



Denman BESS

Scoping Report

PREPARED FOR



M Renewables Australia
Developments Pty Ltd

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Denman BESS

Scoping Report

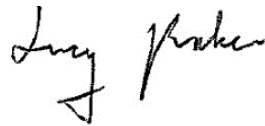
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ACRONYMS AND ABBREVIATIONS

Name	Description
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
AD	Associated Dwelling
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability
AHIMS	Aboriginal Heritage Information Management System
ARI	Average Recurrence Interval
ASC	Australian Soil Classification
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BSAL	Biophysical Strategic Agricultural Land
CE	Critically Endangered
CHMP	Cultural Heritage Management Plan
CIA Guidelines	Cumulative Impact Assessment Guidelines
CMT	Culturally Modified Trees
CSES	Community and Stakeholder Engagement Strategy
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Environment (Previously Department of Planning and Environment)
E	Endangered
EII Act	Electricity Infrastructure Investment Act 2020
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EnergyCo	NSW Energy Corporation
EP	Endangered Population
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
ERM	Environmental Resources Management Australia
ESOO	Electricity Statement of Opportunities

Name	Description
FAQ	Frequently Asked Question
FRMS&P	Flood Risk Management Study and Plan
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse gas
GW	Gigawatt
GWh	Gigawatt hours
Ha	Hectare
HHDD	Non-Indigenous (historical) Due Diligence Assessment
HRSF	Hunter River Solar Farm
IBRA	Interim Biogeographic Regionalisation for Australia
ISP	Integrated System Plan
km	kilometre
km ²	square kilometres
kV	kilovolt
LALC	Local Aboriginal Land Council
LGA	Local Government Area
LoO	Likelihood of Occurrence
LSC	Land Soil Capability
m	metre
m ³ /s	cubic metre per second
MLA	Moir Landscape Architecture
MNES	Matters of National Environmental Significance
Muswellbrook CSP	Muswellbrook Shire Council 2022-2032 Community Strategic Plan
Muswellbrook LEP	Muswellbrook Local Environmental Plan 2011
Muswellbrook LSPS	Muswellbrook Shire Council Local Strategic Planning Statement 2020-2040
MW	Megawatt
NAD	Non-Associated Dwelling
NEM	National Electricity Market
NIS	Network Infrastructure Strategy for NSW
NSW	New South Wales
NTV	Native Title vision

Name	Description
O&M	Operations & Maintenance
OSOM	Oversize Overmass
PBA	Preliminary Biodiversity Assessment
PCT	Plant Community Type
PHA	Preliminary Hazard Assessment
PMF	Probable Maximum Flood
PTA	Preliminary Traffic Assessment
PV	photovoltaic
PVIA	Preliminary Visual Impact Assessment
RDA	Regional Development Australia
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RNE	Register of the National Estate
SA1	ABS Statistical Area Level 1 dataset
SEARs	Secretary's Environmental Assessment Requirements
SEIFA	ABS Socio-Economic Indexes for Areas
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SIA	Social Impact Assessment
SISD	Safe Intersection Sight Distance
SSD	State Significant Development
SVTM	State Vegetation Type Map
TEC	Threatened Ecological Community
TfNSW	Transport for New South Wales
The Roadmap	NSW Electricity Infrastructure Roadmap
TTIA	Traffic and Transport Impact Assessment
UNESCO	United Nations Educational, Scientific and Cultural Organization
V	Vulnerable

1. INTRODUCTION

M Renewables Australia Developments Pty Ltd, herein referred to as 'Metlen' (the Proponent) proposes to develop a battery energy storage system (BESS) (the Project), with a capacity of 2.4 Gigawatts (GW) / 4.8 Gigawatt hours (GWh), located at 1711 Denman Road, Denman, NSW, 2328, within the Upper Hunter Region of New South Wales (NSW). The Project is located entirely within Muswellbrook Shire Local Government Area (LGA) and is comprised of a single allotment, Lot 4 DP 6090, with an area of approximately 30.37 ha.

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 issue of the Secretary's Environmental Assessment Requirements (SEARs). The SEARs will guide the preparation of an Environmental Impact Statement (EIS) for the Project.

1.1 PROPONENT

M Renewables Australia Developments Pty Ltd is part of the Metlen Energy & Metals Group, a global industrial and energy company. The Proponent has successfully delivered similar solar projects across Europe, the Americas, Africa, the Middle East, Asia and Australia. Through its renewables and storage development arm Metlen, the Proponent has several projects under construction and in operation across NSW, including Corowa, Junee and Wagga Wagga.

The relevant contact details for M Renewables Australia Developments Pty Ltd are:

- M Renewables Australia Developments Pty Ltd ABN: 49 646 739 291; and
- Address: Level 5, 20 Bond Street, Sydney NSW, 2000.

1.2 PROJECT OVERVIEW

The Project involves the construction, operation and decommissioning of a BESS and associated 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 storage	BESS	One BESS with 2.4 GW / 4.8 GWh capacity.
Electrical Reticulation Network	On-site substations	New high voltage substation proposed in the southern portion of the Project Area.
	Internal electrical reticulation network	Electrical reticulation will connect into the main substation directly via overhead or underground cables.
	Switchyard	Switchyard and other electrical equipment providing connection to the existing transmission network.

Component	Feature	Specification
Access Roads	Access to site	Access to the Project Area is proposed from Denman Road, Denman.

The indicative preliminary project layout is displayed in **Figure 3-1**. Ancillary infrastructure and associated works for the Project will include:

- Battery cells that will be housed in either climate-controlled shipping container style buildings or outdoor cabinets;
- Electrical inverters;
- Underground cabling and above-ground cabling;
- Associated control systems;
- Communications infrastructure;
- HVAC units and ventilation;
- MV and HV transformers;
- An Operations & Maintenance (O&M) facility and storage sheds/spare parts room;
- Car parking;
- Water tanks;
- Control room and electrical switch room;
- Extension of a busbar at an existing substation;
- Benching and earthing;
- Security fencing and lighting;
- Temporary construction compound and laydown areas; and
- Noise walls, landscaping and screening vegetation.

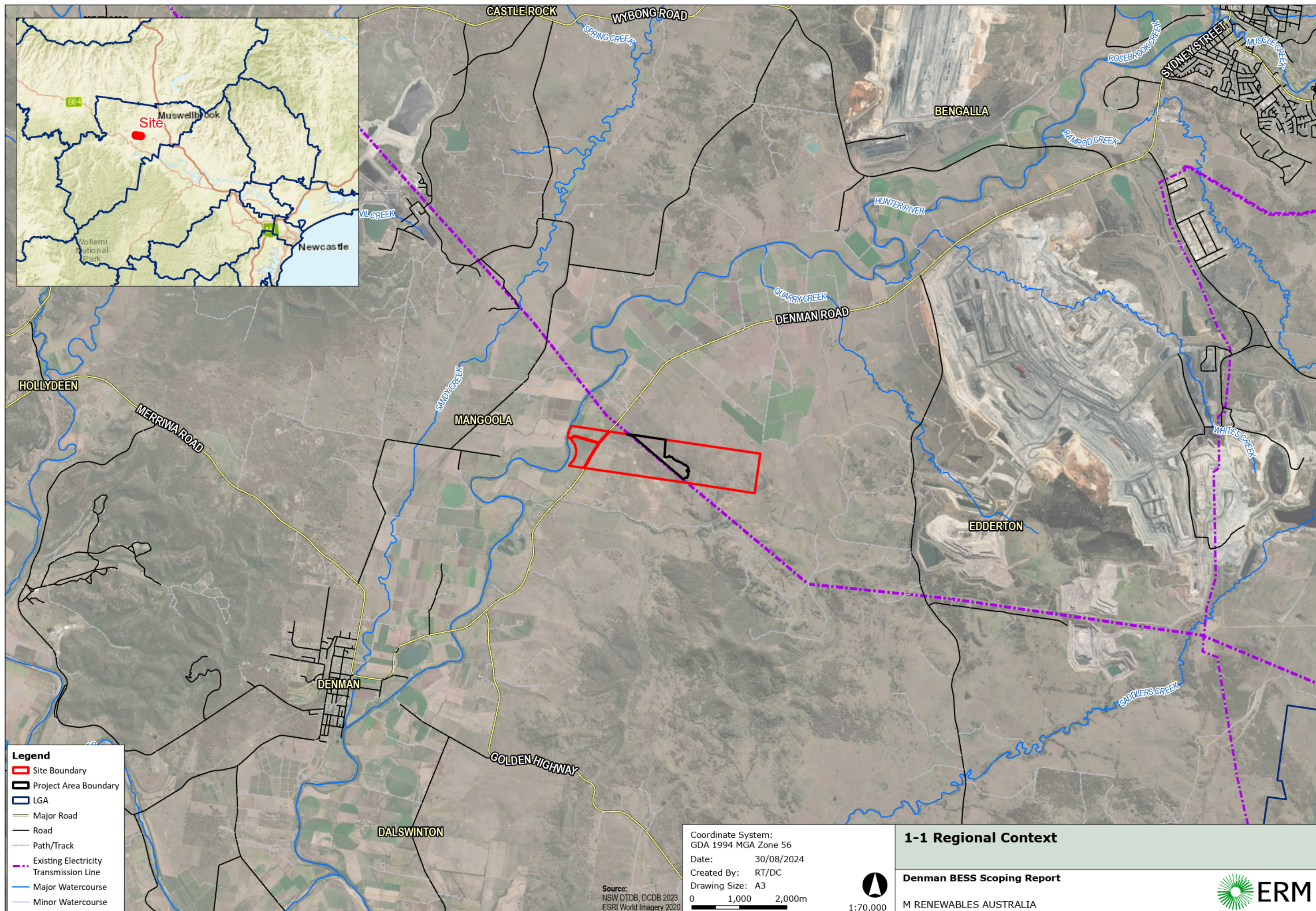
The Project design and components are described in further detail in **Section 3.2**

1.3 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 – Preparing a Scoping Report: Appendix A to the State Significant Development Guidelines (DPE, 2022b);
- Social Impact Assessment Guideline for State Significant Projects (DPHI, 2023);
- Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022c); and
- Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024a) .



2. STRATEGIC CONTEXT

2.1 COMMITMENTS TO RENEWABLE ENERGY

2.1.1 FEDERAL COMMITMENTS

Australia is one of 195 countries that signed on to the United Nations Paris Agreement on climate change (Paris Agreement). The Paris Agreement sets in place a durable and dynamic framework for all countries to take climate action from 2020, building on existing international efforts in the period up to 2020. The aim of the Paris Agreement is to limit emissions globally to net-zero in the second half of this century. Australia set a target to reduce emissions by 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 five per cent below 2000 levels by 2020 (PoA, 2017; DCCEEW, 2022).

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

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

2.1.2 STATE COMMITMENTS

In November 2020, the NSW Government released NSW Electricity Infrastructure Roadmap with the aim of facilitating reliable and affordable energy. This roadmap is facilitated by the *Electricity Infrastructure Investment Act 2020* (EII Act). Part of this includes the appointment of the NSW Energy Corporation (EnergyCo) as the Infrastructure Planner under section 63 of the EII Act for five Renewable Energy Zones (REZs).

In May 2023, EnergyCo released the Network Infrastructure Strategy for NSW (NIS) which outlines a 20-year plan for the state's electricity network and the target to deliver a total capacity of 12 gigawatts of renewable electricity generation and 2 gigawatts of long-duration storage within the REZs by 2030. The Strategy also includes a "Secure Now" and "Plan for the Future" which seek to identify options for increases in network capacity and resilience into and beyond 2030. The Project is located within the Hunter-Central Coast REZ identified by the NIS, which is incorporates Denman NSW and surrounds.

Additionally, these are supported by the newly implemented *Climate Change (Net Zero Future) Act 2023*. This Act legislates net zero greenhouse gas emissions in NSW by 30 June 2050.

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

2.1.3 REGIONAL AND LOCAL PLANS

The development of renewable energy is supported by relevant regional and local plans and strategies which have been outlined in **Table 2-1** below, and include:

- Hunter Regional Plan 2041 (DPE, 2022d);
- Muswellbrook Shire Council Local Strategic Planning Statement 2020-2040 (MSC, 2020); and
- Muswellbrook Shire 2022-2032 Community Strategic Plan (MSC, 2022a).

2.1.4 CONTRIBUTION TO THE NATIONAL ELECTRICITY MARKET

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

The Australian Energy Market Operator's (AEMO) 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 ES00;
- 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.

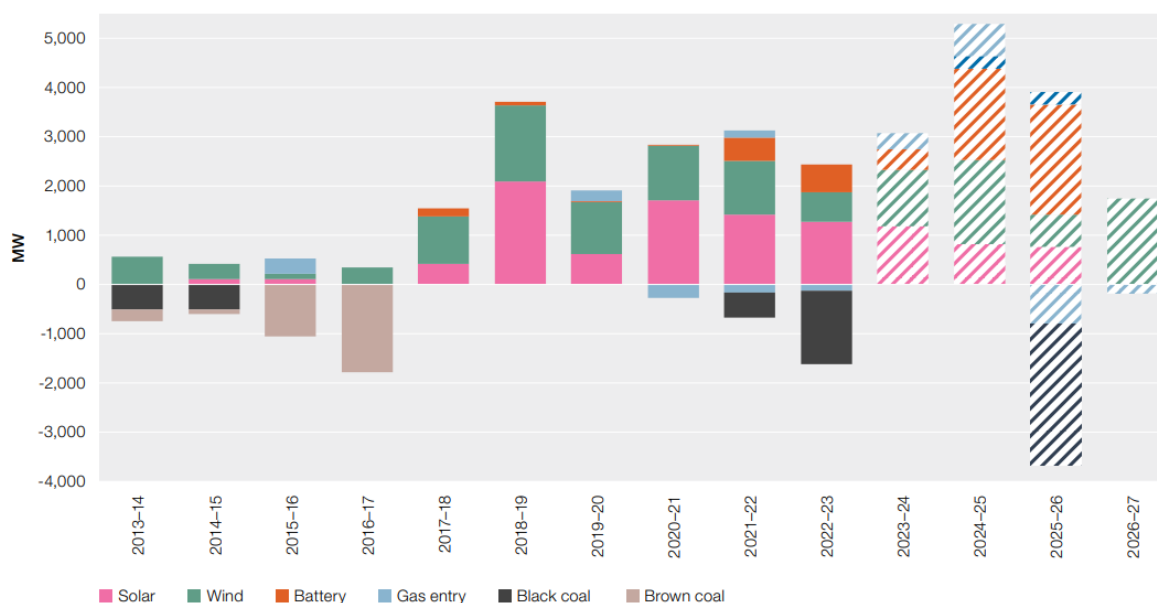
The Project will help to meet the forecast increasing demand for energy in the NEM as forecast demand increases over the forecast horizon through the storage of renewable energy.

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) (AER, 2023) (**Figure 2-1**). 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;

- 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 2-1 EXIT AND ENTRY OF GENERATION CAPACITY IN THE NEM (AER, 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, in 2022 (AER, 2023). However, about 58% of the current coal-fire capacity is expected to withdraw by 2030, initiated by the closure of Liddell's Power Station in April 2023 which marked the first of four-coal station exists for the decade.

2.1.5 BATTERY ENERGY STORAGE SYSTEM BENEFITS

Battery Energy Storage Systems are gaining significance within the electricity market as a means to compensate for the closure of coal-fired power stations. Consequently, they are assuming a more crucial role by offering reliable capacity to bolster intermittent renewable energy generation, thus enhancing the resilience of the grid.

Some key benefits associated with the Project include:

- Providing additional energy storage capacity and dispatchable energy during periods of high electricity demand;
- Allowing for generated energy to be stored and then supplemented to the electricity grid consulting the National Electricity Market (NEM), supporting the transition of the energy sector away from a centralized system of fossil fuel generation, towards a more decentralized system of renewable energy production and storage and assist in reduce greenhouse gas (GHG) emissions;

- Improving security and resilience of the NEM; and
- Helping to avoid blackouts and associated costs.

2.2 PROJECT OBJECTIVES

The objectives of the Project are to:

- Provide a source of renewable energy to supplement NSW and National energy requirements and assist in reducing greenhouse gas (GHG) emissions;
- Contribute to NSW and Commonwealth targets for renewable energy;
- Provide both direct and indirect employment opportunities during construction and operation;
- 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;
- Minimise all potential adverse environmental impacts;
- Assist in improving stability, sustainability and reliability to the electricity network services through proven and cost-effective solutions; and
- Supply electricity during periods of peak demands.

2.2.1 PROJECT-SPECIFIC BENEFITS

The Project will 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 centralized system of large fossil fuel generation, towards a more decentralized system of renewable energy production and assist in reducing GHG emissions.

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

- Direct investment in the Hunter 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 2-2**.

FIGURE 2-2 PROJECT BENEFITS



2.3 REGIONAL AND LOCAL PLANNING CONTEXT

2.3.1 HUNTER-CENTRAL COAST RENEWABLE ENERGY ZONE

The Project Area is located within the boundaries of the proposed Hunter-Central Coast REZ, which is being developed in the areas surrounding Denman in the Hunter-Central Coast region of NSW (Energy NSW, 2021). However, the Project is not proposed to use REZ infrastructure.

The Hunter-Central Coast REZ was formally declared in 2022 and was chosen to be in this region due to:

- The abundance of renewable energy resources;
- A strong pipeline of proposed renewable energy projects; and
- The relative compatibility of land uses within the region.

2.4 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 2-1** below.

TABLE 2-1 ALIGNMENT WITH STRATEGIC FRAMEWORK

Strategy, Policy or Plan	Description	Project Alignment
<i>National Context</i>		
United Nations Framework Convention on Climate Change Conference of Parties (COP28) – United Arab Emirates 2023	COP28 was the 28 th 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.

Strategy, Policy or Plan	Description	Project Alignment
United Nations Framework Convention on Climate Change Conference of Parties (COP21) – The Paris Agreement	The United Nations Paris Agreement on climate change (Paris Agreement) outlines a framework for all countries to take climate action from 2020 and builds upon the existing international efforts in the period up to 2020. The aim of the Paris Agreement is to limit emissions globally to net-zero in the second half of this century. Australia is one of 195 countries that signed on to the Paris Agreement and has set a target to reduce emissions by 26-28 per cent below 2005 levels by 2030. This builds on the 2020 target of reducing emissions by five per cent below 2000 levels (PoA, 2017).	The Project will contribute to meeting Australia's commitments under the Paris Agreement through the generation of renewable wind energy and resultant annual reduction in greenhouse gas emissions. It should be noted that NSW targets are to achieve net-zero emissions by 2050 and is listed in Part 2 section 9(1)I of the <i>Climate Change (Net Zero Future) Act 2023</i> .
Integrated System Plan 2022	The Integrated System Plan (ISP) provides an integrated roadmap for the development of the National Electricity Market (NEM) over the next 20 years, and the most recent ISP 2022. In December 2023 the AEMO published an update to the ISP along with a draft version of the 2024 ISP (AEMO, 2023). This draft is currently subject consultation and submissions which closed 16 February 2024. The final report scheduled to be released 28 June 2024.	The Project is located within the Hunter-Central Coast REZ, which has been identified as a proposed REZ in the ISP 2022. The Project will respond to Phase 2 of the ISP: <i>"Renewable generation development to replace energy provided by retiring coal-fired generators and supported by the actionable ISP projects"</i> .
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. The Plan is the NSW Government's overarching strategy to reduce emissions and mitigate the impacts of climate change. In September 2021, the NSW Government announced ambitious new emission reductions, with an updated objective to reduce emissions by 50% below 2005 levels by 2030 under the Net Zero Plan Stage 1: 2020 – 2030 Implementation Update (September 2021).	This Project will contribute by 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

Strategy, Policy or Plan	Description	Project Alignment
NSW Electricity Strategy	The NSW Electricity Strategy is the NSW Government's plan to provide more reliable, affordable, and sustainable electricity across in NSW (DPE, 2019). The Strategy encourages approximately \$8 billion of new private investment in NSW's electricity system over the next decade, including \$5.6 billion in regional NSW. It aligns closely with the NSW Government's Net Zero Plan Stage 1: 2020–2030, and supports a new affordable and reliable energy system by: • Delivering the coordinated Renewable Energy Zone in the Hunter-Central Coast region; • Saving energy via the Energy Security Safeguard; • Supporting the development of new electricity generators; • Setting a target to increase the state's energy resilience; and • Making it easier to do energy business in NSW.	The Project is consistent with the Strategy as it provides renewable energy generation and storage capacity that, together with other renewable generation projects, is expected to result in lower cost of power in comparison to wholesale prices. The Project will also contribute to greater energy resilience through the use of BESS to support stabilising the supply of electricity to the Hunter 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 aims of the Strategy include increasing NSW's connections with Victoria, South Australia and Queensland, and increasing NSW's energy capacity through the prioritization 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.	The Project will contribute to the development of the Hunter-Central Coast REZ by providing energy storage and dispatch capacity to facilitate and provide electricity demand management.

Strategy, Policy or Plan	Description	Project Alignment
NSW Electricity Infrastructure Roadmap	The NSW Electricity Infrastructure Roadmap (the Roadmap), released in November 2020, is the NSW Government's plan to transform the NSW electricity sector to be cleaner, cheaper and more reliable (DPE, 2020b). The Roadmap builds on the NSW Electricity Strategy (2018) and the NSW Transmission Infrastructure Strategy (2019), and emphasizes 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 Hunter-Central Coast region of NSW. The Roadmap reinforces the key role of these REZs in delivering renewable energy, transitioning from coal fired power generation, and providing regional growth and investment in regional NSW.	The Project will assist in meeting the NSW Government's emissions reduction targets, NSW's energy generation and storage requirements, and NSW's transition from coal fired power generation to renewable energy. The Project will also contribute to the development of the Hunter-Central Coast REZ, which will add to the regional growth and investment in regional NSW.
<i>Regional Context</i>		
Hunter Regional Plan 2041	The Hunter Regional Plan 2041 is a 20-year blueprint for the future of the Hunter Region (DPE, 2022d). It was developed by DPE in 2022 following consultation with local councils, key stakeholders, and local communities. The HRP provides a framework for guiding land use plans, development proposals, and infrastructure funding decisions over the next 20 years and includes both priority and longer-term actions. It aims to grow the region's cities and local centres, support the protection of high value assets, and develop a strong, diverse and competitive economy through the following four key goals: • A growing and diverse economy; • A healthy environment with pristine waterways; • Efficient transport and infrastructure networks; and • Strong, connected and healthy communities.	The Project is proposed to connect with the existing transmission lines and will therefore provide ready access to the electricity network. The Project is also consistent with relevant directions and actions of the HRP listed under: • Objective 1: Diversify the Hunter's mining, energy and industry capacity. The Project will directly respond to: • Outcome 5: Circular economy industries and facilities are in appropriate sites. • Objective 7: Reach net zero and increase resilience and sustainable infrastructure.

Strategy, Policy or Plan	Description	Project Alignment
<i>Local Context</i>		
Muswellbrook Shire Council Local Strategic Planning Statement 2020-2040	The Muswellbrook Shire Council Local Strategic Planning Statement (LSPS) provides a framework for the social, economic, and environmental land use needs throughout the Muswellbrook Shire over the next 20 years (MSC, 2020) (MSC, 2020).	The Project will directly address <i>Planning Priority 18: We adapt to climate change and build climate and hazard resilience</i> , which encourages renewable energy generation.
Muswellbrook Shire 2022-2032 Community Strategic Plan	Muswellbrook Shire 2022-2032 Community Strategic Plan (CSP) is a 10-year plan that outlines the long-term vision and strategic directions for the Muswellbrook Shire community (MSC, 2022a).	The Project will directly respond to <i>Objective 3 – Environmental Sustainability</i> of the CSP. It aligns with <i>Strategy 3.5: Support federal and state initiatives to reduce the impacts of climate change</i> .

2.5 SITE AND SURROUNDING DEVELOPMENT

2.5.1 REGIONAL CONTEXT

The Project Area is situated within the locality of Denman within the Upper Hunter Region of NSW, approximately 113 km northwest of Newcastle. The village of Denman is located approximately 7 km southwest of the Project, within the Muswellbrook Shire Council Local Government Area (LGA). Singleton located approximately 63 km south of the Project site is the closest major regional centre with a population of approximately 22,987 (ABS, 2021) in the urban suburbs.

Muswellbrook Shire is centrally located in the Upper Hunter Valley and at the junction of several significant environmental and physical infrastructure assets. These include:

- The junction of the Hunter and Goulburn Rivers;
- The connection between the Blue Mountains (Wollemi National Park) and the Liverpool Ranges;
- The junction of the Main North Railway line and the Ulan railway line; and
- An important connection between the Golden Highway and the New England Highway.

The Muswellbrook LGA covers a total area of 3,405 km² and has a population of 16,357 (ABS, 2021). Of the total land coverage, 43% is National Park including World Heritage Wollemi National Park. The key land uses within the region are centred on agriculture and food production, and its economy is reliant on tourism, agriculture and associated industries. Muswellbrook Shire has a prominent viticulture industry and is home to the largest critical mass of thoroughbred rearing by value in Australia (MSC, 2022a). The Project Area lies within the Wanaruah Local Aboriginal Land Council (LALC) area, and the traditional owners of the land are the Gamilaraay people.

The closest population centre is the township of Denman, NSW, which is located approximately 7 km southwest of the Project Area with a population of 1,821 (ABS, 2021)

Other key towns located near the Project Area include (ABS, 2021):

- Muswellbrook – 18 km northeast (population 16,357);
- Aberdeen, NSW – 29 km northeast (population 2,051); and
- Singleton, NSW – 63 km southeast (population 5,185).

2.5.2 LOCAL CONTEXT

The Project Area is situated in Denman, which is characterised by a varying topography with Ogilvies Hill and reaching a maximum of 468 m to the east of Denman Town Centre and Limb of Addy Hill reaching a maximum of 424 m to the west. The existing land uses surrounding the Project Area are predominantly agricultural and primarily used for irrigated cropping and grazing. The Project Area is located approximately 1.4 km east of the Hunter River and lies within the Hunter River Catchment which covers an area of 21,500 square kilometres (km²).

The nearest national parks are the Wollemi National Park and Goulburn River National Park, located 15.3 km southwest and 23.4 km west of the Project Area, respectively (refer **Figure 1-1**). The Manobalai Nature Reserve is 19.3 km northwest of the Project Area, and the closest conservation area is the Wollemi State Conservation Area, which covers an area of 2,352 ha and is located 43 km south of the Project Area across the Hunter River.

2.5.3 THE SITE

The Project Area is located at 1711 Denman Road, Denman (Lot 4, DP6090) which covers approximately 30.37 ha. The site has been historically used for agricultural activities and contains a dwelling house, farm buildings, ancillary structures and water retention dams. Vegetation on the site is scattered and predominantly lining fences and fringing ephemeral watercourses. The topography of the Project Area is varied and gently undulating, with the steepest portions of the site located in the southeast portion. Rural and agricultural activities, including grazing of livestock and the production of crops and fodder, are prominent land uses surrounding the site.

The Project Area is located to the east and west of Denman Road. Access to the Project Area is provided via the Denman Road, which runs north-south between Muswellbrook and Denman. The Project Area is zoned in its entirety as RU1 – Primary Production under the Muswellbrook Local Environmental Plan 2011 (Muswellbrook LEP).

2.5.4 RELEVANT FUTURE PROJECTS

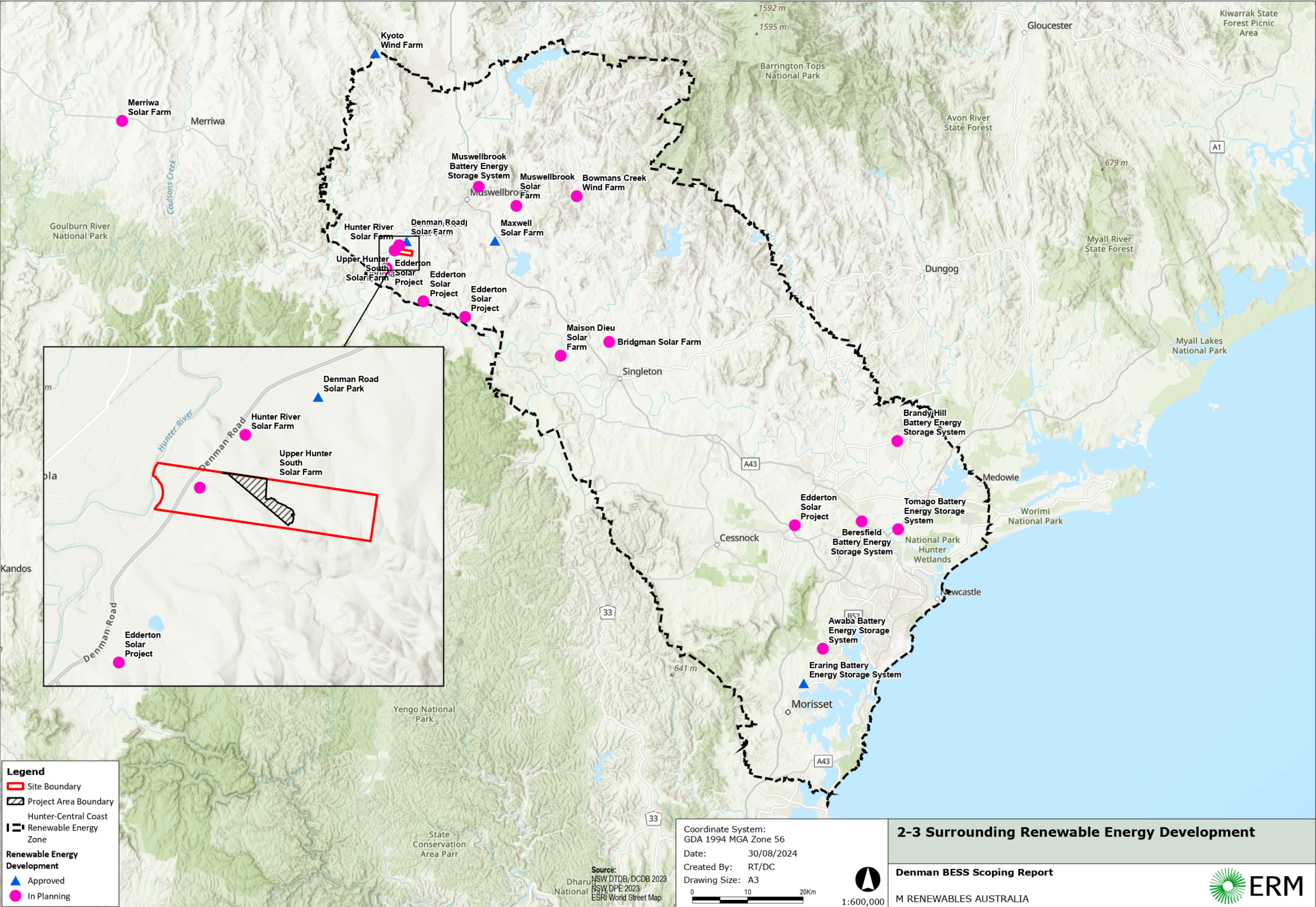
There are a number of renewable energy projects in the region that are preparing planning applications or have obtained planning approval. **Table 2-2** identifies the projects within 50 km of the Project. Of these projects, four are in close vicinity and there is potential for cumulative impacts to be generated. Cumulative impacts are discussed further in **Section 6.14**.

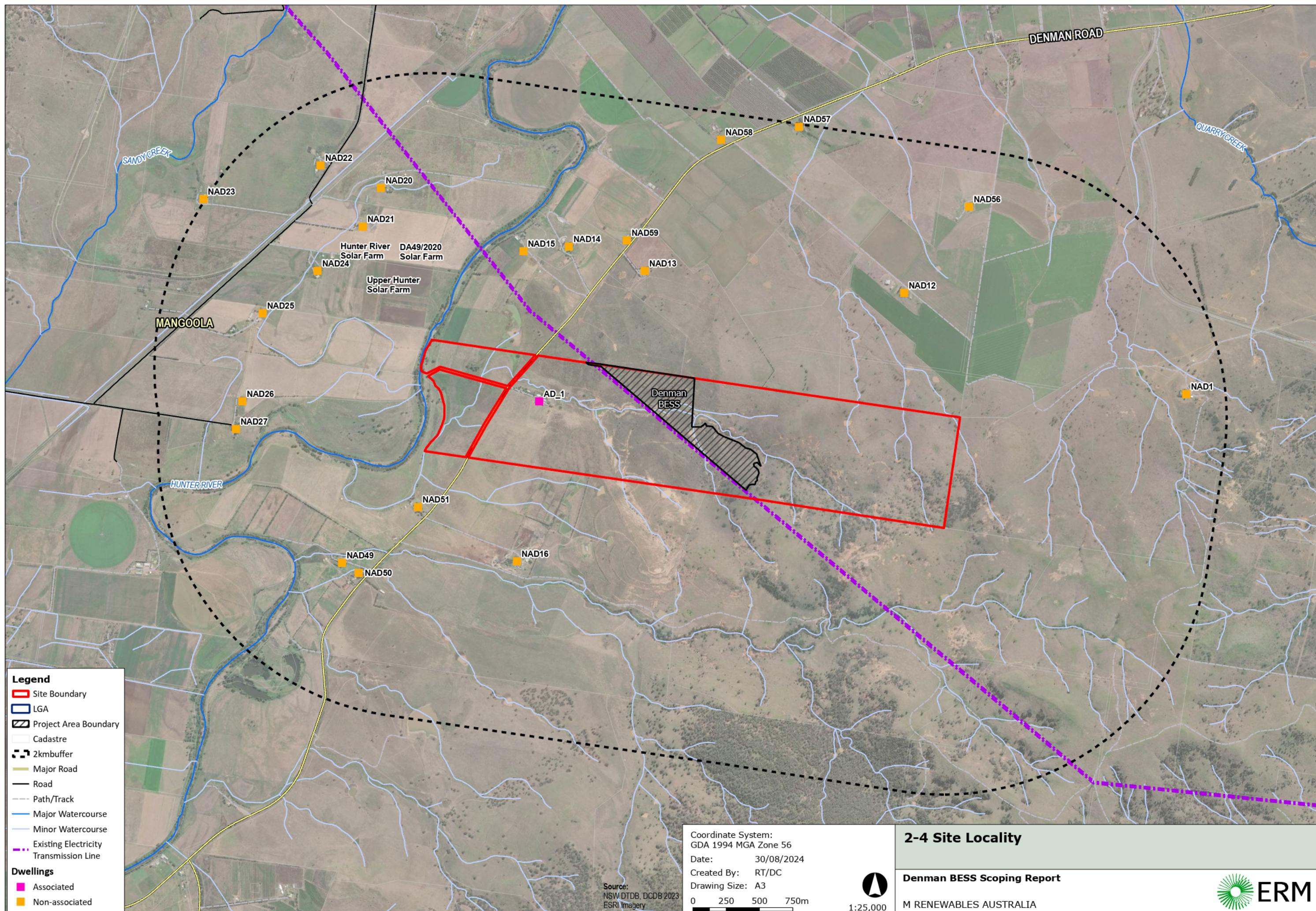
TABLE 2-2 KEY PROJECTS WITHIN 50 KM OF THE PROPOSED PROJECT

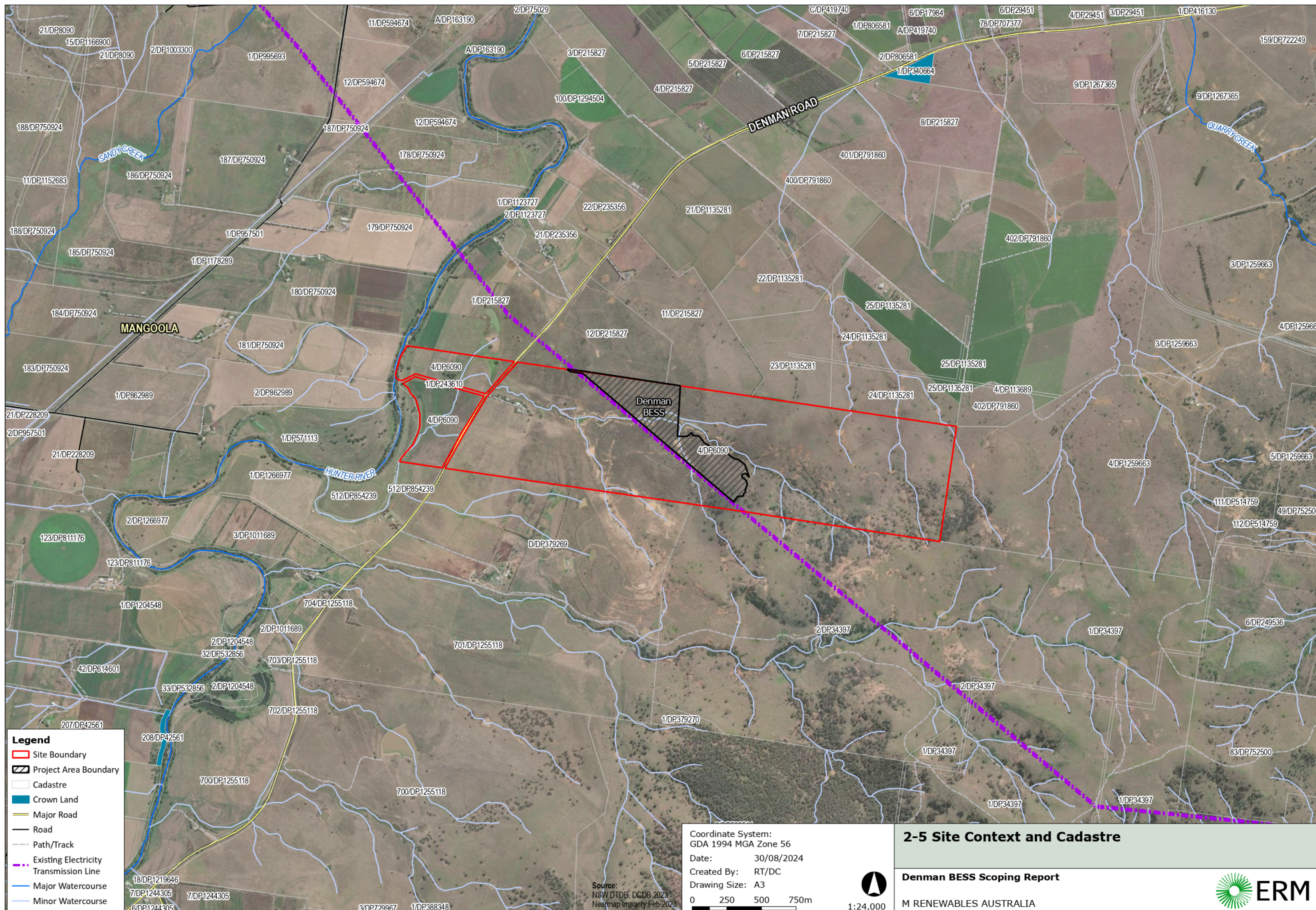
Project	Application Number	Developer	Scale	Proximity	Status	Relevant Future Project
Upper Hunter South Solar Farm	SSD-65996959	Upper Hunter SF Pty Ltd	90 MW	Adjacent to the Project	Prepare EIS	Yes
Hunter River Solar Farm	SSD-38556668	BayWa r.e. Projects Australia Pty Ltd.	60 MW	Adjacent to the Project	Prepare EIS	Yes
Denman Solar Park	DA 49/2020	Joint Regional Planning Panel	22 MW	1.2 km	Approved	Yes
Edderton Solar Project	SSD-69965958	EDF Renewables	350 MW	1.3 km	Prepare EIS	Yes
Maxwell Solar Farm	SSD-9820	Maxwell Solar Pty Ltd	25 MW	14.4 km	Approved	No
Muswellbrook Pumped Hydro Energy Storage Project	SSD-65797725	Muswellbrook Pumped Hydro Pty Ltd	500 MW	16.5 km	Prepare EIS	No
Muswellbrook Battery Energy Storage System	SSD-29704663	Muswellbrook Pumped Hydro Trust	500 MW	18.2 km	Approved	No
Muswellbrook Solar Farm	SSD-46543209	ESCO Solar Farm 9 Pty & Idemitsu Australia Limited	135 MW	18.4 km	Assessment	No
Kyoto Energy Park	MP06_0055	Pamada Pty Ltd	137 MW	30.9 km	Approved	No

2.5.5 VOLUNTARY PLANNING AGREEMENTS

During the preparation of the EIS, the Applicant intends to discuss a Voluntary Planning Agreement (VPA) with Muswellbrook Council which could provide contributions towards improving local infrastructure in the area. The quantum of contributions included in a VPA will be subject to future discussions with the local council.







3. THE PROJECT

3.1 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 30.37 ha within Lot 4 DP 6090 at 1711 Denman Road, Denman, NSW. There are multiple dwellings and outbuildings located 460 m west of the Project Area. Twin 66 kV lines run parallel to Denman Road to the west of the Project Area, and a 500 kV transmission line that runs parallel to the western Project Boundary. The Project Area is located approximately 1.4 km east of the Hunter River and is primarily used for small scale agricultural and residential purposes. A map of the Project Area is provided in **Figure 3-1**.

3.2 THE DENMAN RENEWABLE ENERGY HUB

The Denman Renewable Energy Hub is the name given to both the Denman BESS (this application) and the Upper Hunter South Solar Farm (SSD-65996959). The Upper Hunter South Solar Farm is a 90 MW Solar Farm for which separate approval is being sought.

Metlan has elected to pursue multiple State Significant Development Applications for the Project, reflecting the significance of the Project and the environmental matters which relate to the Project. It is the intent of Metlen that both projects are undertaken.

3.3 PROJECT DESCRIPTION AND LAYOUT

An indicative layout of the BESS has been prepared as shown in **Figure 3-1**. The permanent development footprint is approximately 30.37 ha. Further details of the project layout including ancillary infrastructure, transmission corridor and access roads will be prepared during the EIS phase.

3.3.1 PROJECT DESIGN- COMPONENTS AND SPECIFICATIONS

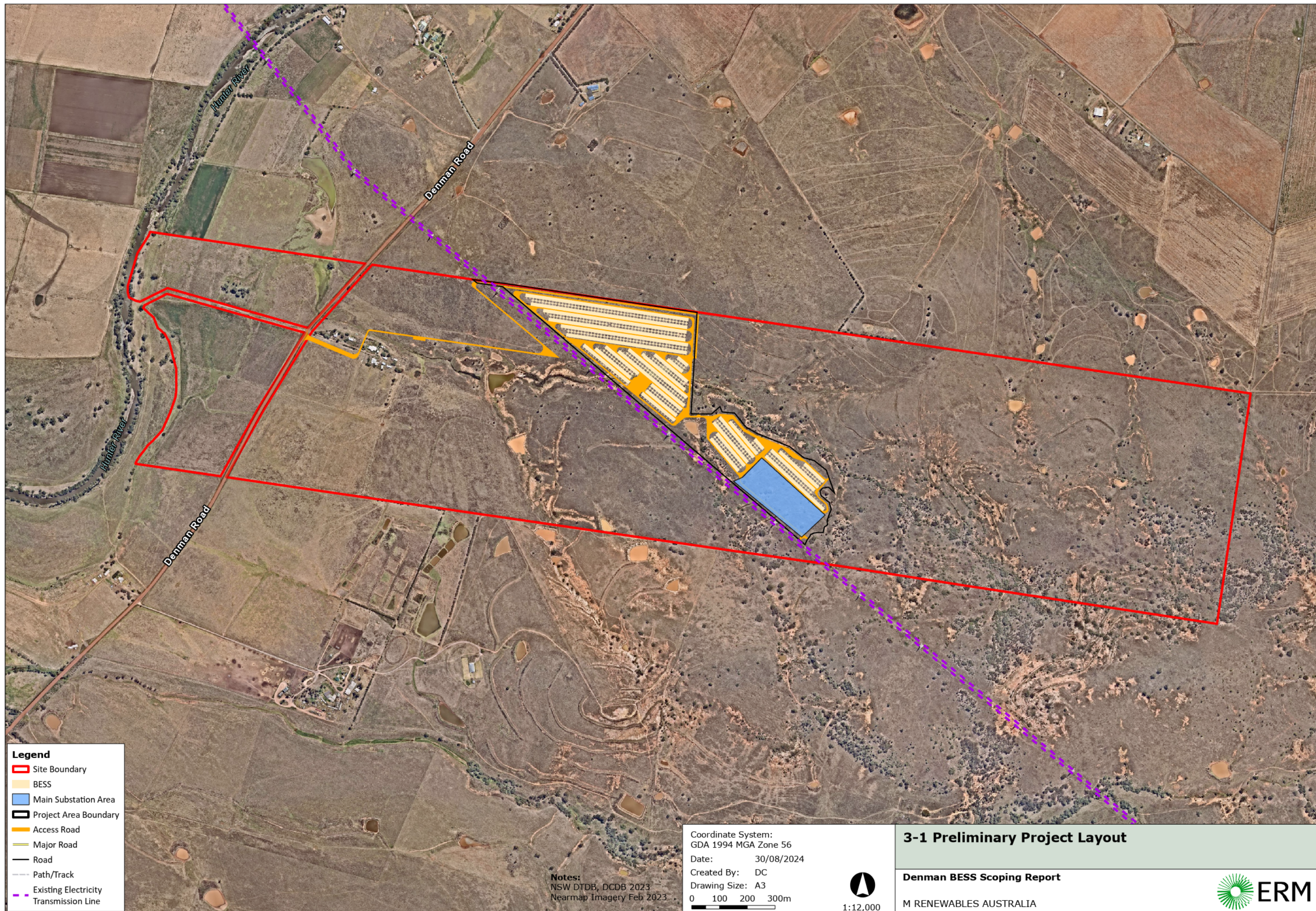
The project will comprise a Battery Energy Storage System (BESS) with a capacity of 2.4 GW / 4.8 GWh and infrastructure associated. **Table 3-1** summarizes the key indicative Project components and specifications.

TABLE 3-1 INDICATIVE PROJECT DESIGN-COMPONENTS AND SPECIFICATIONS

Component	Feature	Specification
Energy generation	BESS	One BESS with 2.4 GW / 4.8 GWh capacity.
Electrical Reticulation Network	On-site substations	New high voltage substation proposed along Denman Road.
	Internal electrical reticulation network	Electrical reticulation will connect into the main substation directly via overhead or underground cables.
	Switchyard	Switchyard and other electrical equipment providing connection to the existing 500 kV transmission network.
Access Roads	Access to site	Access to the Project Area is proposed from Denman Road, Denman

The key project infrastructure would include:

- The construction and operation of a BESS with nominal capacity of 2.4 GW / 4.8 GWh;
- Electrical reticulation network cables that would enable connectivity to the transmission electricity network;
- Access to the Project Area as proposed from Denman Road, Denman; and
- Installation of a switching station and associated infrastructure, including cabling, transformers, carpark, storage area, site fencing, lighting, temporary construction site office and amenities.



Legend

- Site Boundary
- BESS
- Main Substation Area
- Project Area Boundary
- Access Road
- Major Road
- Road
- Path/Track
- Existing Electricity Transmission Line

Notes:
NSW DTDB, DCDB 2023
Nearmap Imagery Feb 2023

Coordinate System:
GDA 1994 MGA Zone 56
Date: 30/08/2024
Created By: DC
Drawing Size: A3
0 100 200 300m
1:12,000

3-1 Preliminary Project Layout

Denman BESS Scoping Report

M RENEWABLES AUSTRALIA

3.3.2 BATTERY ENERGY STORAGE SYSTEM

3.3.3 OTHER INFRASTRUCTURE AND ASSOCIATED WORKS

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

- Underground electrical layout connection;
- Internal access roads to connect BESS and ancillary infrastructure;
- Operations and Maintenance Building;
- Substations; and
- Additional Switchyard.

3.3.4 ELECTRICAL RETICULATION SYSTEM AND GRID CONNECTION

The Project will include underground and overhead electrical reticulation network to connect to a substation/s. The interconnection infrastructure will then connect to the existing 500 kV Transgrid transmission line located on the site.

3.3.5 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 via Denman Road to the west and east.

3.3.6 DEVELOPMENT FOOTPRINT

The Development Footprint represents the maximum potential area of impact associated with the construction and operation of the Project. For the purposes of this Scoping Report the indicative Development Footprint is 30.37 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 BESS footprint, 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.

3.3.7 ANCILLARY ACTIVITIES

The Project may also include the following ancillary activities:

- sourcing of water for construction (this may include offsite or onsite water sourcing, including the construction of bores and / or manmade dams onsite);
- subdivision and boundary adjustments relating to lease arrangements, where required;
- visual screening, where required; and
- geotechnical investigations to inform the siting and location of Project layout and infrastructure.

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

3.3.8 TRANSPORT ROUTE AND SITE ACCESS

Access to the Project Area during construction and operations is proposed via the existing road network. Primary access will be via Denman Road, which runs north-south through the Project Area. The transport route of project related materials is subject to a Route Assessment, which will be prepared as part of the EIS, the outcomes of which will be incorporated into the Traffic and Transport Impact Assessment. This will identify a proposed transport route from the port to the Project Area, as well as any required road upgrades. It is likely that Newcastle Port will be used as the delivery port for the Project. The indicative route and the distance from Newcastle Port to the Project are provided in **Figure 3-2**.

3.3.9 SUBDIVISION

The application includes subdivision to create separate allotments for the Upper Hunter Solar Farm (separate application) and the Denman BESS (this Project). The two projects will share the internal access roads and connection to Denman Road. A right of way will be created over the internal access roads.



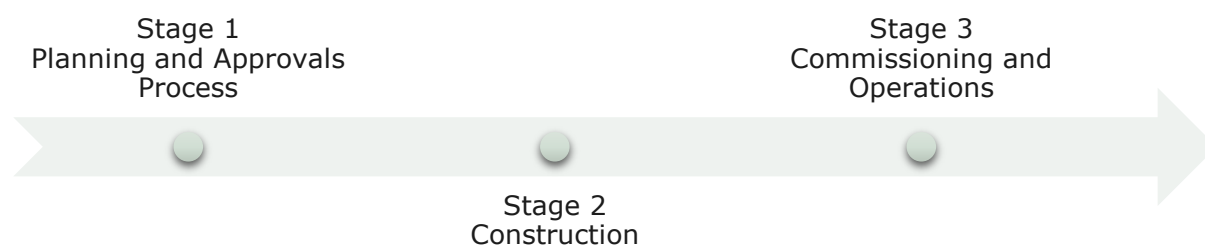
3.4 STAGING

The anticipated staging of the Project is summarized in **Table 3-2** and presented in **Figure 3-3**. The Project is currently in Stage 1, during the planning and approvals process, involving the preparation of the Scoping Report and EIS. The planning and approval process is expected to be completed by 2025. Construction of the Project is expected to commence in 2025, with operations commencing in 2027.

TABLE 3-2 PROJECT STAGING

Stage of the Project	Estimated Date of Completion
Planning and Approvals Process	2025
Construction	2026
Commissioning and Operations	2027 Onwards

FIGURE 3-3 PROJECT STAGING MAP



3.5 PHASES

3.5.1 CONSTRUCTION

The anticipated construction period including associated infrastructure, grid connection and commissioning for this Project is four stages, with each stage consisting of 6-9 months. It is expected that the Project would generate up to 50 fulltime equivalent (FTE) jobs during the peak construction period.

The batteries will be manufactured offsite and delivered to the project site following the completion of construction works to enable installation of the BESS. The primary onsite construction activities are listed below:

- Clearing and levelling of ground cover;
- A concrete foundation or base construction on which the batteries will be installed on;
- Construction of access road;
- Security fencing and landscaping;
- Construction of a permanent carpark and a temporary construction loading area;
- Installation of battery containers and associated electrical equipment;
- Installation of transformers and switching stations;
- Installation of high voltage electrical equipment such as circuit breakers, switching equipment, auxiliary power equipment and control systems;
- Installation of earthing system;

- Installation of lighting; and
- Commissioning.

3.5.2 OPERATIONS

The proposed operational hours are 24 hours, 7 days a week. The operational life span for the utility scale BESS is anticipated to be 20 years. During the operation of the battery no workforce is permanently required on site, as the battery system is designed to function remotely without any intervention.

The maintenance undertaken will be majorly preventive. The workforce required periodically for maintenance activities or the project during operations will be equivalent to FHE.

3.5.3 DECOMMISSIONING

The EIS will discuss the potential options associated with the decommissioning of the project upon completion of operations.

At the end of operational life of the project, the site could be formally decommissioned. A decision will be made at this point whether to upgrade or replace the existing infrastructure, subject to technological improvements, or to remove the utility scale battery energy storage system and rehabilitate the site.

This process of decommissioning will be undertaken in accordance with the relevant legal requirements, regulations and conditions of approval.

3.6 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.

3.6.1 ALTERNATIVE SITE LAYOUT OPTIONS

The design of the Project will require ongoing review during the EIS phase. These design revisions will be an iterative process, allowing for improvement in BESS siting based on information from environmental assessment, landowner feedback and inclusion into the Project (as involved landowners), and broader community consultation.

The design process will be focused around three main principles:

- Minimizing and/or avoiding negative environmental and social impacts;
- Maximising wind energy production; and
- Incorporating feasible and reasonable mitigation/management measures, safeguards and provisions (e.g. for compliance monitoring) into the construction and operational aspects of the Project.

The preliminary layout of the BESS was chosen to minimise potential environmental impacts that may occur. The preliminary layout, whilst indicative, has considered the preliminary constraints that have been mapped within the Project Area. In addition, the design of the Project will be subject to further assessments and community feedback throughout the Project development.

3.6.2 DO NOTHING

The Project Area is currently used for agricultural land uses. The 'do nothing' scenario would lead to 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; and
- A capital investment creating direct and indirect employment during construction and operations.

Failing to adequately transition to renewable energy sources will result in the continued use of fossil fuels, including coal (both black and brown) and natural gas. The reliance on these energy sources results in the release of GHG emissions such as CO₂, which contributes to the harmful effects of climate change. The RET discussed in **Section 2.1** outlines the commitment by Australia and NSW in reducing greenhouse gas emissions and have set targets for increasing the generation of renewable energy.

4. STATUTORY CONTEXT

This section outlines the key statutory requirements for the Project under the *Environmental Planning and Assessment Act 1979* and other relevant NSW and Commonwealth legislation about the *State Significant Development Guidelines – Preparing a Scoping Report* (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 (SSD). Section 4.36(2) of the EP&A Act states:

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

Under the provisions of Section 2.6 (1) of the Planning Systems State Environmental Planning Policy (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 an estimated development cost of more than \$30 million.

The Project involves development for the purpose of electricity generating works which will have an estimated development cost 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 Muswellbrook Shire Council LGA and is subject to the provisions of the Muswellbrook Local Environmental Plan 2009 (Muswellbrook LEP). The Project Area is zoned in its entirety as RU1 – Primary Production under the Muswellbrook LEP. Relevant SEPPs is the State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP).

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 purpose of—

(a) making or generating electricity, or

(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.	<i>Roads Act 1993</i> (Roads Act)	The Project will require consent from the appropriate roads authority under Section 138 of the Roads Act for any works undertaken on public roads. The impacts of the Project on roads and traffic will be assessed within the EIS.
EPBC Act Approval	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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). The findings of the Preliminary Biodiversity Assessment (Appendix C) determined that one (1) threatened species listed under the EPBC Act is known to occur, seven (7) are considered likely to occur, and 11 species have the potential to occur within the Project Area. Future survey periods completed to inform the Project Biodiversity Development Assessment Report (BDAR) will continue to use methods consistent with the BAM to evaluate the presence of threatened species.

Approval Category	Legislation	Requirement
Other Approvals	<i>Water Management Act 2000</i>	The Project may require water access licenses under the <i>Water Management Act 2000</i> . The soil and water assessment will identify whether any water access licenses will be required for the Project.
	<i>Biodiversity Conservation Act 2016 (BC Act)</i>	The Biodiversity Assessment that will be prepared to accompany the EIS will provide a discussion of the management and protection of listed threatened species of native flora and fauna and threatened ecological communities (TECs) and assess biodiversity offsets consistent with the Biodiversity Offset Scheme. Given the Project is SSD, entry into the Biodiversity Offset scheme is automatically triggered.
Approvals not required under SSD Section 4.41 of the EP&A Act outlines the following approvals, permits etc. are not required for an approved SSD.	<i>Fisheries Management Act 1994</i>	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.
	<i>Heritage Act 1977</i>	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.
	<i>National Parks and Wildlife Act 1979</i>	The Project will not require an Aboriginal heritage impact permit under Section 90.
	<i>Rural Fires Act 1997</i>	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.
	<i>Water Management Act 2000</i>	The Project will not require a water use approval under Section 89, a water management work approval under Section 90, or an activity approval (other than an aquifer interference approval) under Section 91.

4.4 MANDATORY MATTERS FOR CONSIDERATION

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

TABLE 4-2 MANDATORY CONSIDERATIONS

Statutory Reference	Mandatory Consideration
<i>Considerations under the EP&A Act and Regulation</i>	
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; and 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 including: ◦ State Environmental Planning Policy (Resilience and Hazards) 2021; ◦ State Environmental Planning Policy (Transport and Infrastructure) 2021; and ◦ Muswellbrook Local Environmental Plan 2009. • 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.
<i>Considerations under other legislation</i>	
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 Biodiversity Development Assessment Report (BDAR). The Minister may (but is not required to) further consider under the Act the likely impact of the proposed development on biodiversity values.

Statutory Reference	Mandatory Consideration
<i>Considerations under relevant EPIs</i>	
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 Department of Planning 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.
Muswellbrook Local Environmental Plan 2009	The EIS will address relevant components of the LEP, including: • Section 2.3(2) – The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone; and • Land Use Table – Objectives and permissible uses of the <i>RU1 – Primary Production</i> zone.
<i>Considerations under Development Control Plans</i>	
Muswellbrook Shire Council Development Control Plan 2009 (DCP)	Section 8 of the Muswellbrook Shire Council DCP applies to development in RU1 zones. Under Section 2.10 of the Planning Systems SEPP, DCPs do not apply to SSD projects: <i>2.10 Exclusion of application of development control plans</i> <i>Development control plans (whether made before or after the commencement of this Policy) do not apply to—</i> <i>(a) State significant development, or</i> <i>(b) development for which a relevant council is the consent authority under section 4.37 of the Act.</i> The Project will be classified as SSD.

5. COMMUNITY AND STAKEHOLDER ENGAGEMENT

The Proponent recognises that individual communities are both diverse and unique. Across its renewable energy portfolio, it works closely with local communities to deliver projects that leave a positive, long-term impact in the regions in which it operates.

Engagement provides a unique opportunity for projects to benefit from local insights, better anticipate unforeseen issues and build lasting partnerships that are key to forging a social license to operate for the 30-plus year project lifespan.

5.1 ENGAGEMENT APPROACH

ERM developed a Community and Stakeholder Engagement Strategy (CSES) in May 2024 to support the Denman BESS development (**Appendix B**). The CSES provides the blueprint for robust engagement consistent with the following principles:

- **Respectful** – seek to understand and act on community concerns;
- **Honest** – be open about what aspects of the project can be influenced;
- **Accessible** – provide clear, concise information in formats and channels that best meet a community's needs;
- **Proportionate** – tailor engagement to reflect the level of impact across the stakeholder environment;
- **Evidence-based** – base engagement activities and tools on an understanding of community demographics, history, and social and economic influences;
- **Timely and high-profile** – engage early, across the entire project lifecycle, and widely promote access to project information, feedback channels and engagement activities; and
- **Accurate reporting** – build robust systems to record feedback, track response timeframes and record how feedback has been incorporated into the project.

These principles align with the social justice-focused principles outlined in Muswellbrook Shire Council's Community Engagement Strategy 2022 (MSC, 2022b) which prioritises equity, access, participation and rights as the cornerstone for effective engagement.

5.2 ALIGNMENT WITH NSW GOVERNMENT ENGAGEMENT GUIDELINES

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

- *Undertaking Engagement Guidelines for State Significant Projects* (NSW DPE, 2022);
- *State Significant Development Guidelines* (DPE, 2022b);
- *Community Participation Plan* (DPHI, 2024b); and
- *Social Impact Assessment Guideline for State Significant Projects* (DPHI, 2023).

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

5.3 STAKEHOLDERS

The Proponent has identified relevant stakeholders who are affected by or have an interest in or influence on the 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 IDENTIFIED STAKEHOLDERS

Stakeholder group	Identified stakeholders
Government	• NSW Member for Upper Hunter, Dave Layzell MP; • Federal Member for Hunter Dan Repacholi MP; • Muswellbrook Shire Council; ◦ Mayor, Cr Steve Reynolds; ◦ General Manager, Derek Finnigan; and ◦ SSD Committee (Mayor, Councillors, technical staff). • Transport for NSW (TfNSW); • Department of Planning, Housing and Infrastructure (DPHI); • EnergyCo NSW; • NSW Local Land Services; • NSW Environmental Protection Authority (EPA); • Regional Development Australia (RDA); • Department of Climate Change, Energy, the Environment and Water (DCCEEW); • Australian Energy Infrastructure Commissioner; • Emergency service organisations, including the NSW Rural Fire Service; and • Hunter Joint Organisation.
Aboriginal communities	• Wanaruah Local Aboriginal Land Council; • Native Title Services; and • The Registrar of Aboriginal Owners.
Neighbours	• Neighbouring dwellings and businesses within 5km of the site; • Camel Farm Tours; • Blakefield Stock and Feed; • Fernrigg Farm; • Hunter Valley Pecans; • Pukara Estate; and • Small Forest Winery.
Surrounding communities	• Community members outside of the 5km radius of the site.
Local community organisations and businesses	• Business Hunter; • Denman Chamber of Commerce; • Muswellbrook Chamber of Commerce and Industry; • Denman and District Development Association; • Upper Hunter Economic Diversification Working Party; • Nearby coal mines; ◦ BHP Mt Arthur open-cut coal mine; and ◦ Drayton Mine. • Local contractors/suppliers; • NSW Farmers Hunter branch; • Service industries likely to benefit during construction – food and beverage, supermarkets; • Estate agents; and • Prospective renewables developers to the south and nor of the Project site.

Stakeholder group	Identified stakeholders
Utilities	• Transgrid; • Hunter Water; and • Ausgrid.
Local schools, religious organisations, clubs	• Osborn's Transport; • Denman Public School; • Martindale Public School; • Muswellbrook High School; • Sandy Hollow Public School; and • St Josephs Primary School Denman.
Environment groups	• Climate Change Council; • Hunter Region Landcare Network; • Upper Hunter Landcare; • Hunter Valley Protection Alliance Hunter Local Land Services; and • Lock the Gate Alliance.
Local and social media	• Muswellbrook Chronicle; • Hunter Valley News; • Hunter River Times; • ABC Upper Hunter; • Power FM Muswellbrook; • NBN TV; and • Facebook. ◦ Denman Community (private group), 9,000 members; and ◦ Denman & District Community Group (private group), 2,600 members.

5.4 ENGAGEMENT ACTIVITIES

The Proponent commenced community and stakeholder engagement on the Project in 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 ACTIVITIES DURING SCOPING PHASE

Activity	Description
Government engagement	• Sent introductory letters to NSW Member for Upper Hunter, Dave Layzell MP and Federal Member for Hunter, Dan Repacholi MP; and • Held in-person meeting with Dan Repacholi MP to introduce Project and hear feedback.
Engaged landowners and neighbours	• Sent an introductory letter to 17 residents and businesses within 5km of the project area.
Communications channels and tools	• Established a Project website www.denmanrenewableenergyhub.com.au to provide information on the Project background and need, a map of the proposed Project location, Project timeline, community consultation approach, and contact information; • Established a Project email address available as a form field on the website; • Developed Project Frequently Asked Questions and placed them on the Project website; and • Developed a Project overview document to support government and industry engagement.
Phone calls	• Phone calls with three local residents responding to the introductory letters.

5.4.1 ENGAGEMENT FEEDBACK

Feedback received to date has been positive to neutral and the topics raised have varied. A summary of feedback themes and responses to date is provided in **Table 5-3**.

TABLE 5-3 SUMMARY OF FEEDBACK AND RESPONSE

Theme	Focus of feedback	Response to feedback
Project location	Parcels of land on which the Project will be situated.	Provided explanation of location and reason for siting.
Agricultural value of land	Project compatibility with local land use.	Project environmental investigations will determine necessary mitigations.
Project benefits	- Support for the economic benefits the Project will bring to Denman; and - Support for the Project's contribution to Australia's renewable energy targets.	Committed to ongoing consultation with government through the Project lifecycle.

5.5 FUTURE ENGAGEMENT

Community and stakeholder engagement through the EIS phase will build on relationships established through early engagement activities and complement formal consultation required under planning regulations. The following community and stakeholder engagement activities are planned with all stakeholder segments:

- Meeting with NSW Member for Upper Hunter, Dave Layzell MP 16/09/24;
- Community drop-in sessions in Denman 20/09/24 and 21/09/24 and ongoing;
- Develop a Project fact sheet, Project Frequently Asked Questions (FAQ) document and Metlen promotional banner as drop-in collateral and for future engagements;
- Advertisement in the Muswellbrook Chronicle promoting the September drop-in sessions;
- One-on-one meetings with stakeholders;
- Discuss a Voluntary Planning Agreement with Muswellbrook Shire Council;
- Further letters to neighbours through the Project lifecycle;
- Continue to monitor and respond to the Project email address; and
- Regular updates to the Denman Renewable Energy Hub website.

All stakeholder engagement feedback will continue to be collected and recorded in a structured and formal manner, using the community engagement management platform. Engagement approaches will be evaluated and reviewed regularly to ensure the Project offers adequate participation opportunities and responds to stakeholder feedback.

5.5.1 MONITORING AND EVALUATION

Engagement and communication processes will be monitored and evaluated throughout the project life cycle to ensure the techniques being used are effective, new stakeholders are being identified and any new issues or concerns are being addressed. The results of stakeholder feedback and a summary of enquires will be incorporated in the evaluation process to ensure continuous improvement of the Project engagement.

The effectiveness of stakeholder engagement strategy and tactics will be monitored 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.

The Community and Stakeholder Engagement Strategy is an organic document that will be adapted to:

- Ensure the techniques being used are effective;
- Identify new stakeholders; and
- Respond to any new issues or concerns.

Chapter 7 of the CSES (**Appendix B**) discusses monitoring and evaluation further.

6. PROPOSED ASSESSMENT OF IMPACTS

6.1 CATEGORISATION OF ASSESSMENT MATTERS

This section outlines matters requiring further assessment in the EIS and the level of assessment that should be undertaken for each matter. A preliminary environmental assessment was undertaken to identify the potential matters associated with the proposed construction and operation of the Project. The following were considered in the identification of matters requiring further assessment in accordance with the Scoping Report Guidelines (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 categorized 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 renewable developments in NSW.

TABLE 6-1 PROPOSED ASSESSMENT

Level of Assessment	Aspect
Detailed (potential constraint)	• Amenity – Visual; • Amenity – Noise, vibration; • Biodiversity – terrestrial flora and fauna; • Heritage – Aboriginal; • Hazards and Risks – bushfire, environmental hazards, waste; and • Access – Traffic and Transport.
Standard	• Heritage – Historic; • Mining and Exploration Titles; • Social – surroundings, livelihoods; • Water – hydrology; • Land – land capability; • Air Quality; and • Waste Management.

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

6.2 VISUAL AMENITY

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

The PVIA was undertaken by Moir Landscape Architecture (MLA) in June 2024. The PVIA was prepared in accordance with the:

- *Large-Scale Solar Energy Guidelines* (August 2022) (DPE, 2022a);
- *Large Scale Solar Energy Guidelines- Technical Supplement: Landscape and Visual Impact Assessment* (DPIE, 2022); and
- *State Significant Development Guidelines* (DPE, 2022b).

Whilst the *Large-Scale Solar Energy Guidelines* apply to large-scale solar developments, DPHI has recommended the guideline be adopted for large scale BESS developments in the absence of visual impact guidelines specific to BESS. 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.

6.2.1 EXISTING VISUAL AND LANDSCAPE CHARACTER

A 'Study Area' of 5 km from the Project boundary has been used to define the landscape character assessment alone in accordance with the Technical Supplement 2022. The Study Area is characterised by modified gently undulating paddocks with scattered vegetation used for grazing and farming. This is the typical character visible in the surrounding landscape. Due to the resource rich geology, several coal mines are located nearby to the Project. The Hunter River flows west of the Project generally in a northeast to southwest direction.

Land within the Study Area is predominantly modified and utilised for grazing and farming, and vegetation is visible along paddock edges and roadsides. Dense vegetation associated with the river is visible along the river edge, with some lower order creeks flow through the Study Area draining into the Hunter River. Several man-made dams are also visible in the Study Area. An existing overhead 500 kV and twin 66 kV transmission lines intersect the Project (**Figure 3-1**).

One associated dwelling (AD_1) at 1171 Denman Road, Denman, is located within the Project Area, and 61 non-associated dwellings were identified within the 5km Study Area. Due to a relatively gently undulating topography and lack of intervening vegetation within the wider landscape, detailed assessment will be undertaken during the EIS phase. The nearest non-associated dwelling (NAD51) is located approximately 412 m to the south of the Project Boundary **Table 6-2**).

6.2.1.1 PRELIMINARY ASSESSMENT TOOL

In accordance with the Technical Supplement 2022, the preliminary assessment tool identifies viewpoints from public roads and rail lines within 2.5 km of the Project Area, and other public and private viewpoints within 4 km of the Project Area. Application of the preliminary assessment tool identified that a total of four (4) public viewpoints have been selected to represent roads within 2.5 km of the Project. Additionally, 36 non-associated dwellings were identified within 4 km of the Project. The majority of the Project will be visible from land to the immediate east and southeast of the Project. The Project may be partially visible by western public viewing locations within 4 km of the Project Investigation Area.

Based on topography alone, 24 non-associated dwellings would theoretically have new views to any part of the Project. The four (4) public viewpoints and remaining 12 non-associated dwellings were subject to further assessment, of which two (2) public viewpoints and one (1) non-associated dwelling (NAD51) would require detailed assessment in the EIS phase (refer to **Table 6-2** and **Table 6-3**).

TABLE 6-2 RESIDENCES LOCATED WITHIN 4 KM OF THE BESS BOUNDARY

Dwelling / Residence Number	Involved / Non-Involved	Distance from BESS boundary (m)	Detailed Assessment Required
NAD16	Not-involved	1,497 m	NO
NAD21	Not-involved	2,025 m	NO
NAD23	Not-involved	3,188 m	NO
NAD24	Not-involved	2,195 m	NO
NAD25	Not-involved	2,522 m	NO
NAD26	Not-involved	2,657 m	NO
NAD27	Not-involved	2733 m	NO
NAD28	Not-involved	3,518 m	NO
NAD29	Not-involved	3,615 m	NO
NAD49	Not-involved	2,406 m	NO
NAD50	Not-involved	2,360 m	NO
NAD51	Not-involved	1,700 m	YES

TABLE 6-3 VIEWPOINTS LOCATED WITHIN 4 KM OF THE BESS BOUNDARY

Viewpoint Number	Distance from nearest panel (m)	Detailed Assessment Required
VP01	1,973 m	NO
VP02	977 m	YES
VP03	675 m	YES
VP04	2,459 m	NO

Potential Cumulative Visual Impacts

In accordance with the *Cumulative Impact Assessment Guidelines* (DPE, 2022c), the area chosen to assess relevant cumulative impacts from other developments 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 suggests solar panels and objects recede into the background in terms of visibility at 8 km.

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. Figure 10 of **Appendix C** shows other renewable energy projects that are currently proposed, operating and under construction over a broader regional context.

The renewable energy projects further considered for cumulative impacts have been identified in **Table 2-2**. Hunter River Solar Farm (HRSF), Upper Hunter South Solar Farm (UHSSF), Denman Solar Park and Edderton Solar Park are located in close proximity to the Project and SEARS for the Projects have been issued (NSW Major Projects 2023). It is likely that there will be potential cumulative visual impact from HRSF, UHSSF and the Project on the surrounding receptors and further assessment will be undertaken as part of the EIS. Except for HRSF and UHSSF, it is unlikely that all the other projects would be visible simultaneously. Further assessment of the cumulative visual impact will be detailed in the EIS, along with potential mitigation and management measures that can be employed to reduce impacts.

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 (e.g. reflectivity, glare, lighting) on nearby receptors, and scenic or significant views, including public viewpoints in accordance with the requirements of Appendix C of the *Large-Scale Solar Energy Guideline* (DPE, 2022a).

6.2.2 ASSESSMENT APPROACH

This report will illustrate the potential views of the Project from key public viewpoints with the development of specialized modelling tools and visualisations (including photomontages). Additionally, site inspections will be undertaken from key public viewpoints identified as requiring further assessment.

Based on the guidelines and Technical supplement, 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. To assess potential impacts of the glint and glare using the industry standard methodology, a further assessment will be undertaken.

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

6.3 NOISE

6.3.1 EXISTING ENVIRONMENT

The Project Area is situated in a rural setting, where the existing land uses are predominantly for agricultural purposes. The existing noise environment at the nearest dwellings is determined to be that of a typical rural area, dominated by natural noise sources such as foliage noise, birdsong, distant road traffic noise and occasional noise associated with agricultural production.

The nearest associated dwelling to the proposed BESS is located within the site at 1711 Denman Road, Denman. An associated dwelling is defined as a dwelling within the Project Area or having an agreement with the Proponent. Six non-associated dwellings are identified within the area of influence (with respect to potential noise impacts) of 2 km of the Project area (refer to **Figure 2-4**).

6.3.2 LEGISLATIVE CONTEXT & ASSESSMENT APPROACH

In the EIS stage of the project, construction and operational noise impacts will be assessed at the associated and non-associated dwellings within the area of influence as part of the Noise and Vibration Impact Assessment (NVIA) for the EIS, and subsequent detailed design of the Project.

During the operational phase of the Project, potential noise impacts are likely to be associated with the electrical infrastructure, in particular, cooling systems associated with the battery units and transformers.

During the construction phase of the Project, dwellings may be affected by noise associated with site preparation, delivery, installation and testing and increased construction traffic on the local road network.

The Project is unlikely to result in vibration impacts during its construction or operational phases.

The NVIA will be developed in accordance with the following standards, policies and guidelines, where applicable:

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

- Transport for NSW (TfNSW), *Noise Mitigation Guideline (NMG) 2022* (TfNSW NMG, 2022); and
- NSW Environment Protection Authority (EPA), *Noise Guide for Local Government (NGLG) 2013* (NSW EPA NGLG, 2013).

The NVIA will generally include:

- Establishment of background noise levels as well as operational and construction assessment criteria at dwellings;
- Assessment of operational noise impacts;
- Assessment of construction noise impacts;
- Assessment of road traffic noise impacts (with a focus on construction traffic);
- Assessment of cumulative operational noise impacts associated with surrounding industry (as relevant); and
- Provision of recommendations for noise mitigation, management measures, safeguards and/or provisions for monitoring.

6.4 BIODIVERSITY

ERM has prepared a Preliminary Biodiversity Assessment (PBA) to inform this Scoping Report for the Denman BESS Project. The PBA is presented as **Appendix D** of this report.

This section summarises the methodology, results and recommended next steps documented in the project PBA. The main objective of this assessment is to provide an initial identification and documentation of the ecological constraints associated with the Project area (referred to in this section as the Subject Land). This assessment has been informed by review of desktop and GIS resources, and field investigations conducted in accordance with the NSW Biodiversity Assessment Method (BAM).

Identification of key ecological constraints at this stage of the project allows for preliminary recommendations to be provided in terms of the avoid, mitigate, and offset hierarchy. Additional biodiversity assessment and field investigations will be conducted a part of the EIS phase of works.

6.4.1 EXISTING ENVIRONMENT

The Project is located entirely within the Sydney Basin Interim Biogeographical Regionalisation for Australia (IBRA) bioregion and the Hunter IBRA subregion. This region is characterised by rolling hills and a meandering river system on a flood plain. The climate of this region is temperate, with warm summers and year-round rainfall. Existing land uses of the region include mining, power generation, and agricultural industries. The Subject Land has evidence of extensive agricultural activities such as crop production and livestock grazing.

The vegetation across the site is largely associated with PCT 3845 Central Hunter Slaty Gum Grassy Forest. This PCT occurs in a derived grassland or open forest form, additionally there are areas of exotic dominated vegetation that does not pertain to any listed PCT in NSW. These areas are referred to as non-native vegetation. Vegetation classification and mapping is to be further refined as a result of subsequent field investigations undertaken as a part of the EIS.

The stands of native vegetation present on site potentially provide important refuge, foraging and nesting habitat of native fauna.

A high abundance of Eucalypt and Allocasuarina species were observed to contain hollows capable of being used by fauna. Other habitat values observed in the Project area included rocky areas, fallen logs and bodies of water.

A search of the Biodiversity Values Map and the Biodiversity Offsets Scheme Threshold Tool was completed for this Project and a copy of the results are located within Appendix A of the PBA (**Appendix D**). There are no areas of biodiversity values mapped within the proposed Project area, the nearest being lands associated with the Hunter River 3 km west of the Project boundary.

6.4.1.1 PLANT COMMUNITY TYPES

Identification of plant community types (PCTs) within the Subject Land was initiated through review of the NSW State Vegetation Type Map (SVTM). This mapping was used as a guide for initial field investigations and was refined after each survey event. The result of this being that only one (1) PCT was found to occur on site in two distinct forms.

The PCT 3845 Central Hunter Slaty Gum Grassy Forest was found to occur in an open woodland state and a derived native grassland formation as shown in **Figure 6-1**.

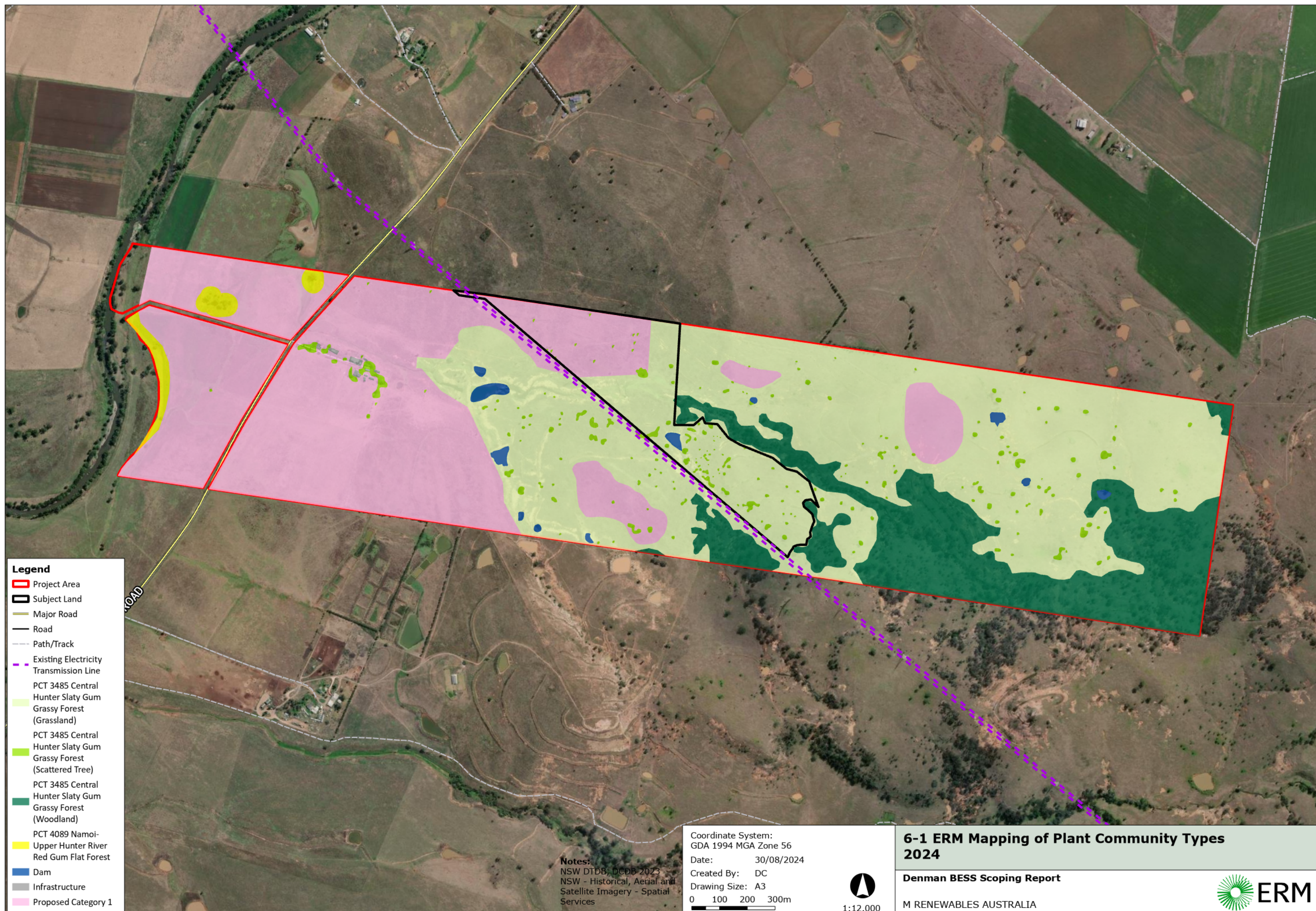
Table 6-4 below describes the PCT and the area it occupies on the Subject Land, and **Figure 6-1** provides the mapping completed by ERM after field investigations.

TABLE 6-4 PLANT COMMUNITY TYPES WITHIN THE SUBJECT LAND

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Coverage (ha)	Percentage (%)
3845	Central Hunter Slaty Gum Grassy Forest	Western Slopes Grassy Woodlands	Open Forest	1.04	3.43%
3845	Central Hunter Slaty Gum Grassy Forest	Western Slopes Grassy Woodlands	Derived Native Grassland	18.70	61.70%

6.4.1.2 LAND CATEGORY ASSESSMENT

Review of the Native Vegetation Regulatory Map (NVR Map) was conducted as part of the desktop review for the PBA. This review determined that there were no Category 1 – exempt lands or Category 2 – regulated lands present within the Project area. The closest Category 2 land is associated with the Hunter River due west of the Project area, shown in **Figure 6-2** below. A Land Category Assessment is to be prepared to determine whether Category 1 land is present on site.



Legend

- Project Area
- Subject Land
- Major Road
- Road
- Path/Track
- Existing Electricity Transmission Line
- PCT 3485 Central Hunter Slaty Gum Grassy Forest (Grassland)
- PCT 3485 Central Hunter Slaty Gum Grassy Forest (Scattered Tree)
- PCT 3485 Central Hunter Slaty Gum Grassy Forest (Woodland)
- PCT 4089 Namoi-Upper Hunter River Red Gum Flat Forest
- Dam
- Infrastructure
- Proposed Category 1

Notes:
NSW DTDB, DCDB 2023
NSW - Historical, Aerial and Satellite Imagery - Spatial Services

Coordinate System:
GDA 1994 MGA Zone 56
Date: 30/08/2024
Created By: DC
Drawing Size: A3
0 100 200 300m

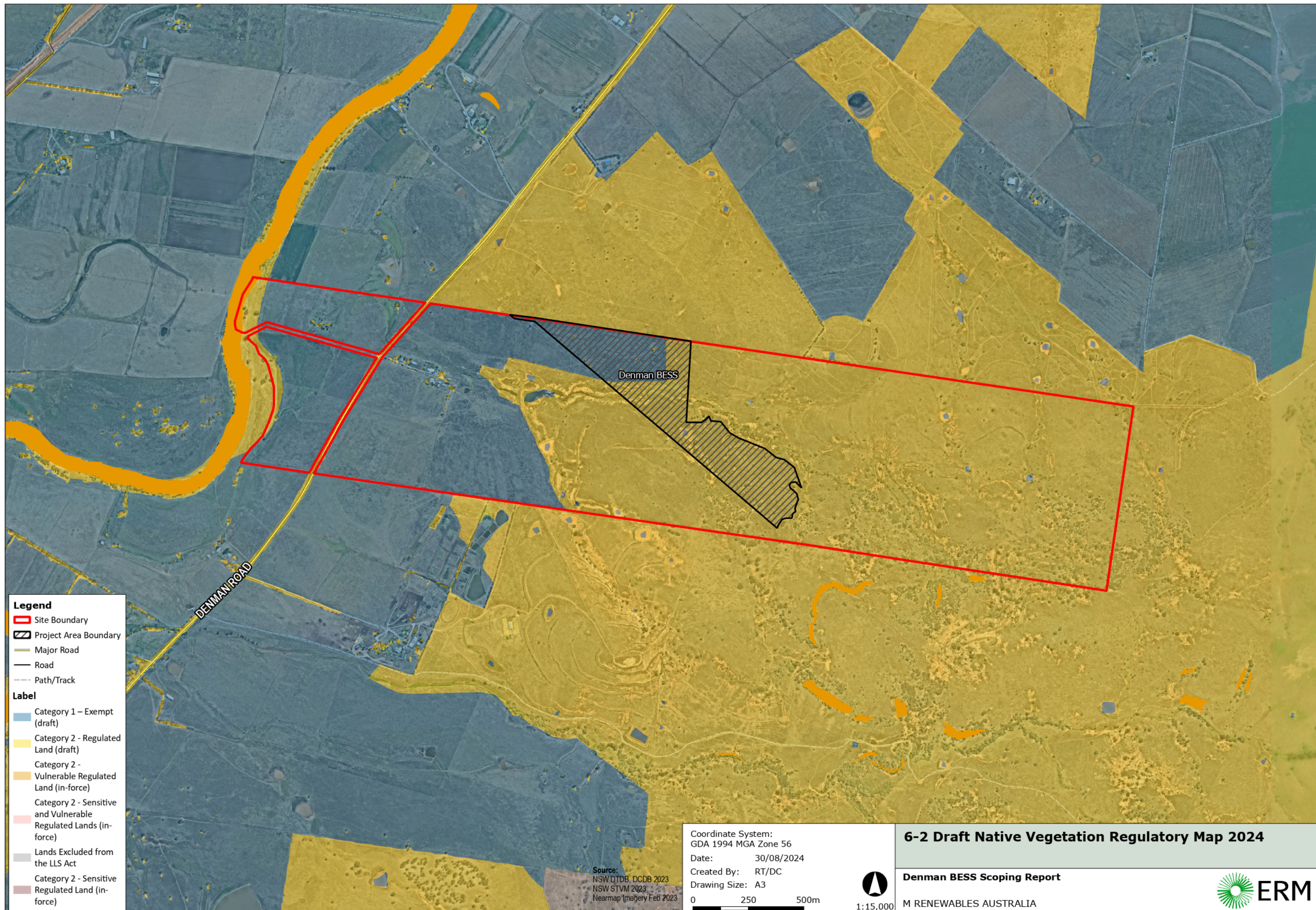


6-1 ERM Mapping of Plant Community Types 2024

Denman BESS Scoping Report

M RENEWABLES AUSTRALIA





Legend

- Site Boundary
- Project Area Boundary
- Major Road
- Road
- Path/Track

Label

- Category 1 – Exempt (draft)
- Category 2 - Regulated Land (draft)
- Category 2 - Vulnerable Regulated Land (in-force)
- Category 2 - Sensitive and Vulnerable Regulated Lands (in-force)
- Lands Excluded from the LLS Act
- Category 2 - Sensitive Regulated Land (in-force)

Source:
NSW DTDB, DCDB 2023
NSW STVM 2023
Nearmap Imagery Feb 2023

Coordinate System:
GDA 1994 MGA Zone 56
Date: 30/08/2024
Created By: RT/DC
Drawing Size: A3
0 250 500m



6-2 Draft Native Vegetation Regulatory Map 2024

Denman BESS Scoping Report

M RENEWABLES AUSTRALIA



6.4.1.3 THREATENED ECOLOGICAL COMMUNITIES

Based on the PCT identified as a part of this assessment there is the potential for one state listed threatened ecological community (TEC) and one Commonwealth listed TEC. These are:

- Central Hunter Grey Box – ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions, Endangered Ecological Community under the NSW BC Act; and
- Central Hunter Valley eucalypt forest and woodland, critically endangered ecological community under the commonwealth EPBC Act.

Mapping of the TECs and the confirmation of their presence/absence will be determined after subsequent field investigations to inform the BDAR as part of the EIS.

6.4.1.4 THREATENED FLORA AND FAUNA SPECIES

Review of the BAM-C completed as a part of the Preliminary Biodiversity Assessment identified a list of twenty-seven (27) candidate species with the potential to occur within the Subject Land. These species are listed below in **Table 6-5**.

TABLE 6-5 PRELIMINARY CANDIDATE SPECIES LIST

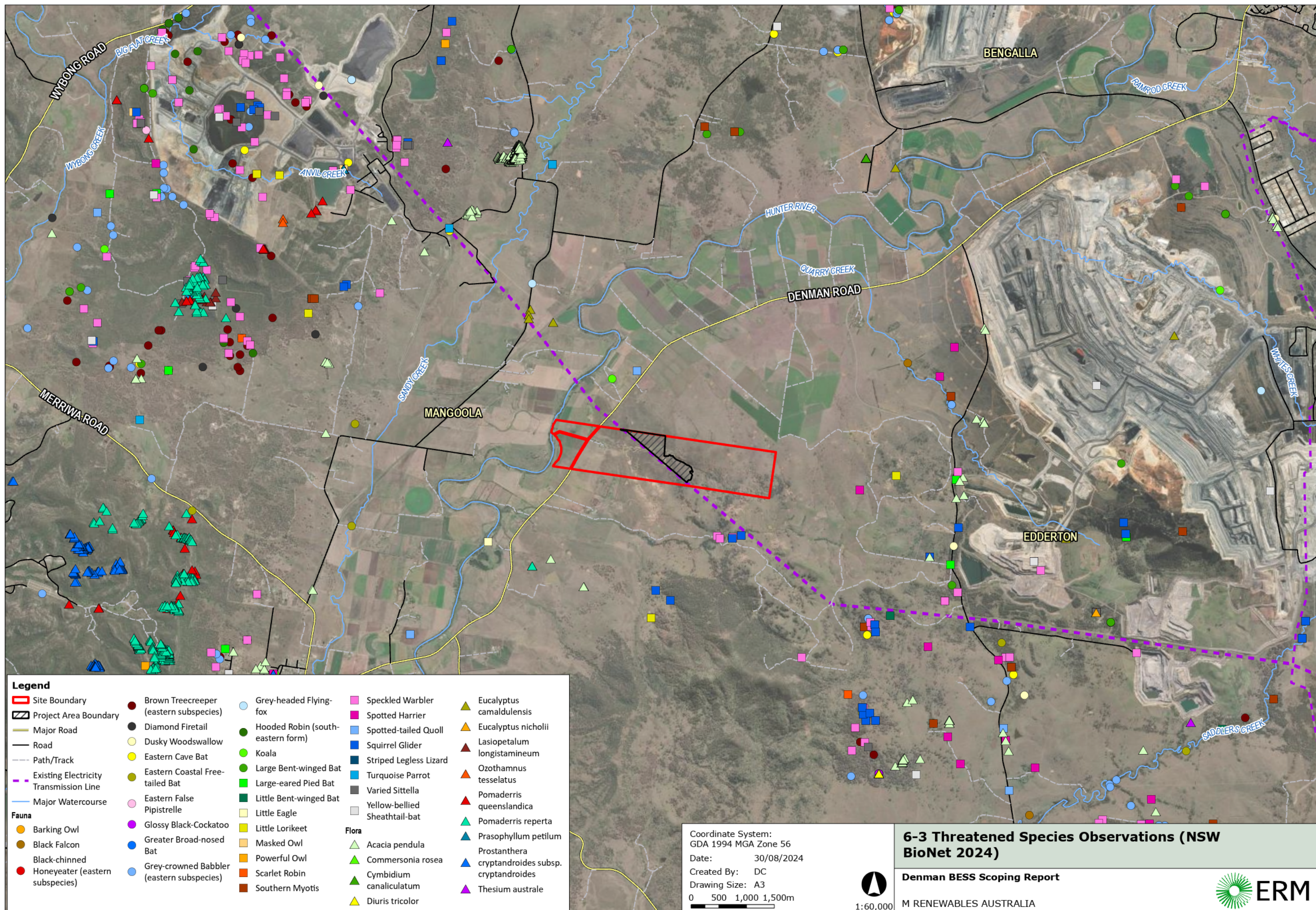
Scientific Name	Common Name	BC Act	EPBC Act	Recorded on Site?
<i>Acacia pendula</i>	Acacia pendula population in the Hunter Catchment	Endangered Population (EP)	-	No
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	No
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	No
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	E	No
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black Cockatoo	V	V	No
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	-	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	E	No
<i>Cymbidium canaliculatum</i>	Cymbidium canaliculatum population in the Hunter Catchment	EP		No
<i>Delma impar</i>	Striped Legless Lizard	V	V	No
<i>Diuris tricolor</i>	Pine Donkey Orchid	V/EP	-	No
<i>Dromaius novaehollandiae</i>	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	EP		No
<i>Eucalyptus pumila</i>	Pokolbin Mallee	V	V	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle	V	-	No
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	No
<i>Lathamus discolor</i>	Swift Parrot	E	CE	No
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	No

Scientific Name	Common Name	BC Act	EPBC Act	Recorded on Site?
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	No
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	No
<i>Ninox connivens</i>	Barking Owl	V	-	No
<i>Ninox strenua</i>	Powerful Owl	V	-	No
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V	-	No
<i>Phascolarctos cinereus</i>	Koala	E	E	No
<i>Prasophyllum petilum</i>	Tarengo Leek Orchid	E	E	No
<i>Prasophyllum sp. Wybong</i>	-	-	CE	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	No
<i>Pterostylis chaetophora</i>	-	V	-	No
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	No

The field investigations completed to date have not observed any of the preliminary candidate species listed above. Further field investigations conducted to inform the Project EIS will utilise the BAM to definitively determine the presence or absence of the above listed species. Additional threatened species observations, obtained through NSW BioNet, are displayed in **Figure 6-3** below.

In accordance with the requirements of Section 5.2 of the BAM, the BDAR will identify the habitat suitability for threatened species within the Project Area. Species that meet all the relevant criteria will be automatically populated in the BAM-C to be assessed either for ecosystem credits or species credits. No further assessment is required for those species that are unlikely to occur or where the Subject Land within the Project Area is considered as unsuitable habitat. Species credit species are likely to have suitable habitat on the Subject Land, which are referred to as 'candidate species' in the BAM-C.

Additionally, there is one (1) species listed under the EPBC Act, the Spotted-tail Quoll (*Dasyurus maculatus maculatus*) that is known to occur, seven (7) that have been determined to be likely to occur within the Subject Land and eleven (11) species with the potential to occur. This has been determined through a Likelihood of Occurrence (LoO) Assessment which is based on species sightings from the last 10 years, presence of suitable habitat, and species distribution mapping available through the Commonwealth DCCEEW Species Profile and Threats Database ([Species Profiles \(SPRAT\) \(environment.gov.au\)](https://speciesprofiles.sprat.environment.gov.au)). During ecology surveys on 15 June 2024, the Spotted-tail Quoll (*Dasyurus maculatus maculatus*) was captured on a camera trap deployed by ERM. Potential impacts to this species will seek to be avoided in accordance with the mitigation hierarchy of the BAM.



6.4.2 ASSESSMENT APPROACH

The construction and operation of the Project has the potential to cause impacts to listed species and TECs listed under the BC Act and EPBC Act. These will need to be considered as part of the Project EIS to be prepared to support a SSD application under Part 4 of the NSW EP&A Act.

As there are recorded Biodiversity values within the Project Area, further implementation of the BAM and the preparation of the BDAR are expected to be required as a part of the Project EIS. In this instance the main potential impacts of the Project (during construction and operation) that would need to be assessed include:

- Impacts to TECs;
- Loss of native vegetation communities and associated fauna habitat and the subsequent impacts to local population of native species;
- Increased habitat fragmentation;
- Mortality and injury from vehicle strike and vegetation clearing; and
- Mitigation measures relevant to threatened species, TECs, native vegetation communities, hydrology and construction impacts will be addressed within the EIS. There is also a risk that weeds may be transported within and off-site. Mitigation measures to reduce the chance of the spread of weeds will be considered within the EIS.

The desktop assessment and field surveys undertaken to date have highlighted a range of known and potential biodiversity constraints. The following steps are considered essential in ensuring an adequate assessment of biodiversity values is continued throughout future stages of the Project:

- Prepare a Land Categorisation Assessment;
- Prepare a detailed assessment of MNES and submit an EPBC referral;
- Further targeted seasonal fauna and flora surveys for species considered likely or potentially occurring within the Project Area in accordance with the BAM; and
- Prepare and submit a BDAR in accordance with the BAM.

6.5 HERITAGE

6.5.1 ABORIGINAL CULTURAL HERITAGE

6.5.1.1 EXISTING ENVIRONMENT

The Project Area is located at 1711 Denman Road, Denman, NSW within Lot 4 DP6090 and Lot 2 DP34397. It is located within the Hunter subregion of the Sydney Basin bioregion. The Hunter subregion extends across approximately 17,045 square km and is associated with several key landscape features including the Hunter River, Macquarie-Tuggerah Lakes, and the ridgelines associated with the Hunter Range, Liverpool Range and Great Dividing Range.

The Project Area comprises the Liddell soil landscape unit. The Project Area can also be delineated into distinctive landscapes utilizing the Mitchell Landscape model. The landscape mapped within the Project Area is the Central Hunter Foothills. The geology of the region is used to inform aspects of the Aboriginal cultural heritage assessment.

The Project Area was traditionally Wonnarua country. A dreamtime story from the Wonnarua explains how the hills and rivers in the Hunter Valley were created by a spirit called Baiame. Baiame also created Kawal to watch over the Wonnarua people; the spirit of Kawal is embodied in the wedge tailed eagle, found throughout the Hunter Valley (GML, 2019).

The country of the Wonnarua has been described as encompassing extensive grasslands with few trees and extensive floodplains. Fire stick farming was a major economic activity of the Wonnarua people; burning cleared the undergrowth and fresh growth attracted prey animals. The Wonnarua followed a hunting and gathering lifestyle; each kinship group moved in a cyclical pattern through their allotted lands. Men were responsible for hunting the larger game, including kangaroo, emu, dingo and fish, whilst women gathered smaller game such as lizard, mouse, possum and bush fruits, yams, grubs and roots (Miller, 1985; Cunningham, 1967). Suitable trees were also available to provide bark for shelters and wooden implements including shields, as well as timber to fashion boomerangs, spears and throwing sticks (Miller, 1985; Umwelt, 2007).

Artefact sites dominate recorded Aboriginal sites within the Project Area and wider Denman area. The main artefact material types have been noted as mudstone, followed by silcrete, tuff, fine-grained siliceous, quartz, and chalcedony. The patterning of the site locations appears to relate to the presence of resources with modelling suggesting that Aboriginal sites may be expected throughout all landscapes; however, the most sensitive archaeological areas are in proximity to water, with slope and terraced landforms most common to include artefactual material, such as those found within the Project Area. Umwelt (2007) noted that camp sites, for example, were usually established near permanent or semi-permanent water sources in areas of low gradient (Umwelt, 2007). Creek lines, used as a means of wayfinding and tracking, often contain artefact material but in smaller deposits as its use didn't require permanent stationing. The most likely site type to be encountered within the Project Area would be stone artefacts. Culturally Modified Trees (CMTs) are unlikely to be found in the Project Area due to the intensive clearance of mature trees associated with historical and current land use.

Preliminary cultural heritage sensitivity mapping is provided in **Figure 6-4**. Further assessment would be required to identify additional environmental or landscape features which may also be archaeologically sensitive, as well as historic land uses which may have disturbed or otherwise modified the archaeological sensitivity of an area. Detailed environmental modelling and ground-truthing would be required to adequately categorise the archaeological and cultural sensitivity of the Project Area.

6.5.1.2 AHIMS SEARCH RESULTS

The Aboriginal Heritage Information Management System (AHIMS) database provides information concerning previously recorded Aboriginal sites in NSW. An extensive search of the AHIMS database using a shapefile was conducted on 20 March 2024 for the Project Area. The searches were conducted utilizing the parameters provided in **Table 6-6**.

TABLE 6-6 AHIMS DATABASE SEARCH DETAILS

Parameters	Search
Client Service ID	875183
Datum	GDA Zone 56
Buffer	1000 m
Number Sites	28

A total of 28 sites were identified during the AHIMS search with one artefact site and one Artefact; PAD site being located within the Project Area. A total of 26 sites were in close proximity to the Project Area. The results of the full AHIMS search are summarized in **Table 6-7** and **Figure 6-4**. Of note, the search contained a total of 29 sites, however, on inspection one site (HR01, AHIMS #37-2-4365 and AHIMS #37-2-2669) was listed twice at the same location and therefore a total of 28 sites were identified within the search parameters.

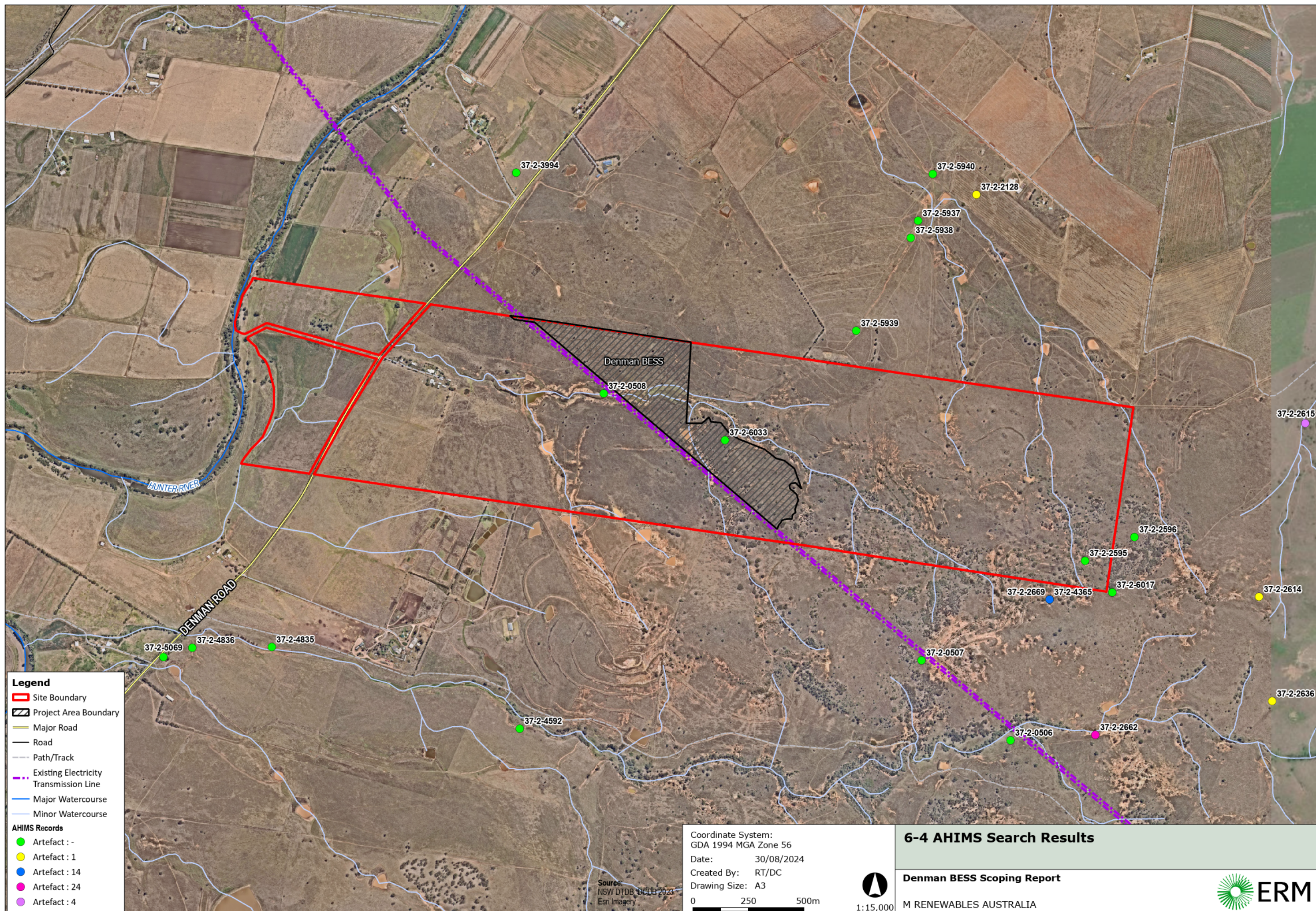
TABLE 6-7 AHIMS REGISTERED SITE TYPES

Site Type	Total Number of Site Types across Search parameters	Number of sites within the Project Area
Artefact	24	1
Artefact, Potential Archaeological Deposit (PAD)	3	1
Hearth	1	-
Total	28	2

6.5.1.3 RECOMMENDED ASSESSMENT APPROACH

Based on the results of the preliminary assessment and the AHIMS search results, it is understood that the Project Area contains known Aboriginal archaeological resources, and it is considered likely that portions of the Project Area not previously subject to survey would also contain evidence of past Aboriginal land use. Predictive modelling prepared at this stage of the process can assist in determining sensitive landscapes (**Figure 6-4**); however, it is acknowledged that more detailed investigation and assessment will be required to inform the next phase of project planning and design. In consideration of these factors, the following recommendations are made:

- Comprehensive investigation, to include pedestrian field survey, consultation with Aboriginal stakeholders, sensitivity mapping, and archaeological test excavation (as required) should be undertaken to support the Project EIS;
- Heritage 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);
- 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); and
- If required, upon completion of the ACHAR, a *Cultural Heritage Management Plan (CHMP)* should be prepared in consultation with the projects registered Aboriginal parties (RAPs) to ensure appropriate management of any identified cultural heritage throughout the construction process.



6.5.2 HISTORIC HERITAGE

6.5.2.1 EXISTING ENVIRONMENT AND SITE HISTORY

Colonial exploration of the Hunter Region began as early as 1796; however, the Hunter River and Hunter Valley were explored in greater detail in 1801. In 1823 the Hunter Valley was surveyed, and substantial settlement of the area followed. The expansive river systems allowed many people to settle in the region due to the richness of the alluvial plains that supported various agricultural pursuits. Settlement was clustered along the Hunter, Peterson and Williams Rivers and their tributaries (Heritage Council of NSW, 2013).

The Project Area is within the historic Vaux Parish of Durham County. The western portion of the Project Area is encompassed within historic Portion 4 (1,000 acres) that was granted to William Carter in 1828. Most of the eastern portion of the Project Area is encompassed within land originally occupied by George Gallway Mills (4,000 acres) in c.1825. These portions of land were utilized for agricultural pursuits and later became part of the Piercefield Estate, totaling over 8,000 acres. In c.1879, the Estate was acquired by James Withycombe, who maintained ownership until the subdivision of the Estate in 1909. The Project Area remained largely undeveloped at this time; historic maps indicate a series of fences were present. By 1909 one house had been constructed to the west of the Project Area, and by 1916 further structures had been established to the north-west of the Project Area including houses, hayshed, sty, dam, and other outbuildings as well as an engine pump and a series of fences. Some of these structures remained extant on the property into the mid twentieth century.

The mid twentieth century saw the development of the coal mining and electricity generation industries in the region. The land encompassing the Project Area was established as a State Coal Mine Reserve in May 1964. The Bayswater to Mount Piper electrical transmission line was constructed in c.1988, running north-west to south-east immediately west of the Project Area. The Project Area remains largely unchanged since that time; it continues to function as an agricultural property.

6.5.2.2 STATUTORY HERITAGE REGISTER SEARCHES

World Heritage List

The United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List includes properties in Australia that are matters of national environmental significance and are protected and managed under the EPBC Act.

There are no World Heritage places within a 2 km radius of the Project Area.

Commonwealth Heritage List

The Commonwealth Heritage List includes natural, Indigenous, and historical heritage places owned or controlled by the Australian Government. Items on the list have satisfied the minister as having one or more Commonwealth Heritage values.

There are no Commonwealth Heritage listed places within a 2 km radius of the Project Area.

National Heritage List

The Australian National Heritage List contains natural, historic, and Indigenous places deemed to be of outstanding heritage significance to Australia. Before a site is placed on the list a nominated place is assessed against nine criteria by the Australia Heritage Council.

There are no National Heritage listed places within a 2 km radius of the Project Area.

State Heritage Register

A search of the NSW State Heritage Register (SHR) was conducted on 14 March 2024. The search revealed that there are no SHR-listed items within the Project Area.

There are no SHR-listed places within a 2 km radius of the Project Area.

Muswellbrook Local Environmental Plan 2009

A search of the Muswellbrook LEP 2009 was conducted on 14 March 2024. The search identified not locally heritage listed sites within the Project Area.

The search noted one locally listed heritage item located within 2 km of the Project Area (detailed in **Table 6-8**).

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. 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 publicly available Section 170 registers was undertaken on 14 March 2024. No Section 170 heritage places are located within a 2 km radius of the Project Area.

6.5.2.3 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. Originally compiled between 1976 and 2003 by the Australian Heritage Commission, the register is now maintained by the Australian Heritage Council.

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

A search of the Australian Heritage Database was undertaken on 14 March 2024. This search identified no RNE listed places within a 2 km radius of the Project Area.

National Trust of Australia (NSW) Heritage Register

The National Trust of Australia maintains a register of landscapes, townscape, 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.

There are no National Trust listed properties within a 2 km radius of the Project Area.

6.5.2.4 HERITAGE SUMMARY

Table 6-8 provides an overview of the statutory and non-statutory heritage listings identified within a 2 km radius of the Project Area.

TABLE 6-8 HISTORIC HERITAGE SITES SUMMARY

Site Name	Register	Item ID	Location	Distance to Project Area	Significance Level
Piercefield	LEP	I13	1532-1618 Denman Road, Denman NSW	~550 m	State ¹

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.

6.5.2.5 RECOMMENDED ASSESSMENT APPROACH

Preliminary assessment has shown there are no historic heritage items within the Project Area listed on National, State or Local statutory heritage registers. The closest registered historic heritage item is the locally listed item Piercefield (Muswellbrook LEP 2009 – Item 13) located approximately 550 m north of the Project Area.

While no registered historic heritage items are located within the Project Area, further assessment would be required to better establish the non-Indigenous archaeological potential of the Project Area. It is proposed that a non-Indigenous (historical) due diligence assessment (HHDD) will be prepared to support the EIS. A field assessment would be undertaken to identify the potential for unlisted or previously unidentified heritage values associated with the Project Area. Preparation of the HHDD would involve detailed historical research, including analysis of historical aerial imagery and 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* (Resilience and Hazards SEPP). Clause 3.2 of the Resilience and Hazards SEPP defines a 'potentially hazardous industry' 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 energy storage facilities. However, the BESS facility proposed for the Project is likely to utilise lithium-ion batteries, which are listed as *Class 9 – Miscellaneous dangerous goods*. While Class 9 materials are excluded from the SEPP 33 screening test, the hazards related to these materials should be considered in accordance with the Applying SEPP 33 Guidelines.

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

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

6.6.2 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 RFS Bushfire Prone Land mapping confirms that the Project Area is not currently recognized as being bushfire prone (refer to **Figure 6-5**). However, it is recognized that Vegetation Category 3 (including but not limited to grasslands and freshwater wetlands) will likely be added to the bushfire prone land mapping at some stage to align with the requirements of the NSW RFS Guide for Bush Fire Prone Land Mapping (RFS, 2015).

The Project Area is characterised by an agricultural landscape with a varying, gently undulating topography. Small patches of vegetation and tree lines maintain connectivity to surrounding lands.

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 BESS 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* (RFS, 2019).

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

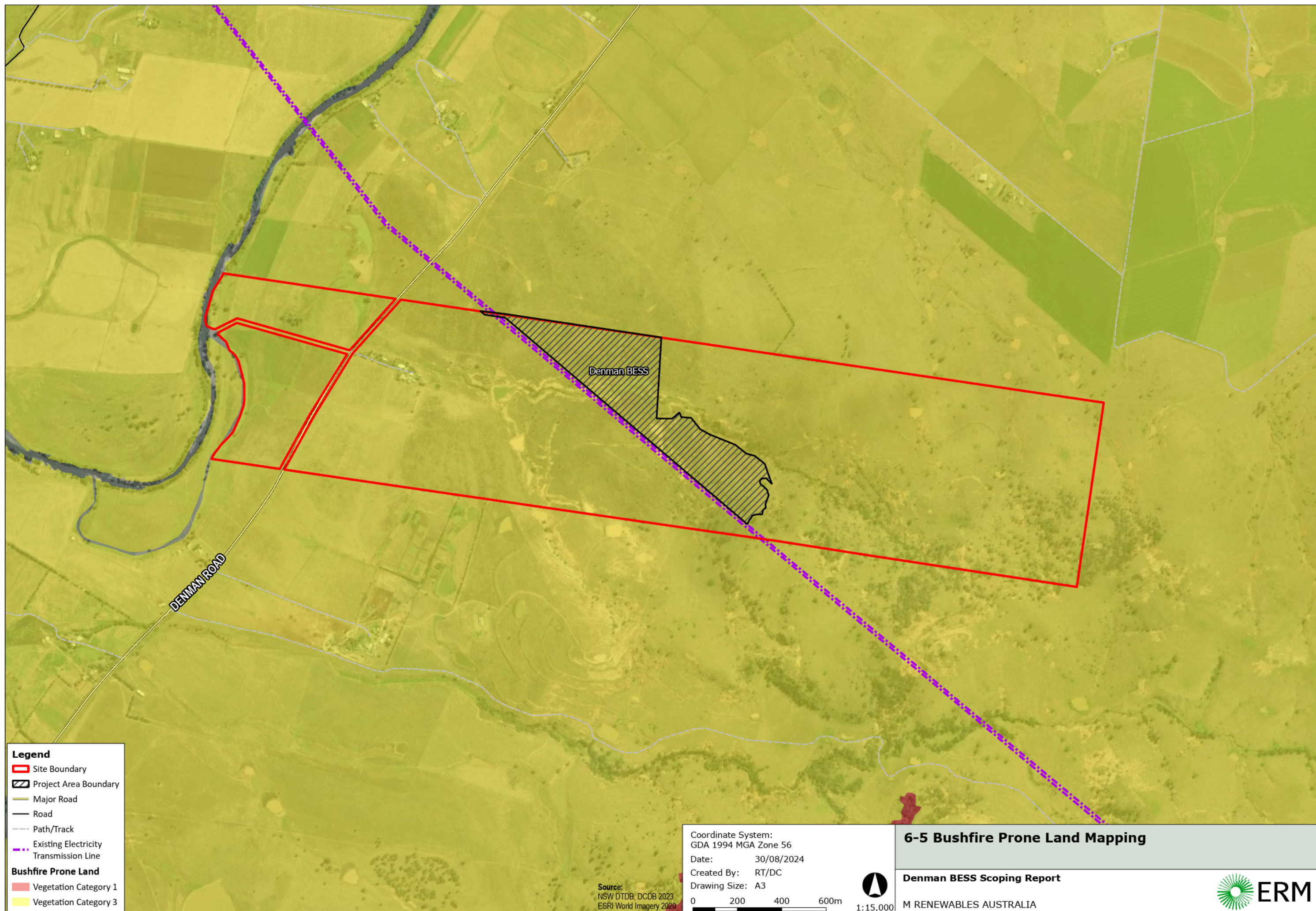
- Fuels, weather, topography, predicted fire behaviour and local bushfire history;
- Suppression resources, access (roads, tracks) and water supply; and
- Values and assets.

Mitigation will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the BESS, land managers and the community.

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 proposed transmission lines and 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.



6.7 MINING AND EXPLORATION TITLES

6.7.1 EXISTING ENVIRONMENT

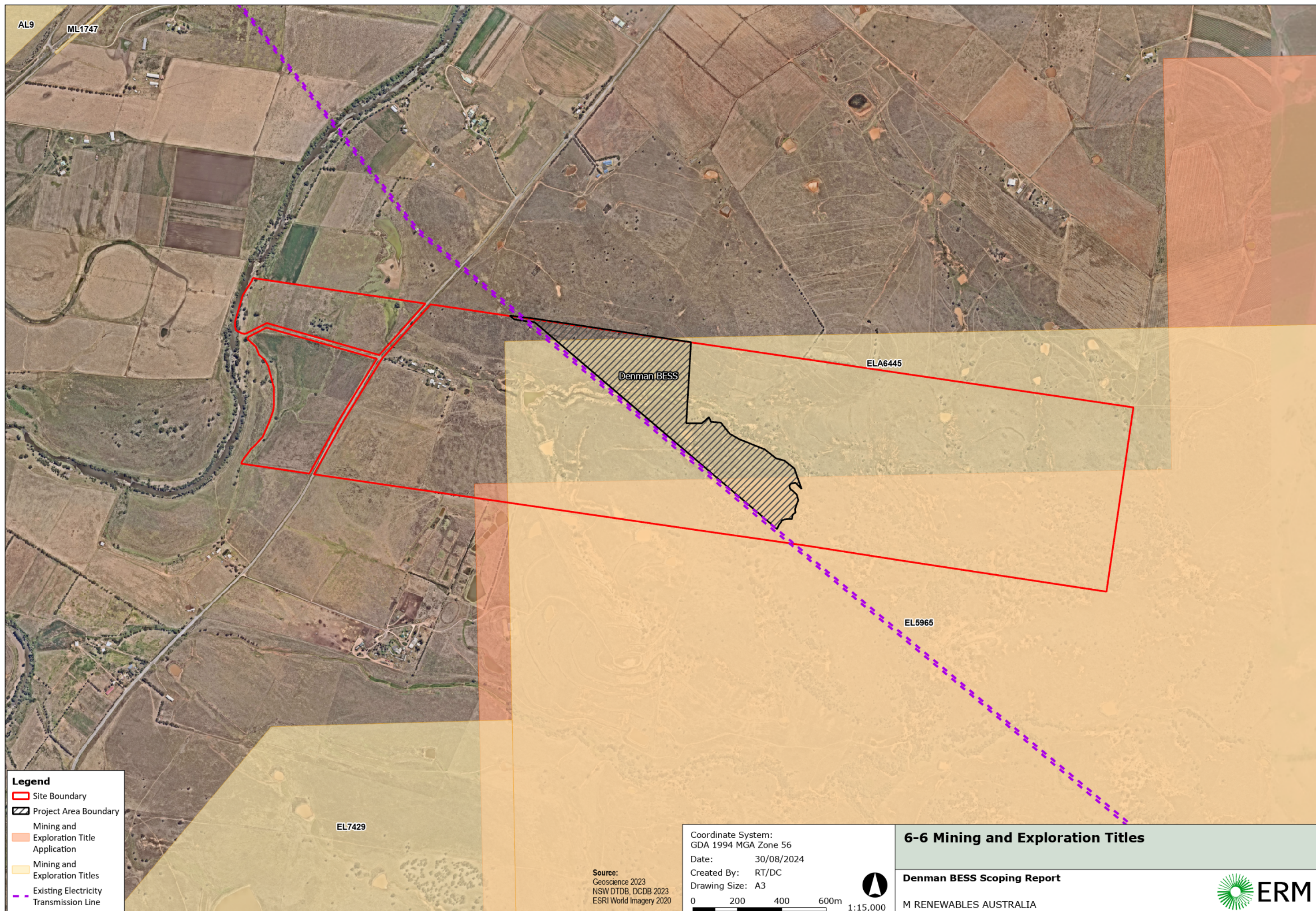
Due to the resource rich geology in the Muswellbrook Shire LGA, the area has a long history of coal mining with several coal mines are located nearby to the Project. The mining sector employed approximately 19.9% of the community in 2021 (ABS, 2021) and is currently one of the largest exports of the region (MSC, 2022a). There is one (1) exploration title that overlaps with the Project Area, and an additional six (6) mining, assessment and exploration titles within 5 km as shown in **Table 6-9** and **Figure 6-6**.

TABLE 6-9 MINING AND EXPLORATION TITLES WITHIN 5 KM OF THE PROJECT AREA

ID	Application Number	Applicant	Operation	Resource	Distance to Project Area
21774	EL5965	Hunter Valley Energy Coal PTY LTD	Exploration	Coal	Overlaps with the Project Area
25960	EL7429	SPUR HILL NO2 PTY LTD	Exploration	Coal	1.5 km south
25402	ML1626	Mangoola Coal Operations PTY LTD	Mining	Coal	2.8 km northwest
25773	AL19	New Hope West Muswellbrook Pty Ltd	Assessment	Coal	3.0 km northeast
17442	ML1358	Hunter Valley Energy Coal PTY LTD	Mining	Coal	3.4 km east
2432	ML1593	Hunter Valley Energy Coal PTY LTD	Mining	Coal	4.3 km southeast
22943	AL9	Mangoola Coal Operations PTY LTD	Assessment	Coal	4.6 km northwest

6.7.2 ASSESSMENT APPROACH

The EIS will include consultation with the license holders that overlap the site prior to development.



Legend

- Site Boundary
- Project Area Boundary
- Mining and Exploration Title Application
- Mining and Exploration Titles
- Existing Electricity Transmission Line

Source:
Geoscience 2023
NSW DTDB, DCDB 2023
ESRI World Imagery 2020

Coordinate System:
GDA 1994 MGA Zone 56
Date: 30/08/2024
Created By: RT/DC
Drawing Size: A3

0 200 400 600m 1:15,000

6-6 Mining and Exploration Titles	
Denman BESS Scoping Report	
M RENEWABLES AUSTRALIA	

6.8 TRAFFIC AND TRANSPORT

6.8.1 EXISTING ENVIRONMENT

The Project Area is located approximately 136 km from Newcastle and 267 km from Sydney (by road). Access to the Project Area during construction and operations is expected via the Denman Road. Denman Road is a State Road that runs in a general northeast-southwest alignment between Racecourse Road in Muswellbrook, and its continuation as Golden Highway approximately 4 km southwest of the Project Area.

Within vicinity of the Project Area, Denman Road has a speed limit of 100 km per hour and a carriageway width of approximately 7 metres. Denman Road accommodates one lane of traffic in each direction with grassed verges on both sides of the road. Review of the TfNSW Road Safety database indicates that Denman Road is currently operating in a relatively safe manner, and minimal public transport services utilise the road.

It is anticipated that BESS equipment and large plant will be delivered via the Port of Newcastle and transported by road to the Project Area.

6.8.2 ASSESSMENT APPROACH

As part of the Scoping Report, a Preliminary Traffic Assessment (PTA) (**Appendix E**) was prepared by Amber in March 2024 which considers potential transportation routes for construction traffic and potential impacts of the size, loads, and volumes of vehicles on the road network. The PTA was prepared in accordance with:

- Guide to Traffic Generating Developments (RTA, 2002);
- Austroads Guide to Road Design (Austroads, Guide to Road Design, 2021); and
- Austroads Guide to Traffic Management (Austroads, Guide to Traffic Management , 2020).

The Port of Newcastle has been identified as the preferred port for the delivery of BESS equipment and plant. A route assessment from the Port of Newcastle, representing the worst-case scenario, was undertaken as part of the PTA and identified that the entire route is currently approved within the NSW Class 1 Oversize Overmass (OSOM) load carrying vehicles network map (refer Section 3.1 of **Appendix E**). The transport route for OSOM vehicles will be confirmed as part of the EIS.

Vehicle access to the Project Area is provided by Denman Road which is currently an approved OSOM route including 26-metre B-Double vehicles. The intersection of Denman Road and Golden Highway is provided with turn treatments and are anticipated to suitably accommodate the construction traffic for the Project. Additionally, the Safe Intersection Sight Distance (SISD) at the proposed site access for the Project Area exceeds the Austroads Requirements. An assessment of the required turning treatments will be undertaken as part of the EIS.

A tube count survey was conducted in February 2024 within vicinity of the Project Area to determine the existing road environment. Denman Road currently carries a low to moderate level of traffic and can accommodate an increase in traffic. It is not anticipated that the increase in traffic generated during the construction stage would result in any significant adverse impacts to the operation of the road network. Any future assessment should consider the cumulative impacts of other nearby major projects. During operation the project would generate a negligible level of traffic on the road network.

A Traffic and Transport Impact Assessment (TTIA) will be prepared to inform the EIS. This will include further assessments of the road network, as well as identify any required road upgrades.

6.9 SOCIAL

This section provides an overview of the first phase Social Impact Assessment (SIA) undertaken for the Project, found in **Appendix F**. The first phase SIA aligns with the DPHI's Social Impact Assessment Guideline for State Significant Projects (SIA Guideline) (DPHI, 2023) and DPHI's Technical Supplement: Social Impact Assessment Guideline for State Significant Projects (SIA Technical Supplement) (DPIE, 2022).

The first phase SIA involves scoping and a preliminary assessment of impacts, it sets further parameters for the second phase SIA (the assessment report to be appended to the EIS) (DPHI, 2023, p. 12). Accordingly, the first phase SIA includes:

- Defining the Project Social Locality;
- Social baseline describing the profile of the community in the Social Locality;
- 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

As depicted in **Figure 6-7**, the Project is located in the Muswellbrook LGA, which borders the Singleton LGA to the south. Denman and Muswellbrook are likely to be the main communities to provide goods and services to support construction and operation (i.e. ongoing maintenance) phases of the Project. Denman Road provides easy access to both towns. Singleton (63 km by road and 14,229 people) is the closest major regional centre which may provide further goods and services to support throughout the phases of the Project. Refer to **Section 2.5.1.1** for a breakdown of the travel distances to nearby regional and town centres.

6.9.2 COMMUNITY PROFILE

The first phase SIA draws on 2021 Australian Bureau of Statistics (ABS) datasets (i.e. latest available) for the purposes of providing a socio-economic baseline analysis (refer to **Appendix F**). SEIFA data outlined in **Appendix F** highlights that the Muswellbrook LGA is a disadvantaged LGA compared to the surrounding LGAs located in the state of NSW. However, the SA1 containing the Project Area is relatively advantaged compared to the surrounding SA1s (refer to **Appendix F**).

6.9.3 SOCIAL INFRASTRUCTURE

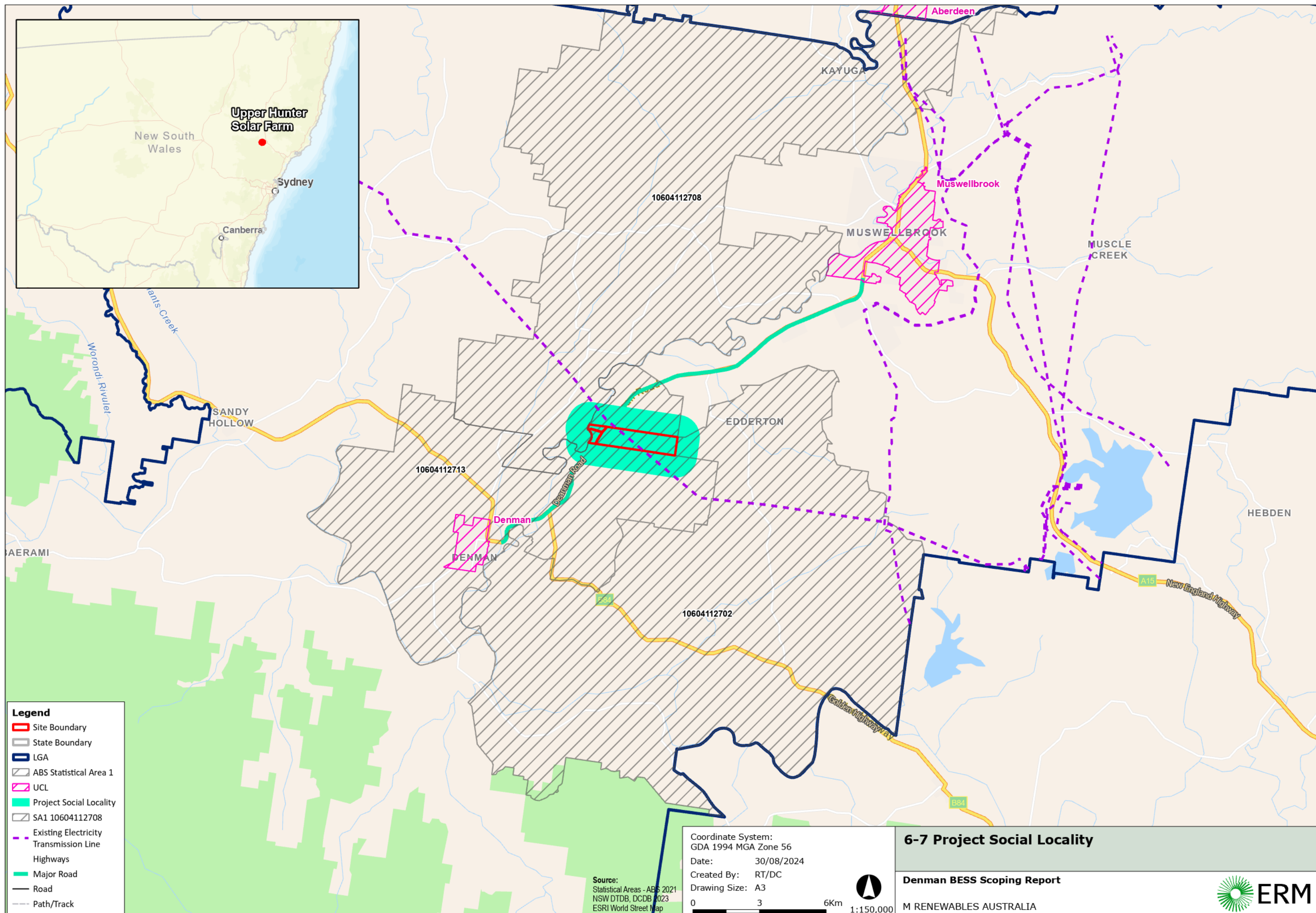
The two towns that are likely to provide social infrastructure for the Project are Denman and Muswellbrook due to their size, proximity, and accessibility to the Project via Denman Road. Social infrastructure comprises schools and other educational institutions, medical services, emergency services, recreational facilities and community organisations.

The preliminary desktop assessment has determined that the social infrastructure provided by Denman and Muswellbrook, supplemented by Singleton, will likely be sufficient to 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 Government, local businesses and the wider community.

6.9.4 POTENTIAL SOCIAL IMPACTS AND ASSESSMENT

The desktop analysis of social impacts (**Appendix F**) 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 related to local employment and procurement opportunities, and community benefits. The identified potential impacts listed in **Appendix F** will be assessed and supplemented by stakeholder feedback, and reviewed against any further design development.



6.10 WATER RESOURCES

6.10.1 EXISTING ENVIRONMENT

6.10.1.1 SURFACE WATER

The Project Area is located within the Hunter River Catchment. The Hunter is the largest coastal catchment in NSW, with an area of about 21,500 km². Elevations across the catchment vary from over 1,500 meters in the high mountain ranges north of the catchment, to less than 50 meters on the floodplains of the lower valley. It contains several sites of international ecological significance, including the Kooragang Nature Reserve (now part of the Hunter Wetlands National Park), Hexam Swamp, the upland swamps of Barrington Tops, and the Shortland Wetlands Centre (DPIE, 2024).

The Project Area is located approximately 1.4 km east of the Hunter River, generally flowing in a northeast to southwest alignment. A tributary extending from the Hunter River approximately 2 km southwest from the Project Area flows into multiple ephemeral streams that cross the Project Area. The ephemeral streams within the Project Area classified as first order and second order streams, with fringing vegetation. Additionally, there are several natural swales that lie within the Project Area and the greater vicinity of the site associated with the Upper Hunter South Solar Farm footprint. During heavy periods of rain, these natural swales are known to fill with water. There are several manmade dams within the vicinity of the site, however these are excluded from the Project Area.

There are no known threatened freshwater fish species within the ephemeral streams that cross the Project Area. There are no wetlands of international importance, nationally important wetlands, or large waterbodies within the Project Area. The watercourses present within the Project Area and the surroundings are presented in **Figure 6-8**.

6.10.1.2 GROUND WATER AND GROUND WATER DEPENDENT ECOSYSTEMS

There are no groundwater bores within the Project Area. The closest groundwater bore is located approximately 1.1 km northwest of the Project Area drilled in 2009 for which the water level is unknown. The Project Area is not within an area mapped as 'Groundwater Vulnerability' under the Muswellbrook LEP.

Groundwater Dependent Ecosystems (GDEs) rely on access to groundwater to maintain water requirements for plants and animals. There are no GDEs mapped within the Project Area, and a low potential of terrestrial GDEs occurring (BOM, 2017).

A map of the local hydrology present within the Project Area and its surroundings is provided in **Figure 6-8**.

6.10.1.3 FLOODING

The Project Area is characterised by varying, gently undulating topography with several natural swales, and intermittent, ephemeral waterways. Manmade dams are situated nearby the Project Area. Land uses are typical of a rural setting, with large pockets of farmland, isolated buildings/sheds and unsealed roads.

The Hunter River, running 1.5 km west of the Project Area, is mapped as flood prone land under the Muswellbrook Flood Risk Management Study and Plan (FRMS&P) (2019) undertaken by Royal Haskoning DHV for and on behalf of the Muswellbrook Shire Council. The largest recorded flood Muswellbrook and Denman have experienced occurred in 1955 (recorded discharge 5013 m³/s). The event had an estimated Average Recurrence Interval (ARI) of 500 years. Muswellbrook and Denman are now protected by levees that were constructed between 1988 and 1992.

The 1% Annual Exceedance Probability (AEP) (one flood every 100 years), 20% AEP (one flood every 20 years) and Probable Maximum Flood (PMF) extent of the Hunter River flood prone land approximately 0.9 km from the Project Area is illustrated in **Figure 6-9** as per the Muswellbrook FRMS&P. The development footprint of the Project located out of the flood prone area of the site. Given the topography of the area and the infrequent history of floods in the vicinity of the Project, the potential impact is considered minor.

6.10.1.4 WATER USE

The Project will require water for construction purposes (e.g. concrete mixing and standard dust suppression measures). Water use may be subject to licences under the *Water Management Act 2000*.

6.10.2 ASSESSMENT APPROACH

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

Flooding and Hydrology Assessment will assess:

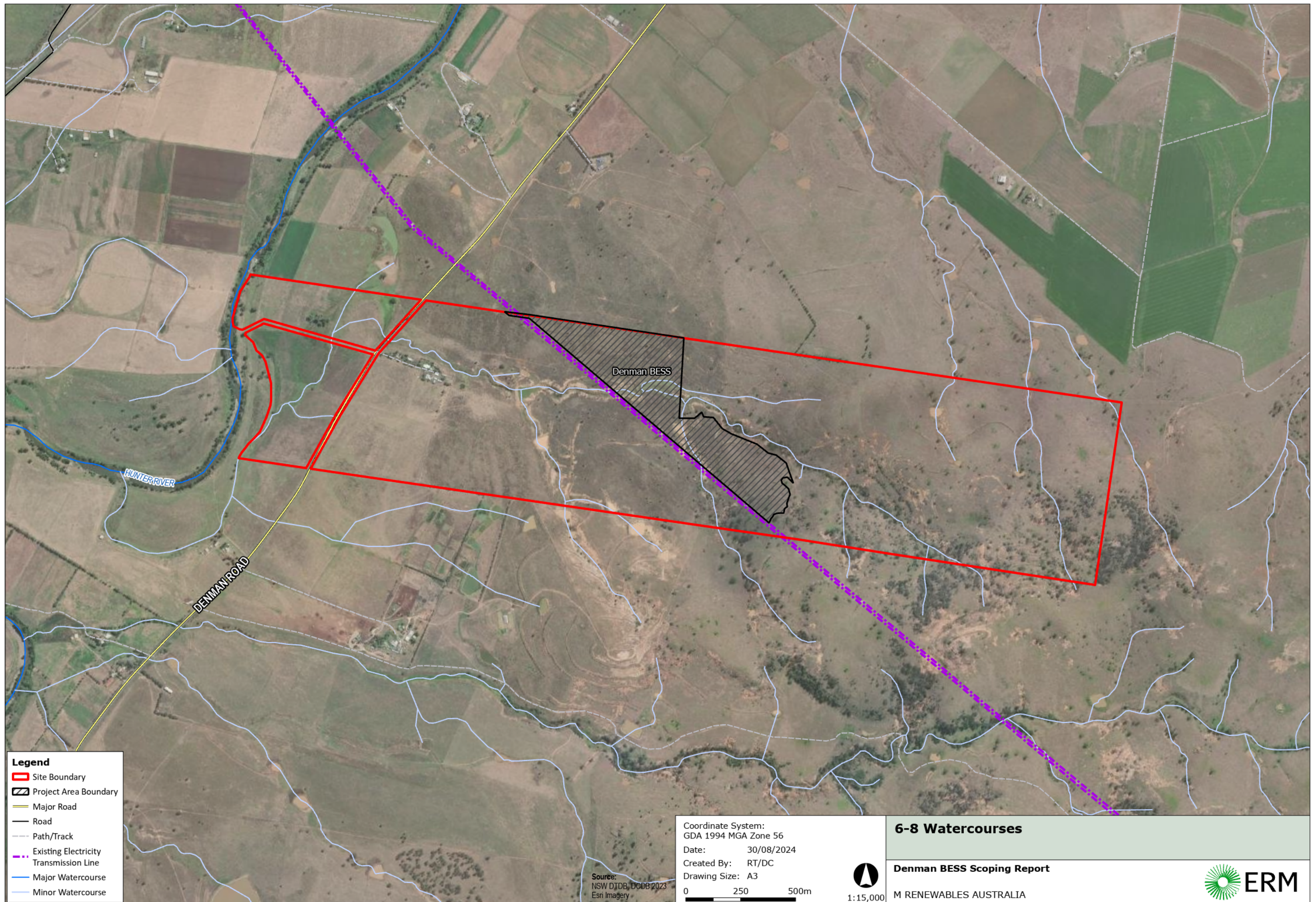
- Existing flood behaviour through review of existing available data, developing computer models and defining flood levels, depths, velocities and flood hazard category for the Project Area for existing topographic conditions; and
- Post development flood behaviour, including quantifying flood levels,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

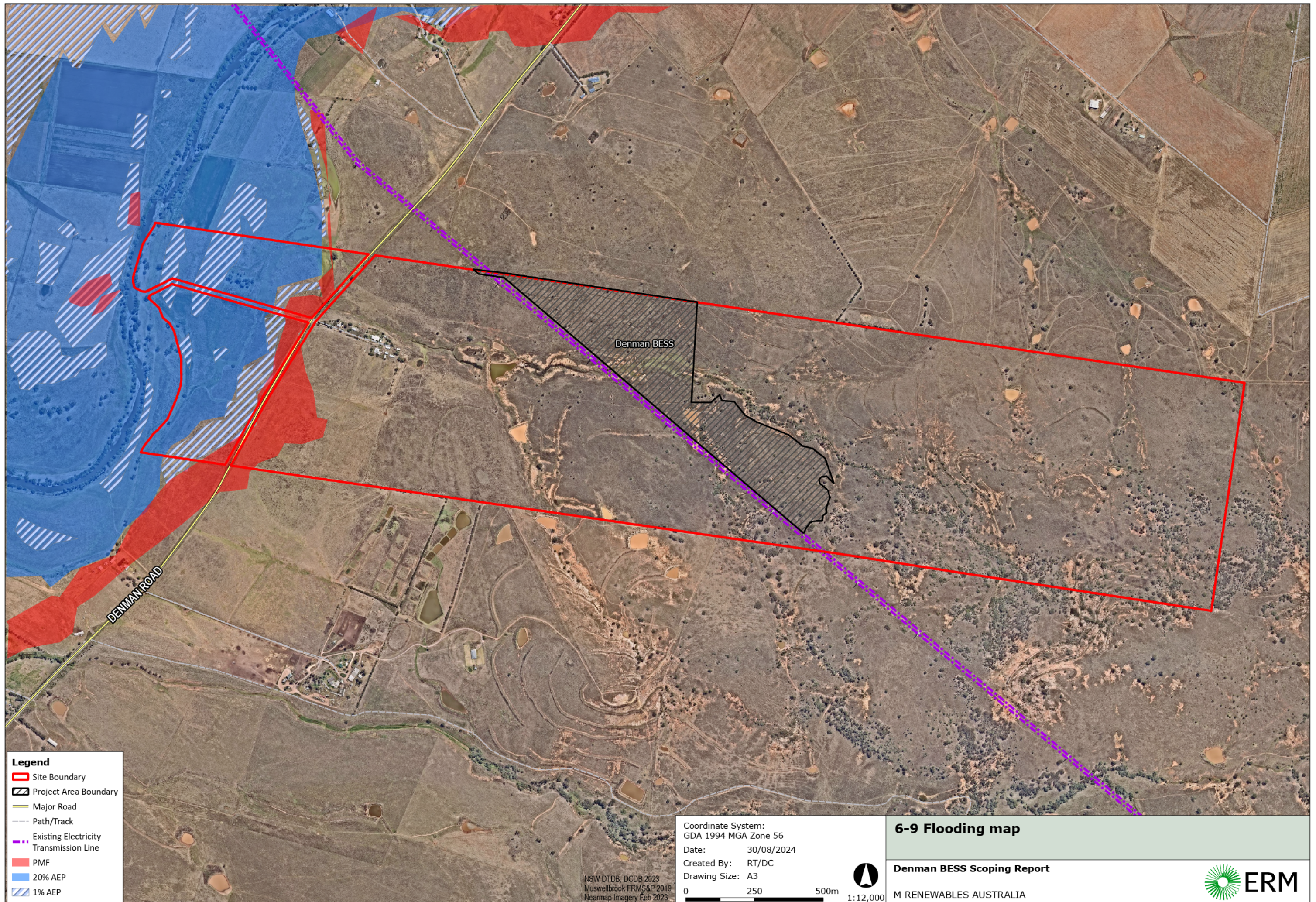
A Water Impact Assessment will be undertaken which will include a review of standard construction environmental management plans to ensure that impacts during excavation, road works, transport of machinery, etc. are adequately mitigated through avoidance, minimization and management.

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);
- The Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2022 (NSW Government, 2022); and
- Controlled Activities - Guidelines for Watercourse Crossings on Waterfront Land (DPE, 2022d).





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 (BCD, 2012).

A preliminary review of the Soil and Land Capability Mapping data for NSW (DPE, 2020c) suggests that most of the Project Area is predominantly mapped as LSC Class 5 – Severe limitations with a small portion of Class 4 – Moderate to severe limitations to the north. The LSC Class 4 and 5 have moderate to severe limitations for high impact land management uses such as cropping. A map of soil classes in the vicinity of the Project Area is provided in **Figure 6-10**.

A search of the Australian Soil Classification (ASC) Soil Type Map of NSW (DCCEEW, 2017) reveals that the site is dominated by Sodosols soils, which display a strong texture contrast between surface horizons and subsoil horizons which are sodic. Generally, Sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed.

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

6.11.2 ASSESSMENT APPROACH

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.

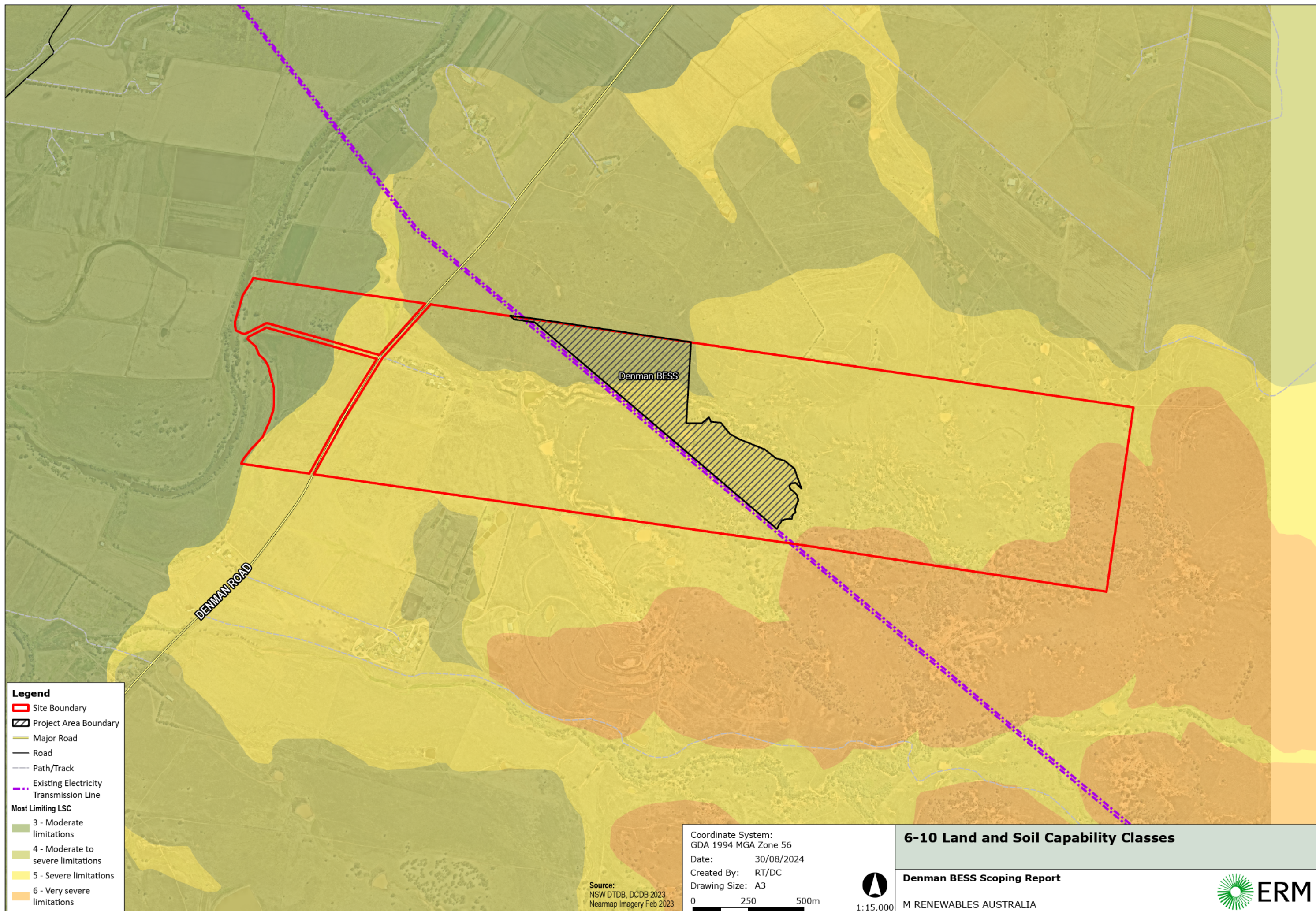
While the guidelines apply to large scale solar developments, the guideline may also be relevant to battery energy storage system developments and the Project EIS will follow the approach to agricultural impact assessment as detailed in Appendix A of the guideline. Figure 4 of Appendix A of the Large-Scale Solar Energy Guideline (DPE, 2022a) provides a flow chart outlining various levels of assessment.

As the Project Area is on land zoned RU1, is not mapped BSAL, and is mapped as LSC Class 4 and 5, site verification should be undertaken to ground truth the Land and Soil Capability class distribution to determine whether the land Level 2 Reduced Agricultural Impact Assessment or a Level 1 Basic Agricultural Impact Assessment is required.

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

- Land and soil capability mapping, and site investigation results;
- Include consultation with neighbouring landholders to identify potential project impacts (if any) on immediately adjacent agricultural land;
- Describe project impacts (if any) on immediately adjacent land;
- Describe consultation undertaken; and
- Consider measures to reduce impacts on neighbouring agricultural land.

If a Level 2 assessment is required to be included in the EIS, it will address requirements of Table 6 of Appendix A (DPE, 2022a) and the information required for a Level 1 assessment.



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:

- National Greenhouse Accounts Factors (Australian Government, 2023); and
- NSW Climate Change Policy Framework (NSW Climate and Energy Action, 2016).

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

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 Cumulative Impact Assessment 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 (refer Section 2.5, 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 Denman Road between Muswellbrook and the Golden Highway. Social and economic cumulative impacts will focus on developments that rely on the workforce and accommodation within the Muswellbrook Shire Council LGA and surrounding LGAs.

A Study Area of 2-4 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 2027 onwards (refer **Section 3.4**). The potential cumulative impacts associated with the staging of the Project are outlined in **Table 6-10**.

TABLE 6-10 CUMULATIVE IMPACTS ASSOCIATED WITH THE PROJECT STAGING

Project Phase	Estimated Timeframe	Likely Scale of Impact	Duration of Impact	Potential Cumulative Impacts
Assessment	2025	Minor	Temporary	Social – community health and wellbeing
Approval	2025	Minor	Temporary	No cumulative impacts anticipated
Construction	2026	Moderate to Major	Temporary	Amenity – visual, noise Social – community health and wellbeing Transport and traffic
Operation	2027	Minor to Moderate	Ongoing during operations	Amenity – noise Social – community health and wellbeing
Decommissioning	2062	Moderate	Temporary	Social – community health Amenity – air quality and noise 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 Cumulative Impact Assessment include four renewable energy projects:

- Denman Solar Park;
- Hunter Solar Farm;
- Upper Hunter South Solar Farm; and
- Edderton Solar Project.

The specifications of these nearby SSDs and the potential overlap with the Project have been outlined in **Table 6-11**.

TABLE 6-11 NEARBY STATE SIGNIFICANT DEVELOPMENTS AND POTENTIAL OVERLAP WITH THE PROJECT

Project	Key Features	Project Status	Indicative timeframe	Overlap with the Denman BESS	Distance to Project (Approx)
Upper Hunter South Solar Farm (SSD-65996959) (Proposed by Metlen Energy & Metals)	- Denman Road, Denman (Lot 4 DP 6090); 90 MW of capacity solar farm; 30 MW / 60 MWh capacity BESS; and - Area of 320 ha.	- Project proposed, SEARs issued on 15 Jan 2024; and - Prepare EIS Phase.	- Construction expected to commence in 2026; and - Minimum 30 years of operational life.	- Construction overlap; and - Operations overlap.	Adjacent to the Project.
Hunter River Solar Farm (SSD-38556668)	- Denman Road, Muswellbrook (Lot 11 and 12 DP 215827); 84 MW capacity solar farm; 60 MW / 180 MWh capacity BESS; 200,000 solar modules; and - Area across 110 hectares.	- Project proposed, SEARS issued April 2022; and - Prepare EIS Phase	- No indication of construction commencement; and - Proposed 50 years of operational life.	- Potential construction overlap; and - Operations overlap.	Adjacent to the Project.
Denman Solar Park (DA 49/2020)	- Denman Road, Muswellbrook (Lot 400 DP 791860); 22 MW of capacity; and - Private infrastructure and community facilities over \$5 million.	- Project approved on 3 September 2021 - Prepare EIS Phase	- No indication of construction commencement; and - Minimum 35 years of operational life.	- Potential construction overlap; and - Operations overlap.	1.2 km
Edderton Solar Project (SSD-69965958)	- Golden Highway between Denman and Jerrys Plains; 350 MW capacity solar farm; 350 MW capacity BESS; and - Area across 886 hectares.	Project proposed, SEARs issued on 17 May 2024.	- Construction expected to commence in 2025; and 35 years of operational life.	- Potential construction overlap; and - Operations overlap.	1.3 km

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 6-12**. Consideration of cumulative impact is also provided in the Scoping Summary Table (**Appendix A**). As per the DPE Cumulative Impact Assessment Guidelines, **Table 6-13** 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 Cumulative Impact Assessment. The environmental management and monitoring measures associated with the Project during the EIS will minimise cumulative impacts.

6.14.6 KEY UNCERTAINTIES

The key uncertainties associated with the cumulative impact assessment 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 Cumulative Impact Assessment will assume all the projects could be in construction simultaneously.

TABLE 6-12 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; and • 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; and • the assessment is unlikely to involve any significant uncertainties or require any detailed cumulative impact assessment.
N/A	No potential overlap in impacts between a future project and the proposed project that would warrant any consideration in the cumulative impact assessment

TABLE 6-13 CUMULATIVE IMPACT ASSESSMENT SCOPING SUMMARY TABLE

Project	Potential overlap between impacts of Project and impact of other projects			
	Access (Traffic)	Amenity – Noise and Visual	Social Impacts	Other
Upper Hunter South Solar Farm (Proposed by Metlen Energy & Metals)				
	There will be overlap of access, traffic and transport impacts between this project and the proposed Project.	There will be overlap of noise and visual amenity impacts between this project and the proposed Project.	There will be cumulative social impacts between this project and the proposed Project. Further assessment required.	The Project and the Upper Hunter South Solar Farm are located on the same parcel of land. The cumulative impacts of both projects on biodiversity and Aboriginal heritage will be considered in the EIS.
Hunter River Solar Farm				
	Potential overlap in access, traffic and transport impacts between this project and the proposed Project.	Potential overlap in noise and visual amenity impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	-
Denman Solar Park				
	Potential overlap in access, traffic and transport impacts between this project and the proposed Project.	Potential overlap in noise and visual amenity impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	-
Edderton Solar Project				
	Potential overlap in access, traffic and transport impacts between this project and the proposed Project.	Potential overlap in noise and visual amenity impacts between this project and the proposed Project.	Potential risk of cumulative social impacts between this project and the proposed Project. Further assessment required.	-

7. CONCLUSION

The Project Area is considered suitable for the proposed BESS due to the following reasons:

- It is located within the corridor of existing Transgrid transmission lines, which will allow for the renewable energy generated from the Project to be supplied to the region;
- It is located within the boundaries of the proposed Hunter-Central Coast REZ and the Project will contribute to the future development of the REZ, however will not be utilising REZ infrastructure;
- There are a number of other existing and proposed renewable energy projects located within the region and in close proximity to the Project Area;
- It is easily accessible via Denman Road, Denman;
- The Project is consistent with the *RU1 – Primary Production* zoning and will meet the following objective of the RU1 zone: to encourage sustainable primary industry production;
- The Project will allow for existing grazing activities to continue within the Project Area; and
- The Project will contribute to creating greater diversity within the local economy, where land uses have experienced diversification in recent years through a growth in dryland cropping and horticulture, conservation, irrigation, native landscapes and forestry.

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.

The EIS will be prepared in accordance with the SEARs to be issued by DPHI. All assessments will be completed by taking into consideration consultation with stakeholders, relevant DPHI and industry guidelines, and the experiences from other BESS projects.

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APPENDIX A SCOPING SUMMARY TABLE



APPENDIX B

COMMUNITY AND STAKEHOLDER ENGAGEMENT STRATEGY



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APPENDIX C

PRELIMINARY VISUAL IMPACT
ASSESSMENT



APPENDIX D

PRELIMINARY BIODIVERSITY ASSESSMENT



APPENDIX E

PRELIMINARY TRAFFIC ASSESSMENT



APPENDIX F

PRELIMINARY SOCIAL IMPACT
ASSESSMENT



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