb Parrot	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Rostratula australis	Australian Painted Snipe	E	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site in the form of farm dams.
Stagonopleura guttata	Diamond Firetail	V	**Likely** There are records found within the locality and the Development Footprint falls within the species distribution. Areas of suitable habitat are also present on site, such as farmland and grassland with scattered trees.
Fish			
Maccullochella peelii	Murray Cod	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution. Suitable habitat does not exist in the Development Footprint.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Frogs			
Litoria booroolongensis	Booroolong Frog	E	**Likely** There are records found within the locality and the Development Footprint falls within the species distribution. Areas if suitable habitat are also present on site, such as a permanent stream with some fringing vegetation; and rock structures within stream margins associated with creeklines.
Litoria daviesae	Davies' Tree Frog	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site in the form of slow-flowing small streams above 400m elevation.
Mammals			
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	E	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.
Dasyurus maculatus	Spotted-tailed Quoll	E	**Potential** There are records found within the locality, and the Development Footprint falls within the species distribution. This highly mobile species has potential to traverse the site.
Notamacropus parma	Parma Wallaby	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Nyctophilus corbeni	Corben's Long-eared Bat, South-eastern Long-eared Bat	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. The species may occur within the limited habitat available within the site.
Petauroides volans	Greater Glider (southern and central)	E	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas with suitable habitat traits are present in the form of hollows of preferred dimensions, however the habitat is present as scattered trees in an open landscape, disconnected from patches by >100m.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
			Therefore, the habitat is considered unsuitable.
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.
Phascolarctos cinereus	Koala	E	**Likely** There are records found within the locality and the Development Footprint falls within the species distribution. Within this region the Koalas preferred feed trees include *Eucalyptus Albens* and *Angophora floribunda,* which are found throughout the Development footprint as scattered trees.
Pseudomys novaehollandiae	New Holland Mouse, Pookila	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.
Pteropus poliocephalus	Grey-headed Flying-fox	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable foraging habitat is present in the form of scattered Eucalyptus and Angophora species.
Flora			
Cadellia pentastylis	Ooline	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.
Dichanthium setosum	Bluegrass	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site, such as cleared woodland, grassy roadside remnants and highly disturbed pasture.
Eucalyptus nicholii	Narrow-leaved Peppermint, Narrow-leaved Black Peppermint	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.
Euphrasia arguta	-	CE	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Haloragis exalata subsp. Velutina	Tall Velvet Sea-berry	V	**Potential** No records within the Locality, however suitable habitat is present, such as damp places near watercourses.
Lepidium aschersonii	Spiny Peppercress	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Lepidium monoplocoides	Winged Pepper-cress	E	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Pomaderris brunnea	Rufous Pomaderris, Brown Pomaderris	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Prasophyllum sp. Wybong (C.Phelps ORG 5269)	a leek-orchid	CE	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site in the form of grassland.
Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea	V	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Thesium australe	Austral Toadflax, Toadflax	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site in the form of grassland.
Tylophora linearis	null	E	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Suitable habitat in the form of forest, woodland or scrub are not present within the Development Footprint.
Reptiles			
Anomalopus mackayi	Five-clawed Worm-skink, Long-legged Worm-skink	E	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.

Scientific Name	Common Name	EPBC Status	Likelihood to occur within Development Footprint
Aprasia parapulchella	Pink-tailed Legless Lizard	V	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present on site, such as grassy ground layers and rocky areas.
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V	**Unlikely** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are not present.

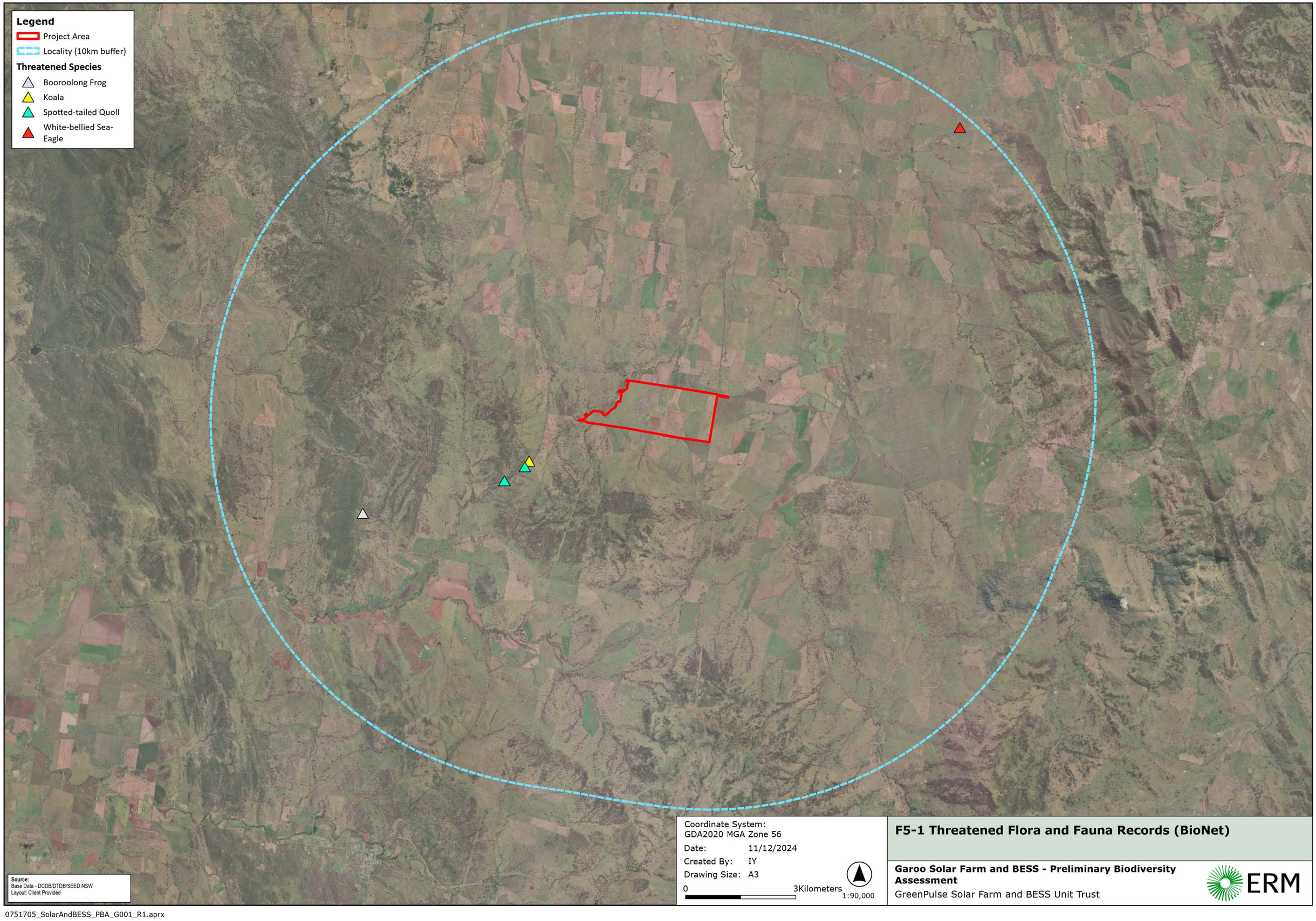
5.3.2 MIGRATORY SPECIES

The PMST search (**Appendix A**) identified 11 EPBC Act listed migratory species with potential to occur within the Development Footprint, these species are assessed in **Table 5-5**. Four of these species have been assessed above as they are also listed threatened species. No migratory species are found to be likely to occur within the Development Footprint.

TABLE 5-5 PROTECTED MATTER SEARCH TOOL MIGRATORY SPECIES

Common Name	Scientific Name	EPBC Act	Likelihood to occur within Development Footprint
Actitis hypoleucos	Common Sandpiper	Mi	**Unlikely** The Development Footprint is within the species distribution, however there is a lack of records in the locality and no suitable habitat is present.
Apus pacificus	Fork-tailed Swift	Mi	**Unlikely** The Development Footprint is within the species distribution. Limited habitat is present for the species and there is a lack of records in the locality.
Calidris acuminata	Sharp-tailed Sandpiper	V, Mi	**Unlikely** There are no records within the locality and the Development Footprint is outside of the species distribution.
Calidris ferruginea	Curlew Sandpiper	CE, Mi	**Unlikely** There are no records within the locality and the Development Footprint is outside the species distribution.
Calidris melanotos	Pectoral Sandpiper	Mi	**Unlikely** There are no records within the locality and the Development Footprint is outside the species distribution.
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	V, Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.

Common Name	Scientific Name	EPBC Act	Likelihood to occur within Development Footprint
Hirundapus caudacutus	White-throated Needletail	V, Mi	**Potential** No records within the Locality, however the Development Footprint falls within the species distribution. Areas of suitable habitat are present in the form of farmland.
Monarcha melanopsis	Black-faced Monarch	Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Motacilla flava	Yellow Wagtail	Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Myiagra cyanoleuca	Satin Flycatcher	Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.
Rhipidura rufifrons	Rufous Fantail	Mi	**Unlikely** No records within the locality and the Development Footprint is outside of its distribution.



Coordinate System:
GDA2020 MGA Zone 56

Date: 11/12/2024

Created By: IY

Drawing Size: A3

0 3Kilometers

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F5-1 Threatened Flora and Fauna Records (BioNet)

Garoo Solar Farm and BESS - Preliminary Biodiversity Assessment

GreenPulse Solar Farm and BESS Unit Trust

ERM

0751705_SolarAndBESS_PBA_G001_R1.aprx

6. IDENTIFYING PRESCRIBED IMPACTS

Prescribed impacts are identified in Clause 6.1 of the BC Regulation. Prescribed impacts are defined as those that are additional to the clearing of native vegetation and associated habitat. These include:

- Management of the habitat of threatened species or ecological communities associated with:
  - Karst, caves, crevices, cliffs, rock outcrops and other geographical features of significance;
  - Human-made structures; and
  - Non-native vegetation.
- Management of areas connecting threatened species habitat, such as movement corridors;
- Management of water quality, water bodies and hydrological processes that sustain threatened species and TECs (including from subsidence or subsidence from underground mining);
- Wind turbine strikes on protected fauna; and
- Vehicle strikes on threatened species or fauna that comprise part of a TEC.

The BAM does not provide assessment approach to determine the number and class of biodiversity credits that are required for a prescribed impact. However, prescribed impacts to biodiversity may be considered by the relevant consent authority when determining the biodiversity credits generated on a Biodiversity Stewardship Site.

Prescribed impacts must also be considered for areas mapped as Category-1 – Exempt Land.

TABLE 6-1 PRESCRIBED IMPACTS

Feature	Present	Description of Feature Characteristics and Location	Threatened Entities that use, are likely to use, or are part of the habitat feature
Karst, caves, crevices, cliffs, rocks, or other geological features of significance	☐Yes ☒No	There are no karst, caves, crevices, cliffs or other geological features of significance for threatened species or threatened communities within the Project Area.	N/A
Human-made structures	☒Yes ☐No	The Project Area includes human-made structures such as a dwelling, multiple sheds and livestock yards.	Threatened fauna species, such as microbats, have potential to utilise human made structures.
Non-native vegetation	☒Yes ☐No	Areas of non-native vegetation have been mapped associated with cropped land and non-native grassland across a large portion of the Project Area	Foraging habitat for threatened fauna, and potential habitat for threatened flora that exist in disturbed/non-native vegetation e.g. *Dicathium setosum*

Feature	Present	Description of Feature Characteristics and Location	Threatened Entities that use, are likely to use, or are part of the habitat feature
Habitat connectivity	☒Yes ☐No	There is limited connectivity present across the Project Area, largely restricted to the riparian vegetation along Sugarloaf Creek. The Project Area is dominated by open grazing land, with scattered paddock trees and isolated woodland patches.	Threatened fauna species have potential to utilise connectivity along Sugarloaf Creek.
Waterbodies, water quality and hydrological processes	☒Yes ☐No	Two creek lines intercept the Project Area, Sugarloaf Creek and Tamarang Creek. Farm dams are also present.	Creek lines and farm dams have potential to provide habitat for listed fauna, including threatened amphibian species.
Wind turbine strikes	☐Yes ☒No	There are no current or proposed wind turbines associated with this development.	N/A
Vehicle strikes	☒Yes ☐No	An increase in vehicle activity during construction and operation of the Project has the potential to result in an increase in vehicle strikes to threatened fauna	Increase in vehicle strikes to threatened fauna present on site and fauna associated with present TEC.

7. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Review of the PMST was conducted on 16 October 2024 (**Appendix A**). This review determined the Matters of National Environmental Significance (MNES) with relevance to the Project Area, provided in **Table 7-1** below.

TABLE 7-1 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

MNES	Relevance to the Project Area
World Heritage Properties	No World Heritage Properties are mapped within or are adjacent to the Project Area.
National Heritage Places	No National Heritage Places are mapped within or are adjacent to the Project Area.
Wetlands of International Importance (Ramsar Wetlands)	The PMST identified three (3) Ramsar Wetlands: • Banrock station wetland complex; • Riverland; and • The Coorong, and lakes Alexandrina and albert wetland. The Project Area is between 900-1200km upstream from each Ramsar site. There are not expected to be any direct impacts to these water bodies, however, impacts to local water quality from the construction of the proposed development should be avoided and/or sufficiently mitigated.
Listed TECs	The PMST identified four TECs with the potential to occur within the Project Area. These are listed below: • Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland, Critically Endangered; • New England Peppermint (Eucalyptus nova-angelica) Grassy Woodlands, Critically Endangered; • Weeping Myall Woodlands Endangered; and • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, Critically Endangered. Based on field survey results, one EPBC Act listed TEC is confirmed to be present within the Project Area: • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, Critically Endangered. This TEC has been avoided and is not present within the Development Footprint.
Listed Threatened Species	The PMST identified forty-six species listed as threatened under the EPBC Act that may be present within the Project Area. A likelihood of occurrence was undertaken for these species, considering the refined Development Footprint, with three (3) species considered likely to occur within the limited habitat present: • Booroolong Frog (*Litoria booroolongensis*), Endangered • Diamond Firetail (*Stagonopleura guttata*), Vulnerable • Koala (*Phascolarctos cinereus*), Endangered A further 14 are considered to have the potential to occur.

MNES	Relevance to the Project Area
Listed Migratory Species	The PMST identified 11 migratory species listed under the EPBC Act that may be present within the Project Area. Based on the LoO assessment against the Development Footprint, no EPBC Act listed migratory species are considered known or likely to occur. One species has the potential to occur within the Development Footprint, the White-throated Needletail (*Hirundapus caudacutus*).
Great Barrier Reef Marine Park	Not applicable.
Oher Matters Protected by the EPBC Act	The PMST identified two (2) Commonwealth Lands (Australian Telecommunications Commission [12949]/ [12948]) within the buffer area.

Under the EPBC Act, projects that are expected to have a significant impact on MNES are required to refer the proposed action to the Commonwealth Minister for the Environment and Water. This process involves a formal assessment and determination by the Minister. If the minister determines that the proposed action is likely to have a significant impact on MNES then the action is deemed to be controlled action under the EPBC Act.

NSW maintains a bilateral agreement with the Australian Government with regards to biodiversity. This agreement aims to establish a consistent framework for environmental assessment and approvals. This agreement allows accredited assessors in NSW to conduct assessments and approvals for state significant development projects in line with state and federal standards.

8. NEXT STEPS

The Project SEARs are likely to require the preparation of a BDAR. This will require completion of Stage 1 and Stage 2 of the BAM. The following sections provide a general outline of the future scope of these works.

8.1 STAGE 1 OF THE BAM

Stage 1 of the BAM requires that additional survey periods be completed to inform the Project BDAR. At this stage of the Project, ERM has conducted the initial site surveys in September of 2024. Additional targeted surveys are to be completed in order to meet the anticipated requirements in accordance with the BAM. The Project BDAR will document the methods and results of these survey efforts and how they adhere to the relevant survey guidelines.

The relevant survey guidelines include:

- Threatened Reptiles Biodiversity Assessment Method Survey Guide (DPE, 2022);
- Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide (DPE 2022);
- 'Species credit' threatened bats and their habitats, NSW survey guide for the Biodiversity Assessment Method (OEH, 2018);
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft) (Department of Environment and Conservation (DEC), 2004);
- Survey Guidelines for Australia's Threatened Mammals (Department of Sustainability, Environment, Water, Population & Communities (DSWP&C), 2011);
- NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE, 2020b); and
- Surveying Threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPIE, 2020c).

Remaining investigations include the following:

- Obtaining of additional BAM plot data for delineated vegetation zones;
- Further assessment of planted native vegetation in accordance with the relevant streamlined assessment module; and
- Targeted surveys for candidate and EPBC Act listed species.

8.2 STAGE 2 OF THE BAM

Application of Stage 2 of the BAM aims to determine how the Project will meet the "No Net Loss" standard required by the NSW BC Act. This calculation depends on the extent of biodiversity values being impacted, whether the impact is direct, indirect, or prescribed. These impacts are to be assessed following application of the mitigation hierarchy (avoid, minimise, mitigate), therefore, allowing for the quantification of residual impacts.

The BAM is subsequently used to calculate the offset liability of the Project in units referred to as biodiversity credits. A BOS will be defined to demonstrate how this offset is to be delivered, this defines the "No Net Loss" for the proposed Project.

8.2.1 APPLICATION OF THE MITIGATION HIERARCHY

This PBA has identified the biodiversity constraints on the proposed Garoo Solar Farm and BESS that will require consideration and application of the mitigation hierarchy. All impacts to threatened species and native vegetation should be avoided as a priority. The following points are to be considered in the application of the mitigation hierarchy:

Avoid

- Avoid areas of mapped TECs;
- Avoid areas along Tamarang Creek and Sugarloaf Creek;
- Avoid areas of mapped native vegetation (PCT 599); and
- Avoid areas with identified biodiversity values such as habitat features (including but not limited to, hollow bearing trees).

Minimise

- Minimise the risk for weed and pest incursion within the Project Area; and
- Minimise the risk of injury to fauna.

Mitigate

- Mitigate any residual impacts to biodiversity. This should be achieved through conservation and improvement of existing native vegetation on the Project Area.

8.2.2 OFFSET STRATEGY

If deemed to be required after assessment, an offset strategy would need to demonstrate a "No Net Loss" outcome. This could comprise of the following:

- Retirement of suitable ecosystem and species credits registered in the Biodiversity Offsets Scheme;
- Contribution to a conservation initiative; and/or
- Implementation of a voluntary planning agreement.

The Minister may also consider Ancillary Rules in lieu of retiring biodiversity credits as well as any additional and appropriate measures that will minimize those impacts if consent or approval is to be granted for impacts on entities at risk of serious and irreversible impacts (s7.16(3) of the BC Act).

8.3 PREPARATION OF A BDAR

A BDAR is to be prepared in accordance with the provisions of the BAM to support the Project EIS and will have regard for the PCTs and BAM-C generated Candidate species identified in this PBA. This is to be used to assess the impacts of the Project on assessable biodiversity values. The Project BDAR will contain the survey methods and results, an assessment of impacts associated with the Project. It will also outline the offset strategy for any residual impacts as a result of the Project.

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APPENDIX A PMST RESULTS

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 20-Sep-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	46
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	1000 - 1100km upstream from Ramsar site	In feature area
Riverland	900 - 1000km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1100 - 1200km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.			
Community Name	Threatened Category	Presence Text	Buffer Status
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area	In feature area
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community may occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area	In buffer area only
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Grantiella picta](#)			
Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Hirundapus caudacutus](#)			
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Lathamus discolor](#)			
Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Melanodryas cucullata cucullata](#)			
South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
[Neophema chrysostoma](#)			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
[Polytelis swainsonii](#)			
Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
[Rostratula australis](#)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Stagonopleura guttata](#)			
Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
[Maccullochella peelii](#)			
Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only
FROG			
[Litoria booroolongensis](#)			
Booroolong Frog [1844]	Endangered	Species or species habitat known to occur within area	In feature area
[Litoria daviesae](#)			
Davies' Tree Frog [78964]	Vulnerable	Species or species habitat may occur within area	In buffer area only
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Cadellia pentastylis			
Ooline [9828]	Vulnerable	Species or species habitat may occur within area	In feature area
Dichanthium setosum			
bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus nicholii Narrow-leaved Peppermint, Narrow-leaved Black Peppermint [20992]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Haloragis exalata subsp. velutina Tall Velvet Sea-berry [16839]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In buffer area only
Pomaderris brunnea Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat may occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Uvidicolus sphyrurus			
Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [12949]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [12948]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Hills of Gold Wind Farm	2019/8535		Assessment	In buffer area only

Not controlled action

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX D AHIMS SEARCH RESULTS

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 0751705 - NE Solar Farm

Client Service ID : 943297

ERM Brisbane

Level 1 60 Leichhardt St
Spring Hill Queensland 4000

Attention: Mia Linton-Smith

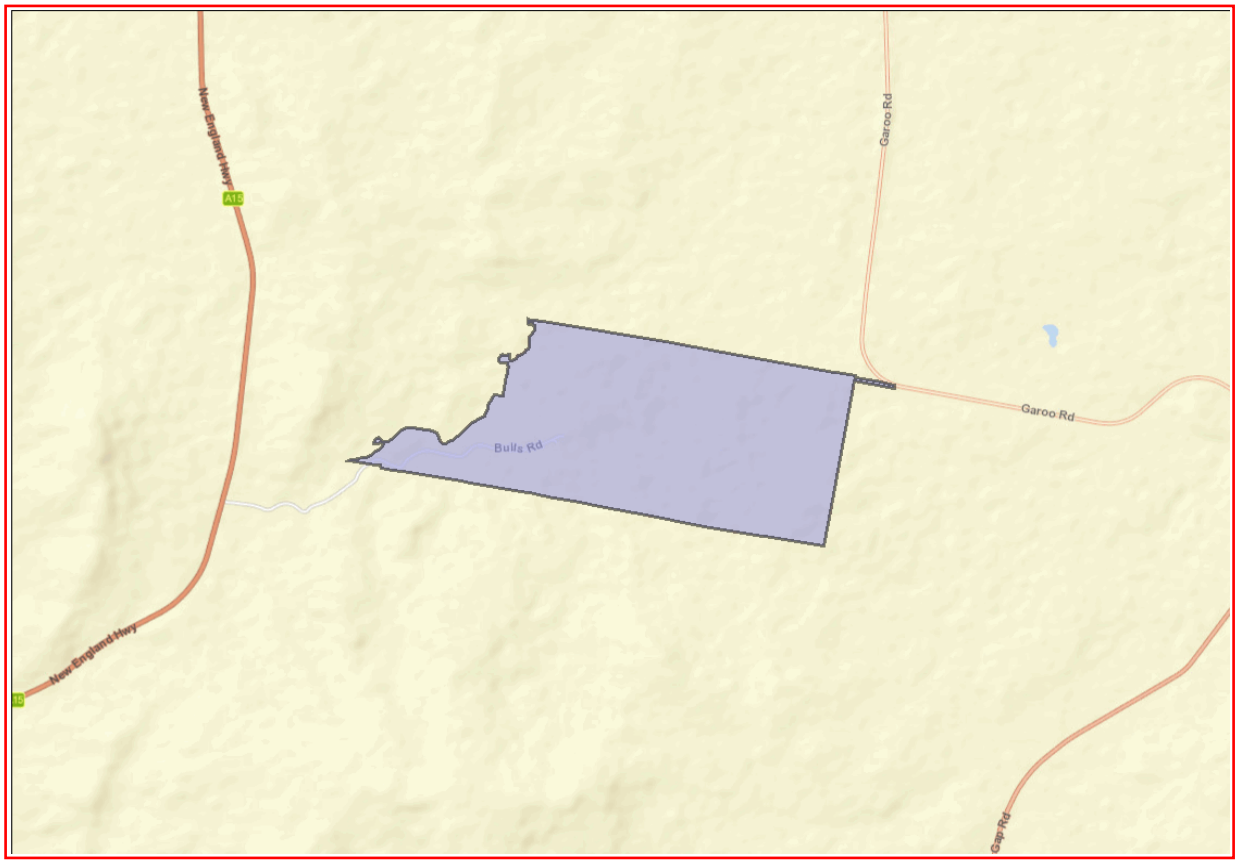
Email: mia.linton-smith@erm.com

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Search using shape-file Project Boundary 20241015 with a buffer of 0 meters. Additional Info : Due Diligence, conducted by Mia Linton-Smith on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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APPENDIX E PRELIMINARY SOCIAL IMPACT ASSESSMENT, ERM, 2024

Garoo Solar Farm and BESS

Preliminary Social Impact Assessment

PREPARED FOR
GreenPulse Solar Farm and BESS Unit Trust

DATE
17 December 2024

REFERENCE
0751705

DOCUMENT DETAILS

DOCUMENT TITLE	Garoo Solar Farm and BESS
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AUTHOR	Hilton Penfold, Paula Saad
CLIENT NAME	GreenPulse Solar Farm and BESS Unit Trust

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
01	01	Hilton Penfold	Paula Saad	Lucy Baker	13.12.2024	Draft for comment
01	01	Hilton Penfold	Paula Saad	Lucy Baker	17.12.2024	Final

SIGNATURE PAGE

Garoo Solar Farm and BESS

Preliminary Social Impact Assessment

0751705

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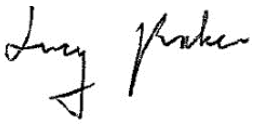
Paula Saad
Principal Consultant

Sophie Butcher
Principal Consultant



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CONTENTS

LIST OF TABLES

LIST OF FIGURES

Acronyms and Abbreviations

Acronym	Description
ABS	Australian Bureau of Statistics
EIS	Environmental Impact Assessment
IRSAD	Index of Relative Socioeconomic Advantage and Disadvantage
LGA	Local Government Area
LSPS	Local Strategic Planning Statement
NSW	New South Wales
SA1	Statistical Area Level 1
SAL	Suburbs and Localities
SEARs	Secretary's Environmental Assessment Requirements
SEIFA	Socio-Economic Indexes for Areas
SIA	Social Impact Assessment
UCL	Urban Centre and Localities
9ABC	description or meaning

1. PRELIMINARY SOCIAL IMPACT ASSESSMENT

1.1 EXISTING ENVIRONMENT

The Project site is located approximately 380 km from Sydney and 40 km south of Tamworth town near the southern boundary of Tamworth Regional Local Government Area (LGA) and adjacent to Liverpool Plains LGA. The Project site is mainly accessible via New England Highway and secondary roads including Lindsays Gap Road and Garoo Road.

Tamworth is the main urban centre that is likely to provide goods and services (including accommodating workers) to support the construction and operation (e.g., ongoing maintenance) phases of the Project. Due to their proximity, Werris Creek, Quirindi, Wallabadah and Nundle Urban Centre and Localities (UCLs) will provide additional support during the Construction and Operation phases of the Project.

Based on the above, the Project Social Locality, as defined for the purposes of the Social Impact Assessment (SIA), was determined to comprise the following three components:

- The **Project Area and immediate surrounding areas** are represented by the Australian Bureau of Statistics (ABS) Statistical Area Level 1 (SA1) Nos. 11004120544 (containing the Project), SA1 11004120116 (adjacent to Project Area to the West), and SA1 11004120114 (adjacent to Project Area to the South). SA1 data has been used to identify key socio-economic baseline indicators for the Project Area and immediate surrounding areas, where applicable.
- The possible **transportation and haulage routes** to the Project Area includes the road network along the New England Highway via Lindsays Gap Road and Garoo Road; and
- The **surrounding towns and regional centres** of Tamworth, Quirindi, Werris Creek, Wallabadah, and Nundle will likely provide goods and services to support the Construction and Operation phase of the Project. ABS UCLs provide baseline data for these towns and regional centres.

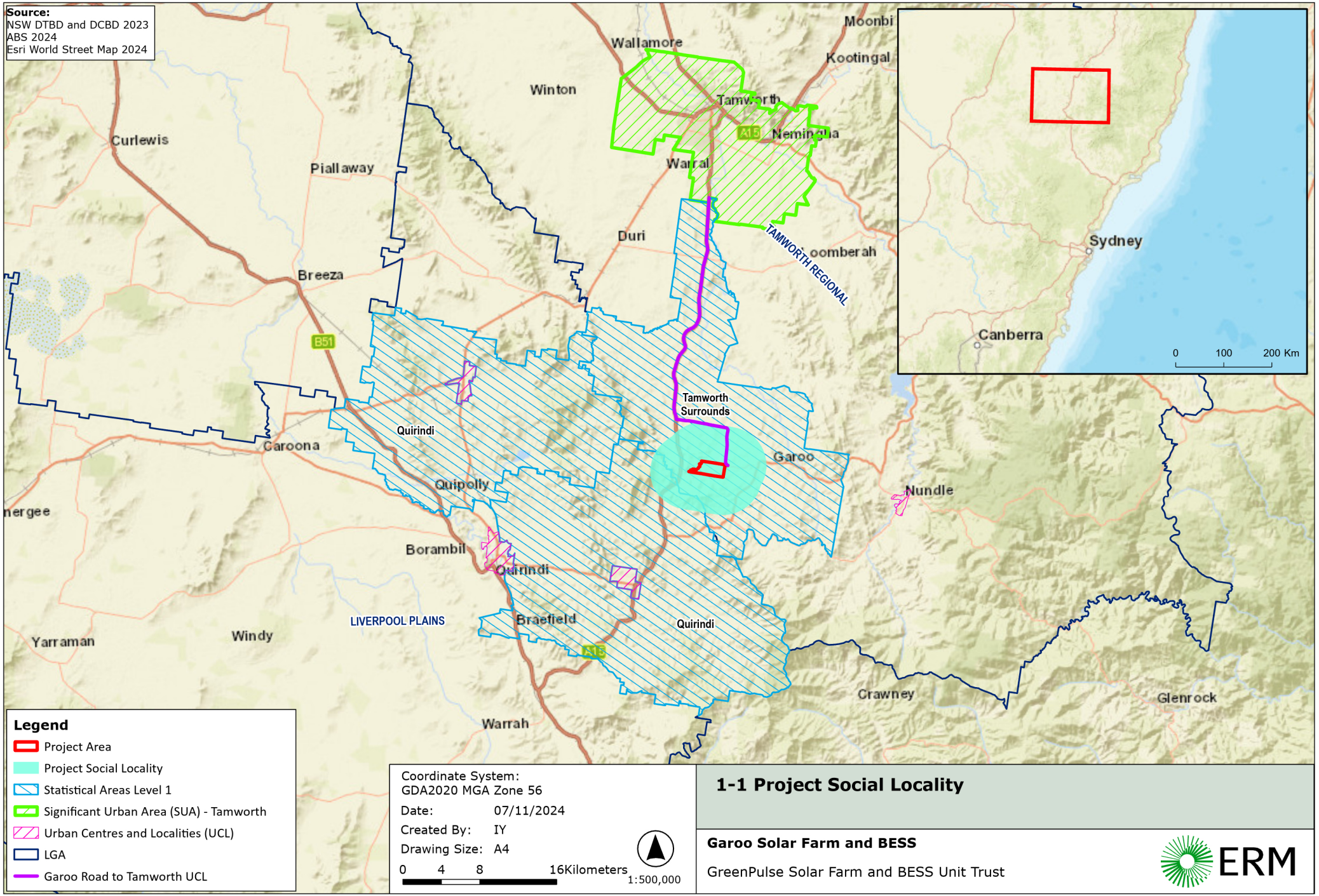
This Social Locality will enable the following types of comparative statistical analysis in the second phase SIA:

- **Rural-urban analysis**: UCLs establish baseline data for urban areas whilst SA1s surrounding UCLs represent low-density rural areas, which allows for a rural-urban analysis.
- **Hierarchical spatial analysis**: LGA and State data is included to allow for a hierarchical spatial analysis comparing local areas (SA1s and UCLs) to regional and state baselines.
- **Time-series analysis**: Including ABS data from the two most recent census years (currently 2016 and 2021) will allow for a time-series analysis to identify positive and negative socio-economic trends.

The Social Locality is depicted in **Table 1-1**and **Figure 1-1.**

TABLE 1-1 APPROXIMATE DISTANCES TO THE PROJECT AREA

Town/Regional Centre	Straight distance	Travel Distance
Tamworth	36 km	43 km
Werris Creek	28 km	61 km
Quirindi	26 km	40 km
Wallabadah	16 km	24 km
Nundle	19 km	24 km



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1.2 COMMUNITY PROFILE

The community profile presented in this section will inform the social baseline in the second phase of SIA (part of the Environmental Impact Assessment (EIS)) and is primarily based on 2016 and 2021 ABS Census data.

Table 1-2 outlines the ABS datasets used to provide key demographic data across the Project Social Locality. This first phase of SIA draws on both 2016 and 2021 ABS datasets (i.e. latest available) for the purposes of an initial socio-economic baseline. A trend analysis of these socio-economic baseline data sets will be provided in the second phase of SIA.

TABLE 1-2 SUMMARY OF RELEVANT ABS DATASETS

Location	2016 ABS Data Reference (Census)	2021 ABS Data Reference (Census)
Tamworth Regional LGA	LGA 17310	LGA 17310
Liverpool Plains Shire LGA	LGA 14920	LGA 14920
SA1 (area containing the Project)	SA1 1120544	SA1 11004120544
SA1 (adjacent to the Project Area to the South)	SA1 1120116	SA1 11004120116
SA1 (adjacent to the Project Area to the West)	SA1 1120114	SA1 11004120114
Tamworth SUA	SUA 1031	SUA 1032
Quirindi UCL	UCL 115115	UCL 115122
Werris Creek UCL	UCL 115152	UCL 115157
Nundle UCL	UCL 122111	UCL 122102
Wallabadah UCL	UCL 122157	UCL 122148
NSW	Code 1 (STE)	Code 1 (STE)

In addition to the above-listed ABS datasets, the second phase of the SIA social baseline will be informed by a desktop review of sources including 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, notably the NSW Department of Education and Local Schools. Information relating to the economic profile of the Project is also provided by ABS 2016 and 2021 Census data, while information on developmental priorities and challenges in the region will be provided by local and State government planning documents, such as Tamworth Regional Council LGA's Local Strategic Planning Statement (LSPS). The Suburbs and Localities (SAL) of Garoo, which encompasses the Project Area, has not been included, as it has limited information due to its small population (93 people).

1.2.1 DEMOGRAPHIC OVERVIEW

Table 1-3 draws on the ABS datasets listed in **Table 1-2** to provide a demographic overview of the Project Social Locality. As outlined above, the Project Area is located within ABS SA1 no. 11004120544 and adjacent to SA1 no. 11004120116 to the South and SA1 no. 11004120114 to the West. These Statistical Areas are the primary source of information about the potentially impacted communities, which defines the characteristics and is used to provide an understanding of potentially vulnerable groups within the Project's immediate Social Locality.

1.2.1.1 SEIFA

Table 1-3 also includes the ABS' Socio-Economic Indexes for Areas (SEIFA)[1] based on 2021 census to provide an Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD) (ABS, 2023). The ABS broadly defines socio-economic advantage and disadvantage in the SEIFA as, "…people's access to material and social resources, and their ability to participate in society" at an area rather than individual level. (ABS, 2023). A lower SEIFA score indicates that an area is relatively disadvantaged compared to an area with a higher score. The SEIFA scores in **Table 1-3** are a percentile score, which divides a distribution into 100 equal groups. The lowest scoring 1% of areas are given a percentile number of 1 and the highest 1% of areas are given a percentile number of 100. A score of 50 suggests an area is neither advantaged nor disadvantaged.

1.2.1.2 SEIFA ANALYSIS

Based on SEIFA index, **Table 1-3** indicates Tamworth Regional LGA is relatively disadvantaged (31/100), and Liverpool Plains LGA is experiencing greater levels of disadvantage (10/100). However, LGA areas are large and contain urban and regional areas that are not necessarily representative of the Project site location. Therefore, to understand the immediate Project surroundings, it is important to look at SA1s, which are small, low-density geographic areas contained within LGAs that provide more granular data.

The SA1 SEIFA data reveals that the SA1 containing the Project is relatively advantaged, particularly when compared to the other SA1s and LGAs comprising the Social Locality. The unemployment rate of 0.0% and the higher median household income data for the SA1 containing the Project suggest that socio-economic disadvantaged and vulnerable groups tend to be concentrated in the urban areas further away from the Project's surrounding area.

[1] 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/statistics/people/people-and-communities/socio-economic-indexes-areas-seifa-australia/latest-release. SEIFA combines Census data such as income, education, employment, occupation, housing and family structure to summarise the socio-economic characteristics of an area. Each area receives a SEIFA score, referred to as the socio-economic advantage and disadvantage score, indicating how relatively advantaged or disadvantaged that area is compared with other areas.

TABLE 1-3 KEY INDICATORS FOR ALL ABS DATASETS (2016 AND 2021) 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, %)
Tamworth Regional LGA 17310 (LGA)										
2016	59,663	40	10.1%	18.8%	$1,180	5.8%	41	21,745 / 2,580 (10.6%)	65.0% / 30.9%	69.4% / 27.5% / 3.1%
2021	63,070	39	12.7%	19.8%	$1,416	4.5%	31	23,617 / 2,298 (8.9%)	64.9% / 31.1%	68.5% / 28.5% / 2.4%
Liverpool Plains LGA 14920 (LGA)										
2016	7,687	45	12.4%	22.3%	$1,032	7.4%	12	2,908 / 527 (15.3%)	66.4% / 29.4%	63.7% / 30.1% / 2.6%
2021	7,551	47	14.8%	24.6%	$1,165	5.8%	10	2,848 / 462 (14.0%)	68.8% / 24.3%	66.5% / 30.8% / 2.7%
SA1 11004120544 (SA1) (area containing the Project)										
2016	397	42	1.8%	15.0%	$1.763	0.0%	74	132 / 16 (10.8%)	71.1% / 20.7%	85.8% / 14.2% / 0.0%
2021	359	45	4.2%	19.2%	$2,015	0.0%	63	125 / 15 (10.9%)	72.0% / 12.0%	88.0% / 12.0% / 0.0%

	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, %)
SA1 11004120116 (SA1) (adjacent to Project Area to the South)										
2016	530	45	5.6%	18.3%	$1,213	7.8%	50	190 / 16 (7.8%)	77.8% / 19.0%	69.4% / 29.0% / 1.6%
2021	489	47	5.3%	22.4 %	$1,625	1.1%	51	171 / 28 (14.0%)	85.4% / 8.8%	79.4% / 20.6% / 0.0%
SA1 11004120114 (SA1) (adjacent to Project Area to the West)										
2016	314	44	5.8%	14.8%	$1,386	1.8%	46	112 / 26 / 18.8%	74.1% / 23.1%	82.7% / 17.3% / 0.0%
2021	345	43	4.9%	22.0%	$1,899	3.8%	38	116 / 26 (18.7%)	66.4% / 15.5%	81.5% / 18.5% / 0.0%
Tamworth 1032 (SUA)										
2016	41,006	37	11.3%	17.8%	$1,184	6.4%	-	15,026 / 1,727 (10.3%)	59.6% / 36.5%	67.7% / 28.8% / 3.6%
2021	43,874	37	14.1%	18.9%	$1,411	5.1%	-	16,555 / 1,442 (8.0%)	58.9% / 37.5%	66.5% / 30.1% / 3.4%
Werris Creek 115157 (UCL)										
2016	1,442	50	20.5%	28.4%	$763	12.9%	-	583 / 84 (12.6)	67.1% / 28.6%	59.1% / 37.7% / 3.3%

	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, %)
2021	1,349	50	23.5%	30.3%	$917	10.0%	-	575 / 53 (8.5%)	71.8% / 23.7%	60.8% / 36.5% / 2.6%
Wallabadah 122148 (UCL)										
2016	212	56	8.1%	28.2%	$774	7.3%	-	95 / 16 (14.4%)	84.4% / 15.6%	63.9% / 32.0 / 4.1%
2021	216	58	13.4%	32%	$919	10.1%	-	91 / 26 (21.1%)	82.4% / 15.4%	60.0% / 40.0 / 0.0%
Nundle 122102 (UCL)										
2016	310	53	9.8%	34.8%	$671	10.2%	-	124 / 23 (15.6%)	80.8% / 16.8%	59.2% / 38.4% / 2.4%
2021	314	56	7.0%	31.5%	$712	3.3%	-	128 / 0 (0.0%)	70.4% / 14.8%	59.2% / 38.4% / 2.4%
NSW Code 1 (STE)										
2016	**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%**
2021	**8,072,163**	**39**	**3.4%**	**17.7%**	**$1,829**	**4.9%**	**-**	**2,900,486 / 299,524 (9.4%)**	**64.0% / 32.6%**	**71.2% / 25.0% / 3.8%**

Note: SEIFA is not provided for ABS UCL and STE Statistical Areas.

1.2.2 ECONOMIC PROFILE

Table 1-4 shows that as of 2021 there was a total of 18,388 people employed in relevant occupations across the Social Locality and a total Labour force of 54,440.

TABLE 1-4 LABOUR FORCE IN THE KEY OCCUPATIONS FOR SELECT ABS STATISTICAL AREAS (2021 CENCUS DATA)

Location	Labour force	Technicians and Trades Workers	Machinery Operators and Drivers	Labourers
Tamworth Regional LGA	29,980	4,000	2,009	4,024
Liverpool Plains LGA	3,236	347	407	435
Tamworth SUA	20,562	2,682	1,296	3,002
SA1 11004120544 (area containing the Project)	213	13	11	14
SA1 11004120116 (area to the South)	267	37	28	32
SA1 11004120114 (area to the West)	182	15	17	19
Total	**54,440**	**7,094**	**3,768**	**7,526**

Table 1-5 outlines the key industries and areas of employment for SA1 and LGAs in the Project Social Locality. The most prominent occupations across the Tamworth Regional LGA in 2021 where the Project is located were Professionals (17.6%), and Labourers and Technicians and Trades Workers (14.0% each). In Liverpool Plains LGA the most prominent occupations were Managers (24.3%) and Labourers (14.3%). Within the Project Area, a considerable portion of the workforce is involved in the agricultural sector, with 40 people (18.9%) employed in the Beef Cattle Farming industry. Across the three SA1s assessed, industries like Sheep Farming, Grains Growing and Meat Processing are prevalent.

TABLE 1-5 KEY INDUSTRIES FOR SELECT ABS STATISTICAL AREAS (2021 CENCUS DATA)

Location	Workforce Population	Key Occupation and Industries
Tamworth Regional LGA 17310	29,980	59.5% of the LGA's residents reported being in the workforce. **Occupation.** The top occupations reported in the LGA were Professionals (17.6%), Labourers and Technicians and Trades workers (14.0% for each category), Managers (12.7%), Community and Personal Service Workers (12.6%), Clerical and Administrative Workers (11.5%), Sales Workers (9.0%), and Machinery Operators and Drivers (7.0%). **Industries.** The top industries of employment were Hospitals (5.6%), Secondary Education (3.3%), Meat Processing (3.2%), Other Social Assistance Services (3.1%), and Supermarket and Grocery Stores (2.6%).

Location	Workforce Population	Key Occupation and Industries
Liverpool Plains LGA 14920	3,256	58.3% of the LGA's residents reported being in the workforce. **Occupation.** The top occupations reported in the LGA were Managers (20.1%), Labourers (14.3%), Machinery Operators (13.4%), Professionals (12.4%), Technicians and Trade Workers (11.4%), Community and Personal Service Workers (10.9%), Clerical and Administrative Workers (9,7%), and Sales Workers (6.2%). **Industries.** The top industries of employment were Beef Cattle Farming (5.7%), Grain-Sheep or Grain-Beef Cattle Farming (4.6%), Hospitals (3.3%), Other Grain Growing (3.2%), and Primary Education (3.1%).
SA1 (area containing the Project) SA1-11004120544	213	72.7% of the SA1's residents reported being in the workforce. **Occupation.** The top occupations reported in the SA1 were Managers (31.6%), Professionals (16.5%), Clerical and Administrative Workers and Sales Workers (9.4% for each category), Community and Personal Service Workers (7.1%), Labourers (6.6%), Technicians and Trades Workers (6.1%), and Machinery Operators and Drivers (5.2%). **Industries.** The top industries of employment were Beef Cattle Farming (18.9%), Hospitals (4.7%), Real Estate Services (3.8%), Local Government Administration (3.3%), and Cafes and Restaurants (2.8).
SA1 (adjacent to Project Area to the South) SA1-11004120116	267	65.8% of the SA1's residents reported being in the workforce. **Occupation.** The top occupations reported in the SA1 were Managers (25.3%), Professionals (15.1%), Technicians and Trades Workers (14.0%), Labourers (12.1%), Clerical and Administrative Workers (11.3%), Machinery Operators and Drivers (10.6%), Community and Personal Service Workers (9.8%), and Sales Workers (3.0%). **Industries.** The top industries of employment were Beef Cattle Farming (11.3%), Primary Education (5.3%), Hospitals (4.2%), Sheep-Beef Cattle Farming (3.3%), and Cafes and Restaurants (2.8).
SA1 (adjacent to Project Area to the West) SA1-11004120114	182	65.5% of the SA1's residents reported being in the workforce. **Occupation.** The top occupations reported in the SA1 were Managers (24.3%), Professionals (14.5%), Clerical and Administrative Workers (13.3%), Labourers (11.0%), Machinery Operators and Drivers (9.8%), Technicians and Trades Workers (8.7%), Community and Personal Service Workers (6.9%), and Sales Workers (4.0%). **Industries.** The top industries of employment were Grain-Sheep or Grain-Beef Cattle Farming (7.5%), Beef Cattle Farming (6.9%), Other Grain Growing and Coal Mining (6.4% for each category), and Secondary Education (5.8%).
Tamworth SUA 1032	20,564	59.0% of the SUA's residents reported being in the workforce. **Occupation.** The top occupations reported in the SUA were Professionals (18.5%), Labourers (15.4%), Technicians and Trades workers (13.7%), Community and Personal Service Workers (13.4%), Clerical and Administrative Workers (11.4%), Managers (10.1%), Sales Workers (9.4%), and Machinery Operators and Drivers (6.0%) **Industries.** The top industries of employment were Hospitals (6.1%), Meat Processing (4.2%), Other Social Assistance Services and Secondary Education (3.4% for each category), and Takeaway Food Services (2.9%).

Location	Workforce Population	Key Occupation and Industries
Werris Creek UCL115157	461	40.8% of the UCL's residents reported being in the workforce. **Occupation.** The top occupations reported in the UCL were Machinery Operators and Drivers (21.4%), Community and Personal Service Workers (16.9%), Labourers (15.7%), Technicians and Trades Workers (14.0%), Clerical and Administrative Workers (9.9%), Sales Workers (8.9%), Professionals (8.7%), and Managers (4.1%). **Industries.** The top industries of employment were Rail Freight Transport (5.1%), Local Government Administration and Hospitals (3.9% for each category), Supermarket and Grocery Stores (3.6%), and Road Freight Transport (3.4%).
Quirindi UCL115122	1,024	48.0% of the UCL's residents reported being in the workforce. **Occupation.** The top occupations reported in the UCL were Community and Personal Service Workers (15.5%), Machinery Operators and Drivers (15.4%), Labourers (14.9%), Professionals (14.0%), Technicians and Trades Workers (12.8%), Clerical and Administrative Workers (9.7%), Managers (8.7%), and Sales Workers (8.3%). **Industries.** The top industries of employment were Hospitals (5.1%), Local Government Administration (4.8%), Supermarket and Grocery Stores (4.6%), Aged Care Residential Services (4.3%), and Coal Mining (3.6%).
Nundle UCL115122	91	34.1% of the UCL's residents reported being in the workforce. **Occupation.** The top occupations reported in the UCL were Managers (27.7%), Labourers (24.1%) Community and Personal Service Workers (14.5%), Clerical and Administrative Workers (10.8%), Machinery Operators and Drivers (6.0%), Sales Workers (4.8%), and Professionals (3.6%). **Industries.** The top industries of employment were Accommodation (9.6%), Pubs Taverns and Bars and Local Government Administration (8.4% for each category), Preschool Education (7.2%), and Primary Education (7.2%).
Wallabadah UCL115122	79	41.1% of the UCL's residents reported being in the workforce. **Occupation.** The top occupations reported in the UCL were Machinery Operators and Drivers (18.8%), Community and Personal Service Workers (15.6%), Professionals (14.1%), Managers (27.7%), Clerical and Administrative Workers, Sales Workers, and Labourers (12.5% for each category), Managers (7.8%), and Technicians and Trades Workers (6.2%). **Industries.** The top industries of employment were Hospitals (9.4%), Fuel Retailing and Road Freight Transport (7,8% for each category), and Coal Mining and Funeral, Crematorium and Cemetery Services (6.2% for each).
NSW Code 1 (STE)	3,874,012	58.7% of the State's residents reported being in the workforce. **Occupation**. The top occupations reported in the State were Professionals (25.8%), Managers (14.6%), Clerical and Administrative Workers (13.0), Technicians and Trade Workers (11.9%), Community and Personal Service Workers (10.6%), Labourers (8.2%), Sales Workers (8.0%), Machinery Operators and Drivers (6.0%). **Industry**. The top industries of employment were Hospitals (4.2%), Supermarket and Grocery Stores (2.5%), Other Social Assistance Services (2.4%), Computer System Design and Related Services (2.3%), and Aged Care Residential Services (2.2%).

1.2.3 SOCIAL INFRASTRUCTURE ASSESSMENT

Social infrastructure is a term that covers a wide range of services and facilities that meet community needs for education, health, social support, recreation, cultural expression, social interaction and community development. This includes schools and other educational institutions, medical services, emergency services, recreational facilities, community organizations, as well as some commercial services like childcare facilities and recreational sports.

Table 1-6 shows that Tamworth UCL is likely to provide the majority of goods and services to support the Construction and Operation phases of the Project. Tamworth has a population of 43,874 (ABS SUA) and is located 40 km from the Project site. Werris Creek, Quirindi, Wallabadah and Nundlewill UCLs will likely provide additional support during the Construction and Operation phases of the Project due to their proximity to the Project.

TABLE 1-6 SUMMARY OF SOCIAL INFRASTRUCTURE

Services and Organisations	Tamworth SUA	Werris Creek UCL	Quirindi UCL	Wallabadah UCL	Nundle UCL
Health					
Hospitals	2	1	1	0	0
Medical Centres / Dental	17	1	4	0	0
Family and Education					
Childcare	20	1	2	0	1
Primary schools	16	2	2	1	1
Secondary schools	5	0	1	0	0
Tertiary education facilities	5	0	1	0	0
Recreation and Community					
Swimming Pools	3	1	0	0	1
Sporting facilities	21	1	0	0	1
Fitness Centers	18	1	2	0	0
Shopping Centers	8	0	0	0	0
Post Offices	10	1	1	1	1
Libraries	6	1	1	0	1
Place of worship	13	0	4	1	1
Emergency Services					
State Fire Emergency	2	1	1	0	0
Police	2	1	1	0	1
Ambulance	2	0	1	0	0

1.3 POTENTIAL SOCIAL IMPACTS

The first phase of SIA provides a preliminary desktop assessment of the potential impacts while the second phase of SIA, which 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 identified potential impacts listed **Table 1-7** will be ground-truthed, supplemented by stakeholder feedback, and reviewed against any changes associated with further design development after issuing the Secretary's Environmental Assessment Requirements (SEARs).

Generally, SA1s are more likely to experience direct impacts, UCLs and LGAs will experience indirect impacts.

TABLE 1-7 PRELIMINARY SOCIAL IMPACT ASSESSMENT

Description of Impact	Impact Categories	Impact Influence	Project Phase	Level of Assessment
Employment and Procurement				
Increased demand for labour in the Social Locality (generates direct and indirect employment opportunities)	Livelihoods	Positive	Construction	Detailed Assessment
Increased demand for labour in the Social Locality leading to skill shortages/ reduced labour availability for local services and/or businesses	Livelihoods	Negative	Construction	Detailed Assessment
Increased demand for goods and services in the Social Locality (stimulates local economies)	Livelihoods	Positive	Construction	Detailed Assessment
Increased demand for goods and services in the Social Locality (creates shortages)	Livelihoods	Negative	Construction	Detailed Assessment
Diversification of income streams for host landowners	Livelihoods	Positive	Life of the Project	Detailed Assessment
Local Disruptions				
Disruptions to agricultural activities / farming practices (e.g. activities may limit access and cause temporary inconveniences for the operation of rural properties, such as stock movements, paddock access, etc.)	Livelihoods	Negative	Life of the Project	Detailed Assessment
Increased vehicular movement from workers employed by the Project, and the transportation of materials and equipment to site, increasing the potential for accidents and wear and tear on road infrastructure	Health and Wellbeing	Negative	Construction	Detailed Assessment
Interruptions to daily life, such as changes in traffic conditions (e.g. diversions for school buses, road closures, changes to public vehicular access), utility disruptions, etc.	Way of Life Access	Negative	Construction	Detailed Assessment

Description of Impact	Impact Categories	Impact Influence	Project Phase	Level of Assessment
Impacts associated with noise, vibration, and dust, which may cause impacts or disruptions to community health.	Health and Wellbeing Surroundings	Negative	Construction	Detailed Assessment
Changes to public vehicular access in the vicinity of the Project Area have the potential to impact community access	Access	Negative	Life of the Project	Detailed Assessment
Land Use and Landscape				
Perceived impacts on land and/or property values (i.e. a decrease in land values)	Livelihoods	Negative	Operation	Detailed Assessment
Visual impact through altered rural character/changes to rural amenity (i.e. loss of scenic views and negative changes to visual amenity, glare from solar panels)	Way of Life Surroundings	Negative	Life of the Project	Detailed assessment
Altered landscape has the potential to impact tangible and intangible Aboriginal heritage	Culture	Negative	Life of the Project	Detailed Assessment
Accommodation and Worker Influx				
Increased demand / pressures on housing and accommodation potentially resulting in a shortage and/or increased cost of living	Way of life	Negative	Construction	Detailed Assessment
Increased demand and pressure on social, emergency, community, and recreational services and/or facilities including health care	Access Way of Life	Negative	Construction	Detailed Assessment
Stakeholder and Community				
Development of a Community Benefit Fund (or similar Project-specific community benefit sharing scheme), which may generate positive outcomes for the local community (e.g. support of local community groups, scholarships, etc.)	Livelihoods Culture	Positive	Life of the Project	Detailed Assessment

1.4 ASSESSMENT APPROACH

This section outlines the plan for developing the second phase of SIA, in accordance with the requirements of the Social Impact Assessment Guideline (DPE, 2023a) and Technical Supplement (DPE, 2023b)

The impact assessment methodology to be applied to the second phase SIA follows DPE's Social Impact Significance matrix as depicted in **Table 1-8**. 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 **Figure 1-1**. The social impact significance matrix depicted in **Table 1-8** will be applied to yield the initial evaluation of social impacts that are likely to be experienced by different groups within the Project Social Locality. The SIA will recommend mitigations, monitoring and social impact management measures.

TABLE 1-8 ADAPTED 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
*Where impacts are positive the following colour scale is used:						
	Positive		Low	Medium	High	Very High

2. REFERENCES

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