The Plains Wind Farm

Environmental Impact Statement

PREPARED FOR

ENGIE

DATE
24 April 2024

REFERENCE
0667692

DOCUMENT DETAILS

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Draft	0.1	M. Coles C. Mackay	J. Woodhouse	M. Davey	03/04/2024	Draft for client review
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SIGNATURE PAGE

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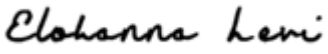

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REAP DECLARATION

Project details	
Project name	The Plains Wind Farm
Application number	SSD-50629707
Address of the land on which the infrastructure is to be carried out	Cobb Highway, approximately 15 km south of Hay in the Hay Shire and Edward River Local Government Areas
Applicant details	
Applicant name	ENGIE
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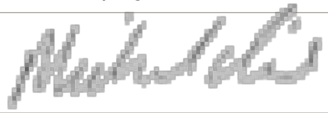
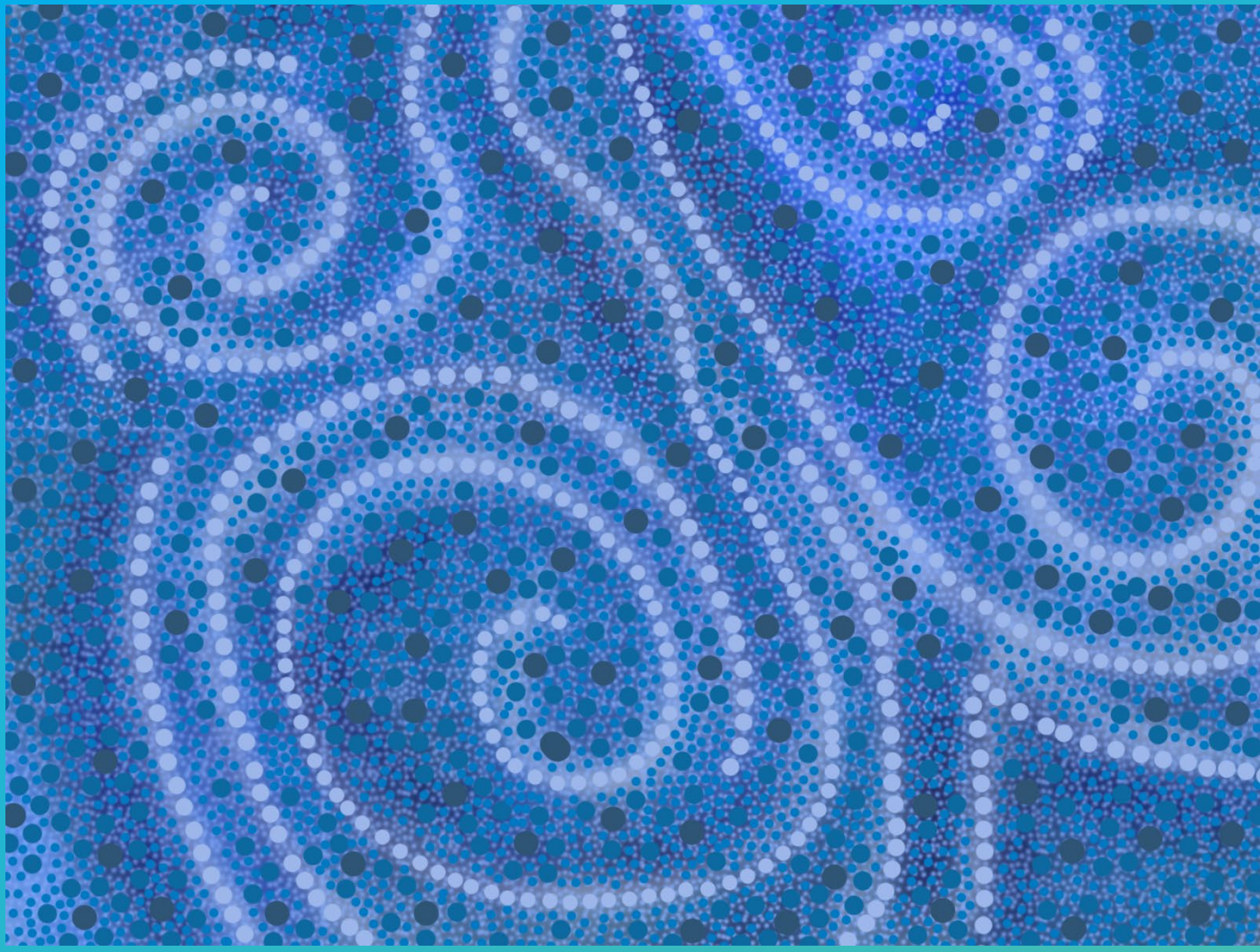
Declaration by Registered Environmental Assessment Practitioner	
Name	Michael File
Registration number	8596
Organisation registered	Member, Planning Institute of Australia
Declaration	The undersigned declares that this EIS: • Has been prepared in accordance with Schedule 2 and Part 10 of the Environmental Planning and Assessment Regulation 2000; • Contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates; • Does not contain information that is false or misleading; • Addresses the Planning Secretary's environmental assessment requirements (SEARs) for the project; • Identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments; • Has been prepared having regard to the Department's State Significant Development Guidelines - Preparing an Environmental Impact Statement; • Contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development; • Contains a consolidated description of the project in a single chapter of the EIS; • Contains an accurate summary of the findings of any community engagement; and • Contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole.
Signature	
Date	24 April 2024



The Artwork

One of Hay's local First Nations artists, Emma Johnston of Wiradjuri Country, celebrates a connection to culture, Country and the wind in this piece titled '*Blue Winds*.'

"*Blue Winds* represents the cool breeze that comes from the skies, the different shades of blue create a cold tone feeling of comfort and peace. Using different sized dots to create dimension and level to this piece. White shows the wind and the blue represents the cold feeling."

– Emma Johnston, artist

CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Plains Wind Farm

ENVIRONMENTAL IMPACT STATEMENT

This summary provides a non-technical overview of the project and assessment outcomes only and should be read in conjunction with the environmental impact statement (EIS) and supporting technical reports.

Sustainability is our business

What is the project?

The Plains Wind Farm (the Project) is part of the broader Plains Renewable Energy Park that aims to harness wind and solar energy to provide cheap, reliable and clean electricity for homes and businesses in NSW. The renewable energy park will include the construction of an integrated wind and solar farm and will operate alongside agricultural activities.

The Wind Farm will provide significant economic benefits to the Hay region and will supply more than 5500 GW hours per year of clean, renewable energy, enough to power more than 1 million NSW homes on average annually.

The Wind Farm is located on land predominately used for agricultural activities and is located approximately 15 kilometres (km) (by road) south of the Hay town centre and 10 km (by road) north of the Booroorban village via the Cobb Highway (refer to Figure S1).

The Project is located within the South-West Renewable Energy Zone (REZ), one of five areas identified by the NSW Government with an abundance of high-quality wind and solar resources, proximity to transmission infrastructure, relative land use compatibility.

The Project has gone through a comprehensive design process that considered community and stakeholder feedback, as well constraints identified during detailed environmental, heritage, hazard and social studies.

The Project will connect to the existing 220 kV transmission line or the approved and under construction Project EnergyConnect 330 kV transmission line, both owned by TransGrid and located south of the Project Area.

Note: The Plains Solar Farm and BESS, located to the east of the Cobb Highway, will form part of a separate development application and approval process.

1,350 MW

Capacity

1,996 Ha

Footprint

Who we are?

ENGIE specialises in the development, operation and maintenance of large-scale assets, predominantly focusing on wind, solar and industrial-scale battery storage. ENGIE has been driving innovation in the energy sector for over 180 years globally. Today, ENGIE operates in over 70 countries with 101,504 employees worldwide. ENGIE was founded in Australia in 1964 and currently employees over 337 staff locally.

ENGIE's purpose is to act to accelerate the transition towards a carbon neutral economy, through reduced energy consumption and more environmentally friendly solutions.

Project Description

Development Footprint covers 1,997 ha

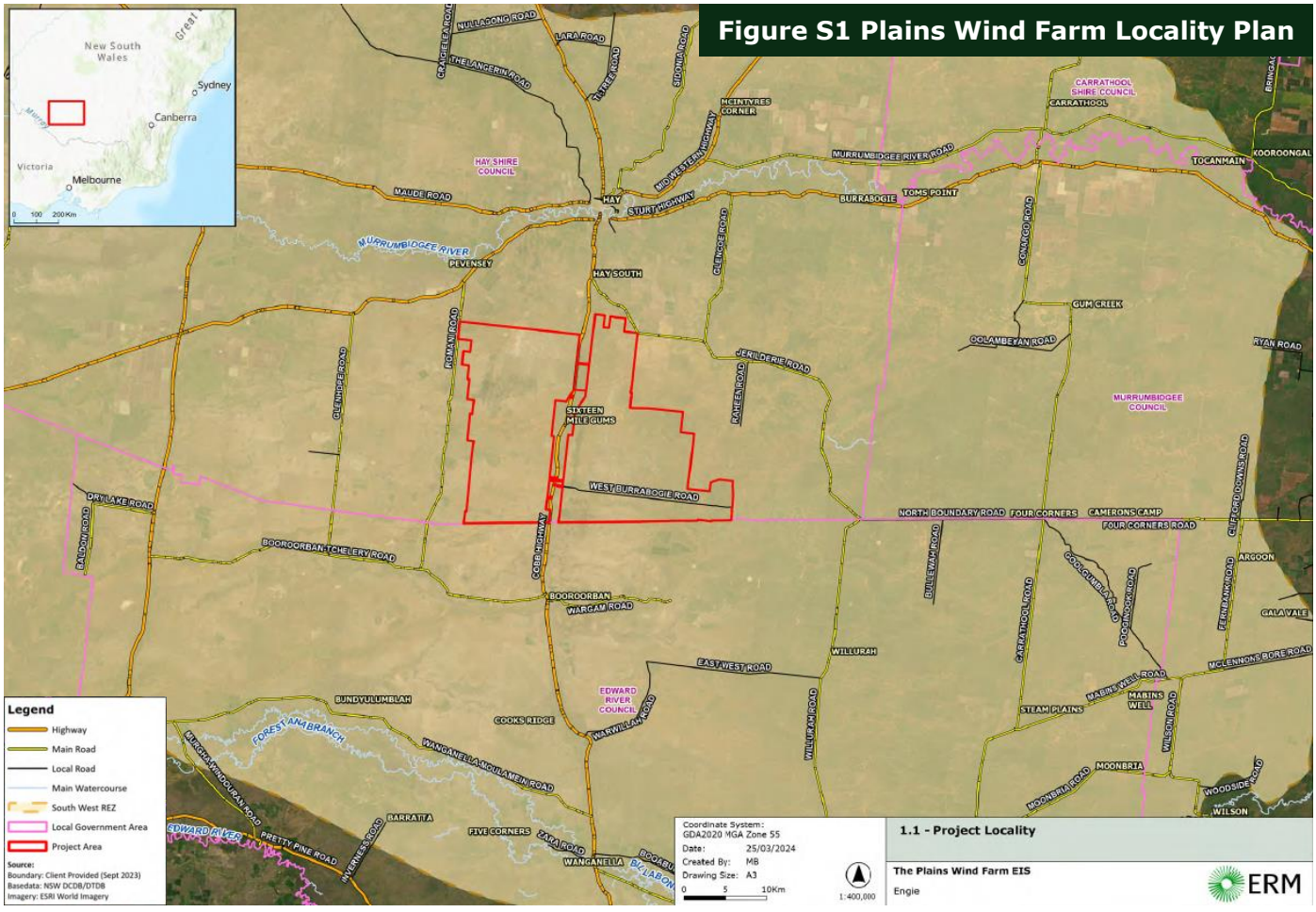
188 Wind Turbine Generators (WTGs) with an estimated capacity of up to 1,350 MW

Local road network upgrades

Temporary construction facilities

Electrical infrastructure to connect the Project to the electricity grid, including underground cables and overhead powerlines, substations and transmission lines

Figure S1 Plains Wind Farm Locality Plan



Why is the project needed?

Both the Commonwealth and NSW Governments have made commitments to increase renewable energy generation and reduce carbon emissions. The Plains Wind Farm will help provide cleaner, cheaper and reliable electricity while also reducing greenhouse gas emissions and the impacts of climate change.

The long-term, regional benefits of the Project:

- Minimise adverse environmental impacts;
- Ensure quality, safety and environmental standards are maintained;
- Employment of approximately 700 jobs annually during peak construction (40 months), plus 46 direct and indirect operational jobs;
- Economic benefits to the local economy, through procurement of local goods and services and community benefit programs;
- Recycle and reuse materials where practical and economically feasible;
- Providing an additional income stream for rural landowners connected to the Project; and
- Benefits to local and regional infrastructure and services, such as Community Enhancement Fund (CEF), and Neighbour Benefit Sharing Program (NBSP) options.

What is the planning process?

The Plains Wind Farm requires approval under both NSW and Commonwealth environmental and planning legislation. Under NSW planning legislation, the Project is a State Significant Development (SSD) and therefore requires approval under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project also requires assessment and approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to potential impacts on Commonwealth listed threatened species and communities and Commonwealth listed migratory species. The Project was referred under the EPBC Act (EPBC Ref:2022/09404) and was determined to be a controlled action on 20 March 2023.

An EIS has been prepared to outline the Project, its potential impacts (positive and negative), how these impacts are proposed to be mitigated, managed and offset.

The NSW Minister for Planning (or delegate) or the Independent Planning Commission (IPC) will decide if the Project is approved. The IPC will be the approval authority if public objections to the Project exceed 50, if any reportable political donations have been made by the Applicant, or if the Council within which the Project is located objects to the Project.

What is the planning process?

01

Early Consultation

Prior to lodging a development application (DA) for an SSD project, the Applicant must consult with the Department of Planning, Housing and Infrastructure (DPHI). Following consultation, the Applicant must prepare a Scoping Report to request the environmental assessment requirements (SEARS) for the Project.

The SEARS will identify the information to be included in the Project's Environmental Impact Statement (EIS) and the stakeholder engagement that must be undertaken.

02

Prepare EIS

The Applicant must prepare the EIS in accordance with the SEARS.

The purpose of the EIS is to assess the economic, environmental and social impacts of the project and help the community, government agencies and the consent authority provide feedback on the merits of the project.

03

Exhibit DA

All SSD DAs must be exhibited publicly for at least 28 days.

This acknowledges the importance of stakeholder and community participation in the SSD process and provides an opportunity for people to make submissions on the Project before a final decision is made.

04

Respond to submissions

After exhibition, the Department will publish all submission and ask the applicant to prepare a Submissions Report.

The purpose of the Submissions Report is to give the Applicant a chance to respond to the issues raised in submissions and help the consent authority evaluate the merits of the DA.

05

Assess DA

After publishing the Submissions Report, the Department will assess the merits of the DA and prepare an Assessment Report. During this assessment process the DPHI may request the Applicant undertake further community engagement, they may request additional information from the Applicant, and/or seek advice from Government agencies and independent experts and preparing recommended conditions of consent.

06

Determine DA

The IPC or a delegate of the Minister of Planning will be the consent authority for the DA.

They must evaluate the merits of the DA against the matters in section 415 of the EP&A Act and may approve the DA (subject to modifications or conditions) or refuse it.

Key strategies to avoid, minimise or offset impacts

The Project has been designed in consideration of environmental, social and engineering constraints, including feedback from landowners and the surrounding community.

Key drivers to minimise and avoid environmental and social impacts:

Avoid
In the first instance, all efforts were made to avoid potential environmental and social impacts.

Minimise
Where potential impacts could not be avoided, design principles aimed to minimise environmental and social impacts, as far as feasibly possible.

Mitigate
Mitigation strategies will be implemented to manage the extent and severity of remaining environmental and social impacts.

Offset
Environmental and social offsets will only be used following all efforts to first avoid, minimise and mitigate environmental impacts.

Key design principles:

- Minimise vegetation clearing – WTGs relocated to avoid impact to remnant woodland vegetation, threatened ecological communities and important habitat areas for the endangered Plains-wanderer.
- Protect cultural heritage values – cultural heritage values have been identified in consultation with the Hay Local Aboriginal Land Council and impacts avoided where practicable. Preservation and management of Aboriginal sites and heritage values will form a key objective of development controls for Project.
- Minimise land disturbance – site selection considered topographical features and proximity to the existing 220 kV line and Project EnergyConnect to ensure that construction and operation of the wind farm would require minimal earthworks / soil disturbance.
- Protect agricultural values – landowner feedback on agricultural values and land use have been considered during all phases of the design.
- Minimise direct and indirect impacts – reduction of the number of WTGs from 240 to 188 to avoid sensitive Aboriginal cultural heritage, ecological areas, and to minimise potential visual and noise impacts to surrounding dwellings.
- Adopt a flexible approach to design – the design process has been iterative and has progressively responded to identified environmental, cultural and social impacts and constraints. This process will continue through the detailed design process for the Project.

As a result of this iterative design process and after detailed consultation, the development footprint has reduced from 58,786 ha during the scoping stage to 53,894 ha in this EIS.

Key community issues addressed

Social & Economic

Provision of jobs, training and community services

Roads & Traffic

Upgrade of roads to support construction traffic and consideration of road safety

Visual and Noise

Alteration to the landscape and local character

Cultural Heritage

Acknowledgement of Traditional Owners and inclusion for heritage aspects of the Project

Biodiversity

Impacts to birds within the Project Area

Inform, Consult, Involve, Collaborate and Empower.

How has ENGIE Engaged with Stakeholders?

ENGIE is committed to ensuring public concerns and comments are considered, and that attempts are made to avoid, minimise or mitigate potential impacts where possible. The engagement incorporated best practice objectives for community participation in the Project, which is open and inclusive, easy to access, relevant, timely and meaningful.

A significant number of individual and group meetings and public information events have been conducted since the inception of the Project. Throughout engagement activities the Project development team received feedback on a variety of issues from the community and regulators. A total of 504 engagement activities have been undertaken since the launch of the Project

Feedback from local community has contributed to changes in design of the project with the solar farm changing location to the east of the site and further than 2 km away from the Cobb highway.

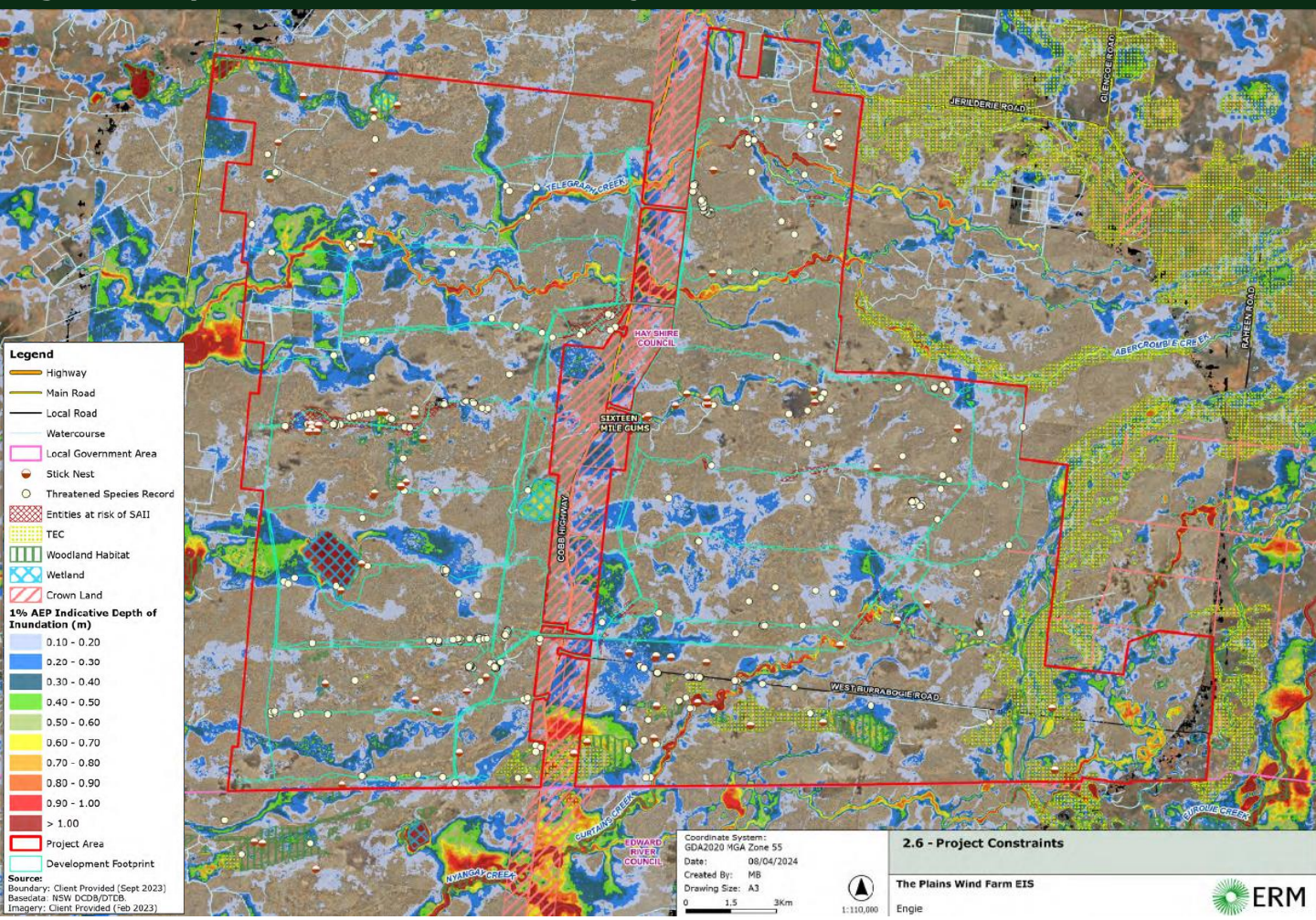
In recognition of the impacts of the Project, and as a key part of the mitigation strategy, ENGIE have also negotiated agreements with many of the landowners surrounding the Project. The agreements provide annual payments to landowners likely to be impacted by the Project. Consultation with these landowners is ongoing.

Project constraints

The EIS includes a detailed assessment of the potential environmental, social and economic outcomes of the Project and proposes, where required, mitigation measures to manage adverse environmental, social and economic aspects. A summary of the key findings for each aspect is provided below. Each assessment has been prepared for this EIS in consideration of relevant guidelines, Project SEARs and stakeholder engagement.

Figure S-2 provides a visual representation of the key restraints relevant to the Project elements.

Figure S2 Key Constraints Relative to the Project



Biodiversity impacts

The design of the Project has evolved to minimise impact on biodiversity values, including minimising impacts to Important Mapped Areas for the Plains-wanderer, using existing access tracks to reduce habitat clearing, avoiding areas of remnant woodland and threatened ecological communities, and retaining vegetation beneath solar arrays.

Potential residual impacts include habitat clearance, noise and disturbance associated with clearing and construction, increased risk of vehicle strike and presence of infrastructure which may create barriers to movement.

Threatened species determined to have potential residual impact include:

- Plains-wanderer (*Pedionomus torquatus*);
- Winged Peppercress (*Lepidium monoplocoides*);
- Chariot Wheels (*Maireana cheelii*);
- Slender Darling Pea (*Swainsona murrayana*);
- Small Scurf-pea (*Cullen parvum*);
- A burr-daisy (*Calotis moorei*);
- A spear-grass (*Austrostipa wakoolica*); and
- Creeping Darling Pea (*Swainsona viridis*) (within transport route disturbance footprint only).

The Plains-wanderer (*Pedionomus torquatus*) is considered present based on Important Mapped Areas and records within the broader Plains Wind Farm. Areas of suitable habitat for this species have been mostly avoided by the Project and impacted habitat is restricted to 5.35 ha.

Based on candidate ecosystem credit species, species credit species, and result of field surveys, three species are at risk of Serious and Irreversible Impact (SAII) as a result of the Project; the Plains-wanderer, A burr-daisy, and the Creeping Darling Pea.

Plains-Wanderer (stockphoto)

Slender Darling Pea

Measures to mitigate against these impacts will be implemented through a Construction Environmental Management Plan (CEMP), Bird and Bat Adaptive Management Plan (BBAMP) and Pest Management Control Programs. The CEMP will make provisions for clearing protocols, construction timing, and include measures to minimise soil disturbance, runoff and sediment transfer, artificial light, noise, dust, and vibrations as a result of the Project. The Pest Management Control Programs will be developed and implemented to minimise the impacts of introduced predators on existing native fauna, with a particular focus on the Plains-wanderer. The BBAMP will detail a long-term approach to the mitigation and management of potential impacts on listed threatened, migratory and resident bird and bat species as a result of turbine strike. Monitoring will also be incorporated into the BBAMP to identify any potential changes to the species' utilisation of the Subject Land and the surrounding landscape.

Where impacts to biodiversity can't be avoided, any residual impacts will be offset through the Biodiversity Offset Scheme. The No Net Loss standard involves the retirement of ecosystem and species credits for Project related direct impacts in accordance with the BOS. The Applicant is developing a biodiversity offset strategy in parallel with the EIS. This strategy will detail the offset approach to be undertaken to retire credit obligations

Noise

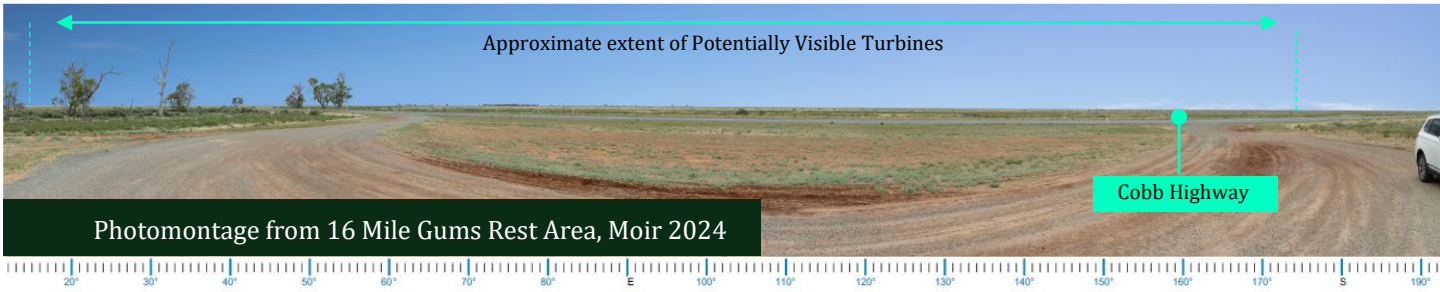
A Noise Impact Assessment was conducted for the Project. The worst-case predicted construction and operational noise levels at the nearest dwellings (associated and non-associated) were assessed against criteria from the Wind Energy: Noise Assessment Bulletin (the Bulletin) and no exceedances were predicted.

Based on assessment against the noise criteria provided by the Noise Policy for Industry and the Interim Construction Noise Guidelines, no noise impacts have been identified for the Project. As such, specific noise management measures are not required for the Project.

However, general good practice environmental noise management measures are recommended to be adopted throughout the Project, including (but not limited to):

- Implementation of a construction noise management plan (CNMP);
- Avoidance of unnecessary noise due to idling diesel engines or fast speeds
- Establishment of a complaints management system for construction works and site operations;
- Ensure all machines used on the site are in good condition, with particular emphasis on exhaust silencers, covers on engines and transmissions and squeaking or rattling components, and
- Revised noise modelling following the finalisation of selected equipment; and.
- Implementation of an operational noise management plan to confirm that the noise levels achieve the requirements.

Landscape and visual



Stakeholder engagement was used to determine community sentiment relating to landscape and visual impacts. The feedback highlighted that the community had concerns relating to impacts to visual amenity, sense of place and uncertainty around the future and nature of the Project. The community also identified the key public viewing locations as the "16 Mile Gums on Cobb Hwy from Hay" and "the open plains".

The Landscape and Visual Assessment (LVIA) was prepared in accordance with the 'Wind Energy: Visual Bulletin' (DPE, 2016) (the Bulletin) and considered the potential visual impacts on residential viewpoints within 8 km of the nearest wind turbine to a dwelling. Eight (8) dwellings and one (1) development application were identified within 8 km of a wind turbine. Twenty-eight dwelling entitlements located within 5 km of a wind turbine were also identified.

Changes to the landscape character because of the Project were noted to be low to moderate, with the assessment concluding the Project is likely to become a landscape feature; however, the landscape has been determined to be of low scenic quality and devoid of significant landscape features.

Visual impact assessment on non-associated dwellings

Of the eight (8) non-associated dwellings within 8 km of the Project, the LVIA concluded that five (5) are likely to have a low visual impact. Three (3) non-associated dwellings (located within 3,500 m) are likely to have a moderate visual impact rating. Mitigation measures incorporated into the design process, as well as landscape and visual screening, can reduce visual impacts at non-associated dwellings identified as having a moderate visual impact (in further consultation with relevant landowner).

Visual impact assessment of public viewpoints

Public viewpoint analysis was undertaken at 15 locations. Of these, three public viewpoints are likely to have a moderate visual impact rating, all of which are located along the Cobb Highway. While the assessment determined that the Project would change the character of the surrounding landscape, the landscape was not determined to be sensitive, rare, or largely unmodified. In accordance with the Bulletin, the existing landscape character is considered of low scenic quality due to it being highly modified and lacking in distinct landscape features.

The Aviation Impact Assessment determined that requirements for night lighting on Project met-masts and ancillary infrastructure is generally limited to security lighting to the substation, flood lights within the workers' accommodation and within the operations & maintenance facility. The light sources will be limited to low-level lighting for security, nighttime maintenance and emergency purposes. The proposed ancillary infrastructure has been carefully sited to minimise visibility from existing residences and publicly accessible viewpoints. It is unlikely the proposed night lighting associated with the ancillary infrastructure would create a noticeable impact on the existing night-time landscape.

A shadow flicker assessment determined that there would be no shadow flicker on any non-associated dwellings.

Transport

The assessment of transport of major project components to the wind farm has considered transport routes from the Port of Geelong (project components) and the Port of Adelaide (wind turbine components). Oversize overmass (OSOM) vehicles will approach the site from the south via Cobb Highway. Traffic will access the wind farm via four access points along Cobb Highway, with some vehicles also utilising a short section of West Burrabogie Road. The outcomes of the Transport Impact Assessment include:

- It is anticipated that during peak construction, the Project could generate up to 310 heavy and 350 light vehicle movements per day. The average traffic movements during construction will be up to 156 heavy and 200 light vehicle movements per day.
- During Project operation up to 80 vehicle movements per day are anticipated which would result in a negligible change to the traffic environment.
- Based on the morning peak hour modelled traffic volumes at the intersection of Cobb Highway and West Burrabogie Road, this intersection will require a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment.
- A swept path assessment demonstrated the access locations are designed to accommodate two-way vehicle movement for B-Double vehicles.
- The sight distance available at the access locations exceed the Austroads requirements given the straight and flat alignment of Cobb Highway.

Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) will be prepared in consultation with Transport for NSW and Hay Shire Council to make sure road safety and road network operations are maintained. A community information and awareness program will be implemented prior to construction to assist in managing the traffic impacts.

During Operation

Average Per Day During Construction

Road upgrades will be provided as part of the Project. These will be undertaken prior to construction commencing. A schedule of the local road upgrades is provided below:

- Widen West Burrabogie Road to a minimum width of 7 m to allow two trucks to pass;
- Provide BAR and BAL treatments at the intersection of Cobb Highway and West Burrabogie Road;
- BAL and BAR treatments at the site access points A, B and D along the Cobb Highway; and
- Minor adjustments along preferred route from port of Adelaide.

Hazards

Bushfire

Bushfires have occurred in most years in this district, and natural ignitions such as lightning strikes are likely and historically common across the region. Human induced ignitions (both accidental and arson) are also known to occur across the region.

The risk that the wind farm itself will cause a fire is considered low given Project infrastructure will include appropriate protection measures. While the Project Area is not identified as a bushfire prone vegetation community within the current NSW RFS bushfire prone land mapping, fires within grasslands and arid shrublands should not be underestimated and can start and spread quickly. For this reason, we have considered these areas as a bushfire hazard and the following mitigation measures will be implemented:

- A Bushfire Emergency Management and Operations Plan will be prepared in conjunction with relevant stakeholders, including NSW RFS, NSW Fire and Rescue, landowners and adjoining property owners.
- A minimum 10 m APZ is to be established around the perimeter of WTGs, and on all sides of the substations, switching station, and O&M Buildings.
- The APZ and access road will be constructed prior to the installation of any WTGs or related infrastructure.
- Vegetation fuels throughout the wind farm are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required.

Aviation

An Aviation Impact Assessment has been prepared to assess potential impacts to airspace and aviation safety associated with the Project .

An aviation risk assessment was conducted that concluded that with appropriate mitigation measures, identified risks were acceptable.

The minimum obstacle clearances of three air routes would need to be increased to 2,200 ft in accordance with the *Manual Standards 173 Standards Applicable to Instrument Flight Procedure Design* to minimise impacts of the Project.

Mitigation measures to be adopted (among others) include designed air routes and grids, notification and reporting when constructing WTGs, and lighting of met masts. Obstacle lighting on wind turbines was not recommended.

Blade Throw

All dwellings will be sufficiently far from WTG locations to be no risk of blade throw. However, blade throw may present a hazard for internal infrastructure including substations, O&M facilities and small sections of the Cobb Highway, albeit the risk is very low.
A comprehensive operations and maintenance program will be implemented to ensure that WTG faults are prevented or detected and rectified quickly, minimising the risk of occurrence of a serious or dangerous problem.

Hazards

Telecommunications

WTGs have the potential to interfere with radiocommunication services. Two services that have the greatest potential to be affected are television broadcast signals and fixed point-to-point signals. The assessment concluded that:

- no material near-field effects to point-to-point links are expected because of the Project;
- it is unlikely that the Project will cause significant reflection and scattering impacts on the nearby transmitter/ receivers;
- turbines will not cause diffraction impact to point to the point link that crosses the Project Area; and
- the Project is unlikely to cause adverse performance of wireless and satellite internet services, broadcast and digital radio, broadcast, digital and satellite television, trigonometry stations, and GPS.

Given the distance from the WTGs, impacts to identified survey marks can be avoided during construction.

Human health

Electromagnetic fields (EMFs) associated with the generation, distribution and use of electricity is classed as extremely low frequency (ELF) EMF or power frequency EMF, which corresponds to a frequency of 50 Hertz (Hz). Globally, concerns have been raised that EMFs associated with electrical equipment might have adverse human health effects.

A human health and EMF assessment conducted by Middleton Group found that EMF impacts are expected to be negligible as:

- the nearest dwelling to a WTG is about 2.7 km away; and
- the nearest dwelling to the substations or switchyard, or transmission lines is over 9 km away.

The Project has been designed to implement prudent avoidance by ensuring appropriate setbacks. Transmission lines will be built at a minimum height of 12 metres to meet the INCIRP guidelines for general public exposure.

Aboriginal Cultural Heritage

ERM and ENGIE would like to acknowledge the Traditional Owners of the Hay region and pay respects to their Elders past, present, and emerging. We acknowledge and respect their Indigenous knowledge systems and recognise continuing connection to lands, waters, culture, and community..

The Project Site is located within the Hay Local Aboriginal Land Council (LALC) area. An Aboriginal cultural heritage assessment has been prepared by ERM to assess the potential impacts of the Project on Aboriginal cultural heritage. Cultural heritage values for the Project Area were identified through a combination of desktop assessment and consultation undertaken during the field surveys and preparation of the report. Archaeologists were accompanied by registered Aboriginal parties (RAPs) on each day of the survey, including representatives from Hay LALC.

A total of 227 sites were recorded within the Project area (134 previously registered Aboriginal sites and 93 newly recorded sites), comprising artefacts, hearths, modified trees and PADs. Based on the current development footprint, potential harm to 82 sites (34 of moderate significance, 47 of low significance and one (1) of unknown significance) has been identified. Proposed key measures to manage and mitigate impacts to the identified heritage sites include:

- Consultation between ENGIE and Hay LALC in August 2023 resulted in agreed changes to the Project design to avoid impacting Aboriginal sites. A buffer of 200 m will be provided to recorded PADs, a buffer of 100 m will be provided to recorded hearths, and a buffer of 50 m will be provided to recorded culturally modified trees;
- An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed to record and describe the processes and procedures required to be implemented prior and during the construction and operation of the wind farm. This will be developed in partnership with the Traditional Owners and should include:
    - any required archaeological test or salvage excavations;
    - care of any archaeological material that is removed from the development site;
    - measures to protect archaeological material that will not be impacted by development activities;
    - heritage training and inductions for employees and contractors;
    - monitoring of ground disturbance activities by Traditional Owners;
    - development and provision of cultural awareness training by Traditional Owners;
    - an Unexpected Finds Protocol;

There are 227 registered Aboriginal heritage sites within or in the vicinity of the Project Area.

Soils and Agriculture

The Project Area is located on land zoned RU1 –Primary Production. The impact of the Project on the local and regional agricultural industry was assessed. The area of agricultural production lost during construction and operation was estimated to be a small fraction of the total agricultural land available in the Hay LGA. Therefore, the impacts of the Project at a regional scale would be minimal:

- The potential loss of grazing income during construction (36 months) was estimated at approximately $536,794;
- Grazing can continue across most of the Project Area during operations, except for some permanent infrastructure areas. This may result in a loss of agricultural income during operation of about $115,700 per year. There is no cropping land within the Project Area.
- Other potential impacts include disturbance of livestock by noise. However, these impacts are expected to be relatively small and would have a minor effect on productivity.
- The potential spread of weeds by vehicles, machinery, personnel and movement of soil and water is the highest biosecurity risk, however, this can be managed through the introduction of appropriate biosecurity controls.
- Effective mitigation measures would be implemented to reduce the impacts of the Project on the agricultural industry.

The agricultural income loss during operation does not consider the non-agricultural rental income from the Project which would result in an overall net increase in income to the host landowners.

The overall Project impact would also have a negligible impact on agricultural support services, processing and value adding industries.

The Project Area is dominated by moderate fertility vertosols, on which all the construction and operation areas are located.

Land and soil capability measures give an indication of the land management practices that can be applied to a parcel of land without causing degradation. They also inform strategic placing of developments. The assessment determined:

- The Project Area is predominantly rated Land and Soil Capability (LSC) Class 5 (moderate – low capability), with smaller areas of LSC Class 4 and Class 6 land.
- Four WTGs and associated access tracks, electrical reticulation and hardstand blocks would be located on the draft State Significant Agricultural Land (SSAL).
- No biophysical strategic agricultural land (BSAL) is located within or near the Project Area.

Effective mitigation measures that would be implemented to manage soil and agriculture related impacts during the construction and operation of the project include:

- Permanent structures and temporary construction compounds will be located to avoid or minimise impacts where possible.
- Landowners will be consulted regarding the timing of any adjustment to property infrastructure, and any damages will be repaired in a timely manner.
- The use of existing roads, tracks and other existing disturbed areas will be prioritised.
- Biosecurity protocols will be implemented in accordance with the *Biosecurity Act 2015*.

Air quality

The Project will generally contribute to positive air quality outcomes through the displacement of emissions that would otherwise be generated through the burning of fossil fuels used to generate electricity from traditional coal fired power stations. The Project would thus abate the production of up to 3.6 million tonnes CO_2e per annum which is a substantial contribution towards a cleaner atmosphere.

Air emissions from the Project are predominantly associated with construction activities which will be temporary and limited to:

- localised dust emissions generated by land disturbance, and
- exhaust emissions of civil construction and vehicle, plant and from the Project Area would mostly be associated.

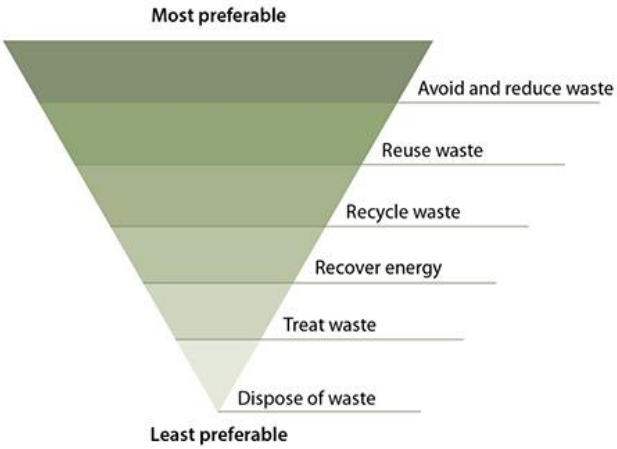
During operations, the Project will generate electricity without directly emitting air pollutants that are known to affect the climate and human health. However, ongoing maintenance of infrastructures and land will result in very minor, localised vehicle emissions and generation of dust from vehicles travelling along unsealed internal access roads.

Potential impacts to air quality would be managed through:

- using water carts during construction for dust suppression
- preparing roadways with coarse gravel or other road coverings
- covering and/or stabilising material loads which may generate dust (such as aggregates) during transport
- managing soil stockpiles
- minimising vegetation clearance
- managing vehicle speed when travelling on unsealed roads
- minimising vehicle movements
- cleaning and washing of vehicles, plant and equipment
- progressive revegetation and stabilisation of disturbance areas no longer required for construction, and
- regular monitoring of environmental conditions during construction (such as wind) that may result in dust generation and implementation of control measures as specified above.

Waste

Minimal waste streams would be associated with the generation of electricity.

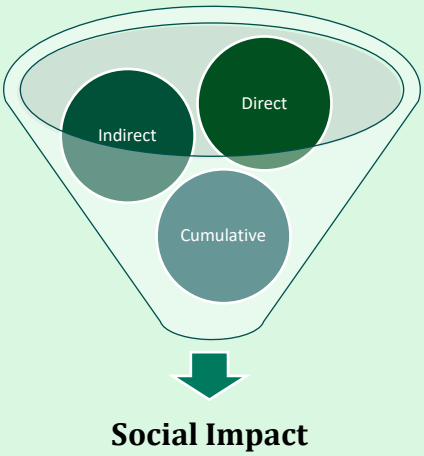


Waste generated during construction phase will include green waste and soil from site establishment and earthworks, packaging materials (e.g., carboard, plastics, wooden pallets), and excess construction materials such as electrical cabling, metals. Most of the waste generated during the construction phase will be classified as general solid waste. Some types of waste, such as hazardous chemicals, cannot be safely recycled and direct treatment or disposal is the most appropriate management option.

A Waste Management Plan (WMP) will be prepared and will describe the measures to be implemented to manage, reuse, recycle and safely dispose of waste. All waste management on the Project will be carried out in accordance with relevant legislation and guidelines and based on the principles of the waste hierarchy.

At Project retirement, infrastructure and facilities will be decommissioned with the various structures, plant, equipment and buildings de-energised, disconnected, dismantled, demolished and removed. At the end of the infrastructure life, most materials are likely to be recycled or reused in accordance with waste hierarchy principles. Items that cannot be reused or recycled, would be classified and disposed of at suitable facilities following applicable regulations. Batteries would be disposed in accordance with the hazardous waste policies active at the time of decommissioning.

Social Impacts



The social baseline describes the social context in the absence of the Project. It documents the existing social environment, conditions and trends relevant to the impacts identified. The social baseline is the benchmark against which direct, indirect and cumulative impacts are predicted and analysed.

The key drivers of social change as a result of the Project are generally positive and include:

- The establishment of the CEF to fund a broad range of projects and programs for the benefit of the residents and the broader community;
- Increased demand for goods and services stimulating the local economy;
- Procurement opportunities for local businesses and employment opportunities for the local workforce;
- Opportunities for diversification of income streams for host landowners;
- Disruptions due to construction related activities (noise, dust, transportation of materials and workers, etc.);
- Accommodation arrangements for construction workforce in Hay as well as the provision on site workers accommodation; and
- Amenity (noise, visual) and other land use and landscape changes due to altered landscapes.

The impacts have been assessed based on the likelihood of the impact occurring, the magnitude of the impact if it occurs, and the vulnerability of the impacted receptors. ENGIE and ERM have also considered issues raised by stakeholders during the engagement process and outcomes from technical studies undertaken by the Project (noise, visual, cultural heritage etc.).

A range of social management and mitigation measures to be adopted for the Project will include:

- Develop and implement the Stakeholder Engagement Plan (SEP);
- Develop and implement a Grievance Mechanism;
- Investigate creating awareness of job opportunities amongst the community (in partnership with the relevant Councils and other partner organisations);
- Develop and implement a Local Employment Plan (LEMP);
- Monitor for skills shortages within the region and take this into consideration with EPC recruitment objectives;
- Develop and implement a CEF, consulting with key stakeholders and potential partner and publish to the wider community; and.
- Develop and implement a Legacy Fund, which will be administered by independent community groups following cessation of the Project.

Economics

The construction and operation of the Project will have net positive impacts on the level of economic activity in the regional and NSW economy. ENGIE proposes to work in partnership with local councils and the local community so that, as far as possible, the benefits of the projected economic growth in the region are maximised and impacts minimised.

Annual direct construction employment (full time equivalent) from the Project is estimated at 700 workers during peak construction. The annual construction impacts of the Project on the regional economy (during the 40-months construction phase) are estimated at up to:

- $200M in direct output and $128M in indirect output.
- $80M in direct value-added and $40M in indirect value-added.
- $42M in direct household income and $18M in indirect household income.
- 550 direct jobs and 298 indirect jobs.

The construction of the Project will create demand for regional labour resources and regional inputs to production. However, this is not expected to lead to any significant impacts on regional wages or prices. The Project is estimated to make the following maximum total annual contribution to the regional economy during operation:

- $200M in direct output and $399M in indirect output.
- $80M in direct value-added and $176M in indirect value-added.
- $59M in direct household income and $105M in indirect household income.
- 550 direct jobs and 1,177 indirect jobs.

Conclusion

The Project will contribute significantly to reducing carbon emissions and human induced climate change as part of the necessary and ongoing clean energy transition from fossil fuels. The Project has been carefully designed and sited to minimise environmental impacts in consultation with the local community and relevant stakeholders. The residual environmental and social impacts identified throughout the EIS and technical assessments will be managed through the proposed mitigation and management measures.

The Project will not result in significant impacts on the environment, or the local community and these impacts will be significantly outweighed by the strong strategic and economic benefits which the Project will deliver.

The Project will:

- Assist the Federal and NSW Governments to fulfil their targets and policies to increase renewable energy supply and reduce carbon emissions;
- Assist in meeting energy demand as part of the market transition from traditional energy sources; and.
- Deliver economic benefits to regional and local communities.

The Project represents a positive addition to the local and wider NSW economy and the NEM. Through the implementation of proposed mitigation and management measures, it is considered that this Project is consistent with the objects of the EP&A Act and is in the public interest.

1. INTRODUCTION

This section provides an overview of the Project, Applicant details, objectives, background, design strategies, related developments, and restrictions as each relates to the Project.

Engie Australia Pty Ltd ('ENGIE' or the 'Applicant') proposes to construct, operate, maintain and decommission The Plains Wind Farm (the 'Project') located south of Hay in the Riverina Murray Region of New South Wales (NSW).

The Applicant is seeking State Significant Development (SSD) consent for the Project under Part 4, Division 4.7 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). ENGIE engaged Environmental Resources Management Australia Pty Ltd (ERM) to prepare an Environmental Impact Statement (EIS) for the Project, as part of the SSD consent process.

This EIS covers all aspects of planning, construction, operation, decommissioning, rehabilitation, and environmental management for the Project. These aspects address the:

- Project-specific Secretary's Environmental Assessment Requirements (SEARs) issued by (then) the Department of Planning and Environment (DPE; now Department of Planning, Housing and Infrastructure (DPHI)) (SSD-50629707, dated 16 December 2022);
- Requirements of other State Government agencies;
- Requirements of Commonwealth government agencies;
- Matters raised by Hay Shire Council and neighbouring Edward River Council); and
- Matters raised during the community engagement process.

Specific requirements and where each are addressed in this EIS are presented within **Appendix A**.

Appendix B provides a concise summary of all management and mitigation measures proposed for the Project.

1.1 THE APPLICANT

ENGIE is a French multinational organisation that specialises in the development, operation and maintenance of large-scale assets, predominantly focusing on wind, solar and industrial-scale battery storage. ENGIE has been driving innovation in the energy sector for over 180 years. Today, ENGIE operates in over 70 countries worldwide, and employs over 101,000 people. ENGIE has been operating in Australia since 1996 and employs over 330 people.

ENGIE's purpose is to act to accelerate the transition towards a carbon neutral economy, through reduced consumption of carbon-intensive energy sources and development of more environmentally friendly energy solutions. Their purpose brings together the company, its employees, its clients and its shareholders, and reconciles economic performance with a positive impact on people and the planet. ENGIE is committed to a long-term sustainable growth and an ambitious net-zero carbon emissions target by 2045. They have also set a global target to have 80 gigawatts (GW) of installed renewable energy capacity and achieve annual emissions reduction by their clients of 45 Mt CO_2 equivalent by 2030.

In Australia, ENGIE is a critical part of the low-carbon energy transition. They currently have more than 2,000 megawatts (MW) of wind, solar and industrial-scale battery storage capacity

projects under development, plus a 10 MW green hydrogen to ammonia project under construction. Their current operating renewable energy generation is 165 MW, comprising the Canunda and Willogoleche wind farms in South Australia.

ENGIE has also recently announced the construction of Australia's largest private-owned battery, the 150 MW Hazelwood Battery Energy Storage System (BESS). The Hazelwood BESS is located at the former Hazelwood Mine and Power Station in the Latrobe Valley, Victoria, forming part of ENGIE's commitment to repurposing the site, which has been under rehabilitation since 2017.

ENGIE's long-term focus in Australia is to develop utility scale renewable energy that provides benefits to all Australian regions and communities.

The Australian Business Number (ABN) and address of International Power (Australia) Pty Limited (trading as ENGIE ANZ) are listed below:

- **ABN:** 59 092 560 793
- **Address:** Level 23, 2 Southbank Boulevard, Southbank VIC 3006.

1.2 PROJECT OVERVIEW

The Project is situated on Mungadal Station and neighbouring properties to the east and west of the Cobb Highway in the Riverina Murray Region of NSW. The Project Area extends across an area of approximately 53,894 hectares (ha), over 314 freehold land parcels (and 6 parcels of Crown Land/ 'Road Casement'), in the Hay Shire Local Government Area (LGA). The Project is about 15 kilometres (km) (by road) south of Hay town centre and 10 km (by road) north of Booroobanan village, via the Cobb Highway. The Project Area is located on land predominately used for agricultural activities. **Figure 1-1** shows the Project locality in a regional setting. Project Layout is provided in **Figure 1-2.**

The Project involves the construction, operation and where relevant decommissioning of:

- 188 wind turbine generators (WTGs), with each having a hub height of up to 180 metres (m) and tip height of up to 270 m, and a total maximum capacity of up to 1,350 megawatts (MW);
- Electrical reticulation; and
- Associated and ancillary facilities.

The Project will connect to either an existing 220 kV transmission line or the 330 kV Project EnergyConnect, both owned by TransGrid and located along the southern boundary of the Project Area.

EnergyConnect was recently approved for construction and will run between South Australia (SA) and NSW, with an added connection to northwest Victoria (Vic) and a total length of around 900 km. EnergyConnect has available network capacity and provides a suitable grid connection point for the Project. The Applicant intends to bid for access rights to this interconnector. An overhead transmission line will connect the Project to the TransGrid transmission network.

Details of consultation undertaken to date with TransGrid regarding the Project connecting to their transmission assets are provided in **Section 5**.

The Project Area covers a total area of 53,894 ha, with a Development Footprint of 1,996.9 ha. The Development Footprint represents the maximum extent of potential impacts associated with the construction and operation of the Project.

The final layout remains subject to further detailed design and refinement. To allow the Applicant to make general design refinements without the need to modify the application, the EIS has assessed impacts for an area that includes temporary and permanent Project infrastructure with, generally, a 100 m micro-siting buffer applied (the Project Area). This means that micro-siting does not jeopardise the assessment of impacts as the areas within which micro-siting will occur were assessed in this EIS. Should the detailed design extend outside of the Project Area assessed in this EIS, the amended design would be subject to SSD assessment requirements and detailed in an Amendment Report (prior to determination) or Modification Report (after determination).

1.3 PROJECT OBJECTIVES

The Project has the following social, economic and environmental objectives:

- Support the transition in the energy sector away from a centralised system of large fossil fuel generation, towards a decentralised system of dispersed, renewable energy production;
- Provide alternative, renewable energy production to offset the forecast retirement of NSW coal-fired power stations, including the 1,260 MW Liddell Power Station (closed in 2023), the 2,922 MW Eraring Power Station (scheduled to close in 2025), the 1,320 MW Vales Point Power Station (scheduled to close in 2029), the 2,640 MW Bayswater Power Station (scheduled to close between 2030 and 2033), and the 1,400 MW Mount Piper Power Station (scheduled to close in 2040);
- Contribute to meeting increasing energy demand in NSW and throughout the National Electricity Market (NEM);
- Contribute to greenhouse gas (GHG) emissions reductions in the order of 3.63 million tonnes (t) CO_2 equivalent per annum (t-CO_2^{-e} pa), supporting the NSW and Australian Government commitments of net zero by 2050;
- Contribute to the NSW and Australian Government's renewable energy targets;
- Deliver economic benefits to NSW, regional and local communities, including approximately:
    - Up to $328 million and up to $599 million in direct and indirect wages and profits respectively to the regional and NSW economy during construction of the Project;
    - Up to $373 million and up to $421 million in direct and indirect wages and profits respectively to the regional and NSW economy during operations of the Project;
    - Material employment of up to 700 FTE jobs during peak construction and up to 40 FTE onsite and offsite jobs during operations;
    - Providing a diversified income stream for rural landowners through payments to associated landowners; and
    - Provide benefits to local and regional infrastructure and services through the establishment of a Community Enhancement Fund (CEF), Neighbour Benefit Sharing Program (NBSP), First Nations Benefit Sharing and Voluntary Planning Agreement (VPA).

- Minimise adverse environmental impacts;
- Recycle and reuse materials where practical;
- Ensure quality, safety and environmental standards are maintained; and
- Liaise and work proactively with the community and all potentially affected stakeholders in the identification, mitigation and/or monitoring of negative environmental impacts.

1.4 PROJECT BACKGROUND

1.4.1 PROJECT HISTORY

An initial assessment of environmental and social constraints was undertaken in 2019 (NGH, 2019) across an area of about 240,266 ha comprising the following properties:

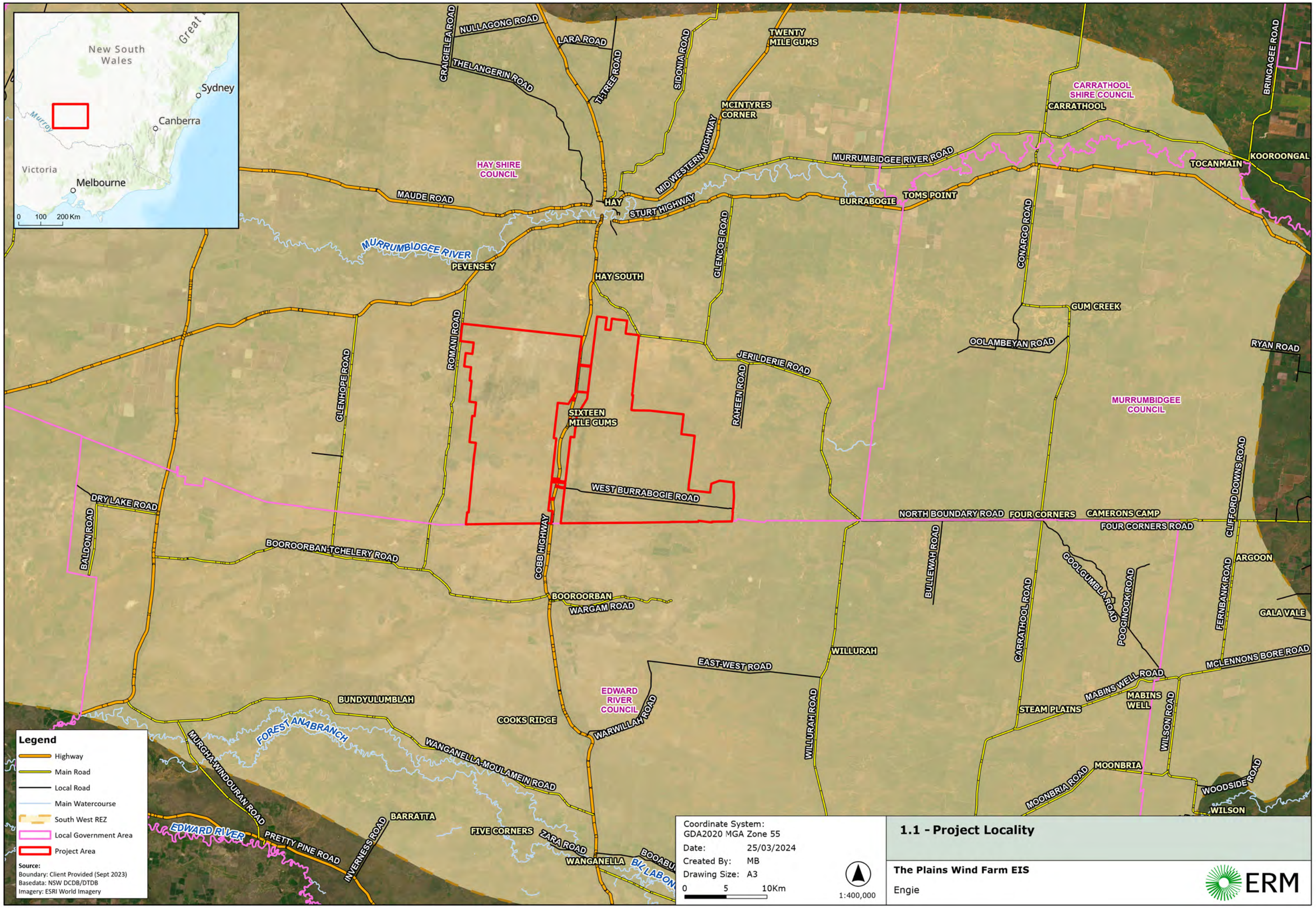
- Cooinbil (91,567 ha);
- Euroka (11,423 ha);
- Mungadal Station East (24,494 ha);
- Mungadal Station West (57,280 ha);
- Pooginook (20,331 ha); and
- Steam Plains (35,171 ha).

This was followed by landcover modelling and field surveys to identify areas of high biodiversity constraints. The findings of these preliminary assessments informed selection of Mungadal East and Mungadal West (together known as Mungadal Station) as a viable Project area. A Scoping Report (ERM, 2022) was subsequently prepared and submitted to the DPE/ DPHI in November 2022. The Scoping Report proposed a wind farm area of 58,786 ha on Mungadal Station. Project-specific SEARs were issued on 16 December 2022.

Based on EIS investigations completed for the Project, in particular flooding and biodiversity investigations and Project constructability and operational efficiency, further refinements to the Project have occurred. This process has resulted in the Project Area being reduced to the south such that the Project no longer extends into the Edward River LGA; however, still within the boundary of Mungadal Station (see **Section 2.7**). As a result of the refinements, the Project Area has reduced from a total of 58,786 ha to 53,894 ha.

The Project was reduced from 240 WTGs to 199 WTGs as a result of biodiversity values and neighbour concerns in 2022. Consultation in 2022 and 2023 with direct neighbours to the Project Boundary led to six (6) additional host landowners, which increased the capacity of the proposed wind farm to include up to 226 WTGs during the scoping phase. Environmental studies undertaken during 2022-2024 as part of the EIS have reduced the viable disturbance footprint of the Project Area, and therefore the proposed wind farm will comprise up to 188 WTGs.

Avoidance and minimisation of impacts has been at the centre of Project design development and is discussed further in **Section 2.7.4**.



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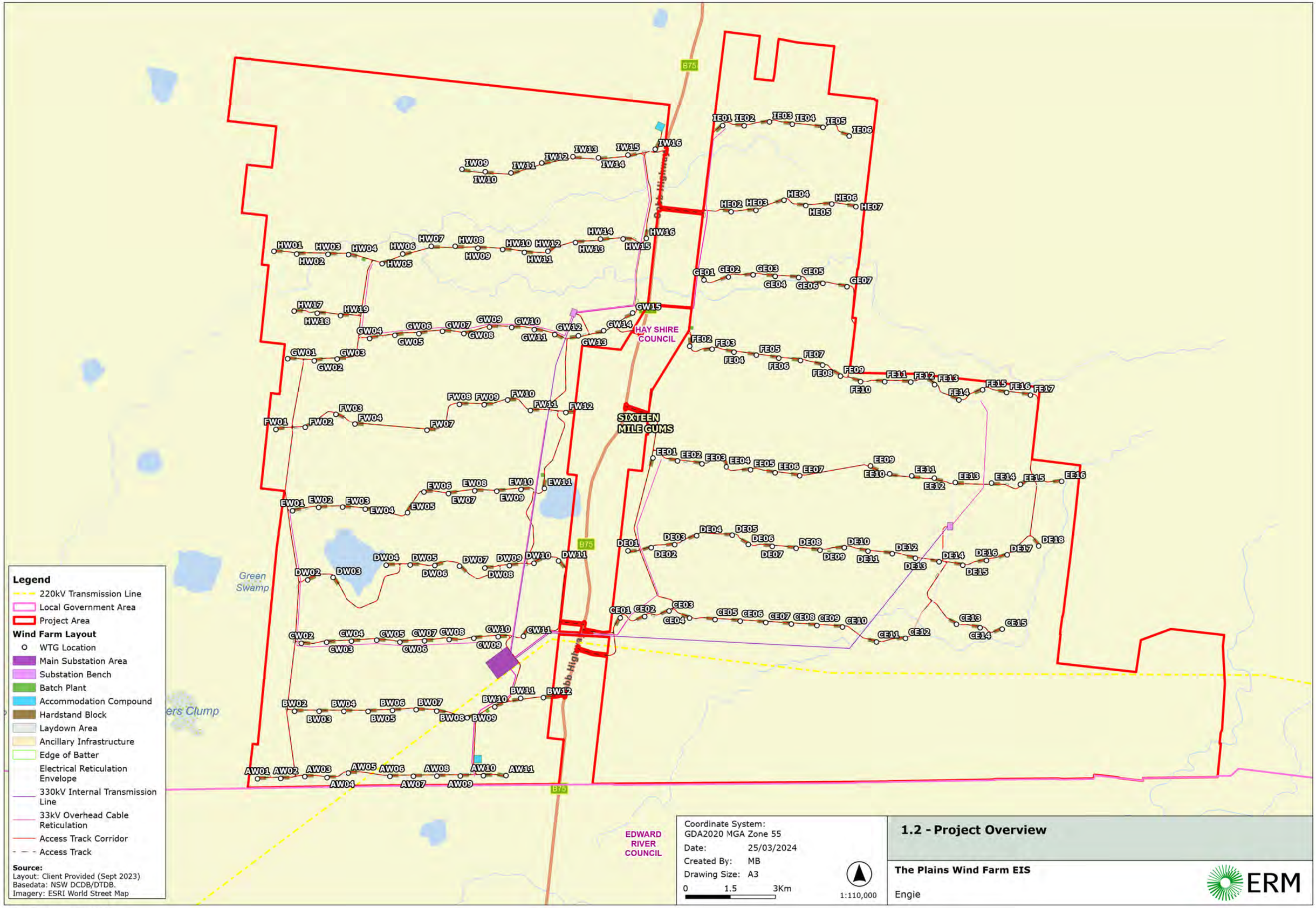
B75
Cobb Highway
HAY SHIRE COUNCIL
SIXTEEN MILE GUMS
EDWARD RIVER COUNCIL
Green Swamp
Legend
220kV Transmission Line
Local Government Area
Project Area
Wind Farm Layout
WTG Location
Main Substation Area
Substation Bench
Batch Plant
Accommodation Compound
Hardstand Block
Laydown Area
Ancillary Infrastructure
Edge of Batter
Electrical Reticulation Envelope
330kV Internal Transmission Line
33kV Overhead Cable Reticulation
Access Track Corridor
Access Track
Source:
Layout: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB.
Imagery: ESRI World Street Map
Coordinate System:
GDA2020 MGA Zone 55
Date: 25/03/2024
Created By: MB
Drawing Size: A3
0 1.5 3Km
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1.2 - Project Overview
The Plains Wind Farm EIS
Engie
ERM

1.4.2 KEY STRATEGIES TO AVOID, MINIMISE OR OFFSET IMPACTS

A multivariable and iterative design approach was adopted for the Project. This considered a range of technical, environmental, social, and economic opportunities and constraints.

Design iterations for the wind turbines and ancillary facilities have sought to minimise and avoid environmental and social impacts in line with the Avoid-Minimise-Mitigate-Offset design hierarchy, namely:

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

Design evolution and impact minimisation is outlined in **Section 2.7.4.**

1.5 RELATED DEVELOPMENT

The Project is part of the broader The Plains Renewable Energy Park (refer **Figure 1-2**), which includes a proposed solar farm (The Plains Solar Farm) that will provide a maximum installed capacity of up to approximately 400 MW and a centralised large-scale battery energy storage system (BESS) with a capacity of up to 400 MW/ 1.6 gigawatt hours (GWh). The Plains Solar Farm, located within the southern portion of the Project Area and to the east and west of the Cobb Highway, will form part of a separate development application and approval process.

1.6 RESTRICTIONS OR COVENANTS

A title search has been undertaken for the Project Area and the following restriction applies to the Project Area:

- Two 80m wide easements, one for the existing 220kV transmission line and the other for the new Project EnergyConnect 330kV line.

2. STRATEGIC CONTEXT

This section identifies the key strategic issues that are relevant to the assessment of the Project. It includes the site setting and surrounding land use, how the Project aligns with International, Australian Government, and State Government policies and strategic goals, alternatives to the Project and modifications made to the proposed design during development of the Project. It also describes relevant contributions and agreements.

2.1 SECURITY OF ENERGY SUPPLY

The Project would provide 1,350 MW of renewable energy supply into NSW.

The Australian Energy Market Operator (AEMO) Draft 2024 Integrated System Plan (ISP) (AEMO, 2023a) provides a comprehensive roadmap for the for the energy transition in the NEM, aiming to optimise consumer benefits through a transition period of great complexity and uncertainty. The 2024 ISP highlights the planned retirement of all of NSW existing coal fired electricity generation by 2040; however, it forecasts that the remaining coal fleet will close two to three times faster than those announcements. Three of these, accounting for over 6 GW of generation is planned to retire before 2030, specifically:

- AGL's Liddell power station (1.26 GW) closed in April 2023;
- Origin Energy's Eraring power station (2.92 GW) is scheduled to close in August 2025, seven years ahead of its previously planned retirement;
- Delta Energy's Vales Point B power station (1.32 GW) is expected to close in 2029;
- AGL's Bayswater power station (2.64 GW) is expected to close between 2030 and 2033, and
- Energy Australia's Mount Piper (1.4 GW), the youngest of NSW's coal-fired power stations, expected to operate until 2040.

These power stations currently provide around three quarters of NSW's electricity supply and two thirds of the firm capacity needed during heat waves (DPIE, 2020d). With coal retiring, renewable energy connected with transmission, firmed with storage and backed up by gas-powered generation is the lowest cost way to supply electricity to homes and businesses throughout Australia's transition to a net zero economy.

Traditionally, across Australia, coal-fired generation and some gas peaking power plants have met electricity needs. Over the past decade, this trend has started to shift. In 2021, coal-fired generation supplied 71% of the total electricity generated in Australia (-5% compared to 2020) and renewables supplied 29% of Australia's total electricity generation (+5% compared to 2020) (DCCEEW, 2022).

The 2024 ISP (AEMO, 2023a) states that given the accelerated retirement schedule for coal fired power generation, and the relative lower capacity factors of wind and solar compared to coal, almost triple grid-scale variable renewable energy by 2030, seven-fold renewable energy generation by 2050 and four times the firming capacity is needed across the NEM to replace retiring coal fired power stations. This translates to the requirement of approximately 6 GW of new renewable generation capacity every year, compared to the current rate of almost 4 GW, and an increase from 19 GW currently to 126 GW in the total capacity of utility-scale wind and solar.

The AEMO's 2023 Electricity Statement of Opportunities (AEMO, 2023b) report notes the substantial pipeline of future renewable projects in various stages of development. These projects total 248 GW and are spread across all NEM regions, including NSW. **Figure 2-1** illustrates proposed generation pipeline – existing, committed, anticipated, and proposed (AEMO, 2023b).

FIGURE 2-1 PROPOSED PROJECTS BEYOND THOSE ALREADY COMMITTED

SOURCE: AEMO'S 2023 ELECTRICITY STATEMENT OF OPPORTUNITIES (AEMO, 2023)

However, with the time it takes for wind and solar projects to become operational in NSW (e.g., to obtain development consent, and progress through construction) there is an urgent need for additional renewable energy development in NSW over the next seven years to offset the planned retirement of coal fired power and ensure a reliable energy supply. The Clean Energy Councils Power Playbook (CEC, 2023) states that Australia needs to see a substantial increase in annual financial commitments in the order of 5- 7 GW of new large-scale renewable projects from 2023 to reach the targeted 82 per cent renewables by 2030.

To facilitate the necessary scale and speed of renewable energy development, the 2024 ISP identified the locations of proposed Renewable Energy Zones (REZs) across the NEM. These REZ were proposed in locations 'to build and coordinate electricity assets, with a more holistic approach to the needs of the energy transition and the aspirations of regional communities' (AEMO, 2023b) .

The Project will assist in meeting the projected seven-fold increase in utility-scale Variable renewable energy (VRE) required to meet the energy requirements across the NEM, by providing 1,350 MW of renewable energy. The Project will therefore augment the security and reliability of the electricity system in the NEM, through renewable energy generation, and transmission to the existing 220 kV transmission line or the 330 kV Project EnergyConnect infrastructure to be established for the South West Renewable Energy Zone.

2.2 GOVERNMENT STRATEGIES, POLICIES AND PLANS

Increased adoption of renewable energy generation will assist Australia to transition away from traditional fossil fuel energy production, which is linked to anthropogenic climate change, atmospheric pollution, water pollution, land pollution and human health impacts. Critically, reducing carbon emissions through replacement of traditional energy sources with renewable energy will assist to minimise the effects of climate change, benefitting current and future generations in line with the principles of Ecologically Sustainable Development (ESD).

In addition to achieving the objectives outlined in **Section 1.3**, the Project will assist to achieve objectives of the following International, Australian Government, and State Government policies strategic goals as described below.

2.2.1 UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

The United Nations 2030 Agenda for Sustainable Development includes global Sustainable Development Goals (SDG) to build a more sustainable and resilient future. The 17 SDG and 169 individual targets cover measures towards improvements to economic, social and environmental sustainability. All Member States of the United Nations agreed to work towards achieving the SDGs by 2030. Of relevance to the Project are:

- Goal 7: 'Ensure access to affordable, reliable, sustainable and modern energy for all', Target 7.2 states '*By 2030, increase substantially the share of renewable energy in the global energy mix*'; and
- Goal 11: Sustainable Cities and Communities, Target 11.6 states: 'By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management'.

The Project will provide a source of renewable energy, increasing the proportion of renewable energy generation in Australia. Further, it will assist to reduce reliance on fossil fuels for energy generation, resulting in reduction of GHG emissions and improved air quality.

2.2.2 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC) CONFERENCE OF PARTIES 28 (COP28)

States that are Parties to the United Nations Framework Convention on Climate Change (UNFCC) have held regular Conference of the Parties (COP) since the inaugural meeting held in Germany 1996. The 28th COP (COP28) was held in Dubai, United Arab Emirates in 2023. A key outcome of COP28 was an agreement to "triple the world's renewable energy capacity and double its energy efficiency by 2030" (UNDRR, 2023). This pledge was made by 130 countries, including Australia. In September 2022, the Australian Government strengthened its GHG emissions reduction targets to aim to achieve 43% emissions reduction on 2005 levels by 2030 and net zero emissions by 2050.

The Project will contribute to meeting Australia's commitments under the UNFCC by generating renewable wind energy that will displace some fossil-fuel energy generation, thus contributing to Australia's renewable energy capacity and reducing overall GHG emissions.

2.2.3 UNFCCC COP21

The United Nations Paris Agreement on climate change (Paris Agreement) outlines a framework for all countries to take climate action from 2020 and builds upon the existing international efforts in the period up to 2020. The aim of the Paris Agreement is to limit emissions globally to net zero in the second half of this century. Australia is one of 195 countries that signed on to the Paris Agreement and has set a target to reduce emissions by 26-28% below 2005 levels by 2030. This builds on the 2020 target of reducing emissions by 5% below 2000 levels (PoA, 2017).

The Project will contribute to meeting Australia's commitments under the Paris Agreement by generating renewable wind energy that will displace some fossil-fuel energy generation, reducing Australia's GHG emissions by approximately 3.6 million t-CO_2-^{e} pa.

2.2.4 GOVERNMENT'S RENEWABLE ENERGY TARGET

The Renewable Energy Target (RET) is an Australian Government scheme which has been in operation since 2001. It is designed to reduce emissions of GHG in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources.

The RET operates as two schemes – small- and large-scale renewable projects, of which the Large-scale Renewable Energy Target (LRET) is relevant for the Project. The LRET encourages investment in large-scale renewable energy projects and incentivises the development of renewable energy power stations through a market for the creation and sale of Large-scale Generation Certificates (LGCs) to achieve current target under the LRET of 33,000 GWh of additional renewable electricity generation (Clean Energy Regulator, 2022). The current targets, accreditation of power stations, and creation of LGCs will remain until the end of the scheme in 2030. This is relevant for the Project as, once constructed, it will contribute toward the LRET and will be an eligible large-scale generator under the RET.

The Project will supply 5541.2 GWh/year hours (MWh) per year of clean, renewable energy, enough to power more than 978,664 NSW homes on average. The Project will deliver renewable, low-cost energy to the NEM, offsetting energy generation that will be lost with the closure of coal-fired power stations and contributing to the Australian and NSW Government's net-zero emissions by 2050 targets (refer **Section 2.2.5** and **Section 2.2.6**).

2.2.5 CLIMATE CHANGE ACT 2022

The Australian Government *Climate Change Act 2022* outlines Australia's greenhouse gas emissions reduction targets of a 43% reduction from 2005 levels by 2030 and reducing Australia's net greenhouse gas emissions to zero by 2050. The Project will assist in achieving this target by providing an estimated reduction in greenhouse gas emissions of approximately 3.6 million t CO_2^{-e} pa. If approved, the Project could be constructed and operational before 2030, which is the year that many nations have pledged significant greenhouse gas emissions reductions relative to 2005 levels.

2.2.6 NET ZERO PLAN STAGE 1: 2020-2030

The 'NSW Government Net Zero Plan Stage 1: 2020–2030' (DPIE, 2020a) sets the foundation for action on climate change and how the NSW Government will deliver on its objective to achieve net zero emissions by 2050, as outlined in the NSW Climate Change Policy Framework (OEH, 2016). The Net Zero Plan Stage 1: 2020–2030 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 targets to reduce emissions by 50% below 2005 levels by 2030 (Net Zero Plan Stage 1: 2020 – 2030 Implementation Update - September 2021). In December 2022, the NSW Government introduced a new goal to achieve a 70% reduction on 2005 levels by 2035 (Net Zero Plan Stage 1: 2020 – 2030 Implementation Update - December 2022).

The Project will assist the NSW Government to achieve the commitments of the Net Zero Plan by providing an estimated reduction in GHG emissions of approximately 3.6 million t CO_2^{-e} pa.

2.2.7 NSW ELECTRICITY STRATEGY

The 'NSW Electricity Strategy' (DPIE, 2019a) is the NSW Government's plan to achieve reliability, affordability and sustainability for the NSW electricity system, and will support an estimated $8 billion of private investment in NSW's electricity system over the next decade.

An aim of the NSW Government's Electricity Strategy is to improve the efficiency and competitiveness of the NSW electricity market by reducing risk, cost, and government-caused delays, and to encourage investment in new price-reducing generation and energy saving technologies. The Strategy identifies the NSW Government's commitment to energy security, including additional capacity increases via interconnector projects and the rolling out of REZs. The Strategy 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 South West REZ in the Riverina 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 energy in the NEM. The Project will also contribute to greater energy resilience by supplying electricity to the NEM with the impending closure of coal fired power stations over the next 20 years.

The Project's proximity to the REZ is shown in **Figure 1-1**.

2.2.8 NSW TRANSMISSION INFRASTRUCTURE STRATEGY

The NSW Transmission Infrastructure Strategy (DPE, 2018) is the NSW Government's plan to unlock private sector investment in priority energy infrastructure projects, which can deliver least-cost energy to customers. The Strategy forms part of the government's broader plan to make energy more affordable, secure investment in new power generation and network infrastructure and ensure new technologies deliver benefits for consumers.

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 South West REZ by supporting the facilitation of additional infrastructure, which will result in an overall increase to NSW's energy capacity by unlocking up to an additional 400 MW of transmission capacity, transporting electricity from the South West REZ to homes and businesses across NSW.

2.2.9 NSW ELECTRICITY INFRASTRUCTURE ROADMAP

The NSW Electricity Infrastructure Roadmap (Roadmap), released in November 2020 is the NSW Government's plan to transform the NSW electricity sector into one that is clean, cheap, and reliable. The Roadmap builds on the NSW Electricity Strategy (DPIE, 2019a) and the NSW Transmission Infrastructure Strategy (DPE, 2018). It sets NSW on a plan to replace its ageing

coal-fired power stations with a coordinated portfolio of generation, storage, and network investment.

The Roadmap emphasises the need to transition to renewable energies, noting the planned closure of NSW coal fired power stations as discussed in Section 2.1.

Enabled by the *Electricity Infrastructure Investment Act 2020* (NSW), the Roadmap sets out a coordinated framework to support $32 billion in private investment in at least 12 GW of renewable energy generation infrastructure and at least 2 GW of long-duration storage infrastructure by 2030 (DPIE, 2020d).

The Roadmap seeks to reduce GHG emissions from NSW electricity generation by 90 million tonnes by 2030, helping deliver on NSW's emissions targets (DPIE, 2020d).

The Project will provide a significant amount of renewable energy annually to help offset the retirement of coal-fired power stations in NSW. The Project will assist in meeting the NSW Government's emissions reduction targets, and NSW's energy generation and storage requirements. The Project will also contribute to the development of the South West REZ, which will add to the regional growth and investment.

2.2.10 SOUTH WEST RENEWABLE ENERGY ZONE

The NSW Electricity Strategy (DPIE, 2019a) and Electricity Infrastructure Roadmap (DPIE, 2020d) establishes the framework to deliver the state's first five REZ in strategic areas across the state, including around Hay. The REZ will play a significant role in delivering renewable energy generation and storage to help replace existing fossil fuel power stations as they come to their end of operational life.

The Southwest region has been identified as one of five REZ to be created in NSW, with others being declared/proposed in the Central-West Orana, Illawarra, New England and Hunter-Central Coast regions of NSW. REZ combine wind, solar, hydroelectric and energy storage, and high-voltage transmission lines, to generate and deliver clean, renewable energy. By connecting multiple generators and storage in the same area, REZ capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses in NSW.

The objectives of REZ are to:

- Deliver affordable energy into the future;
- Diversify the NSW energy mix;
- Expand electrical transmission capabilities; and
- Open new parts of the NEM for energy generation in locations that can benefit from diverse weather patterns.

The Project is strategically located within, and aligns with the strategic objectives of, the South West REZ (**Figure 1-1**). The Project will deliver affordable energy, contribute to the diversification of the NSW energy sector, and facilitate the expansion of electrical transmissions capabilities and the opening up of new parts of the NEM for energy generation.

2.3 LAND USE PLANNING

2.3.1 RIVERINA MURRAY REGIONAL PLAN 2041

The Riverina Murray Regional Plan 2041 (Regional Plan) applies to the Project Area. The Regional Plan sets a 20-year strategic land use planning framework for the region and covers all facets of land use planning, including employment areas, town centres, housing and related infrastructure, the natural environment and future hazards (DPE, 2023c). It also provides guidance for councils in preparing local strategic plans, local plans, and planning proposals, as well as setting direction for state agencies to support the objectives of the Regional Plan. The vision for the region to 2041 will be implemented through objectives, strategies and actions for the three sections of the Regional Plan, including the environment, communities and places, and the economy.

Table 2-1 summaries the objectives of the Regional Plan relevant to the Project.

TABLE 2-1 REGIONAL PLAN STRATEGIES RELEVANT TO THE PROJECT

Regional Plan Objectives	***Project Response***
Objective 2: Manage development impacts within riverine environments	The Project has undertaken technical studies to identify, avoid and mitigate impacts associated with the development of Project. Additionally, appropriate measures will be adopted to protect and manage natural hazards, including flooding.
Objective 3: Increase natural hazard resilience	The Project will provide income to landowners hosting Project's infrastructure. The additional income can help make farms more resilient to the impacts of droughts, fires and commodity price fluctuations.
Objective 7: Provide for appropriate rural residential development	The Project allows for ongoing agricultural activity through planned continued use of the Project Area for grazing of native pastures, preventing fragmentation of agricultural land in the region.
Objective 11: Plan for integrated and resilient utility infrastructure	The Project will provide renewable energy generation and storage capacity that will contribute to the creation of a new renewable energy generation industry within the Riverina Murray region and in proximity to the EnergyConnect. This will ensure the region has a sustainable and reliable power source to accommodate new residential and economic development.
Objective 13: Support the transition to net zero by 2050	The Project's proposed renewable wind energy development would increase the renewable generation in the region and assist with replacing fossil energy sources.

2.3.2 LOCAL ENVIRONMENTAL PLAN

The Project is located within the Hay Shire LGA, which is subject to the relevant provisions of the 'Hay Local Environmental Plan' (Hay LEP) 2011.

Aims of the Hay LEP (Clause 1.2(2)) of relevance to the Project include:

> *"(a) to protect, enhance and conserve agricultural lands and the contribution they make to the regional economy,*
>
> *(b) to ensure that there is sufficient land to meet the employment needs of Hay,*
>
> *(c) to encourage further urban growth of Hay, Booligal and Maude villages by ensuring there is a range of residential living opportunities,*
>
> *(d) to ensure areas of high ecological value or significant land sensitivity are enhanced for future generations,*
>
> *(e) to give priority to the protection, conservation and enhancement of areas and items of significance for Aboriginal and non-Aboriginal cultural heritage."*

The Project Area is zoned RU1 (Primary Production) as shown in **Figure 2-2**. Objective of the RU1 zone relevant to the Project is "*to encourage sustainable primary industry production by maintaining and enhancing the natural resource base*" and "*to encourage diversity in primary industry enterprises and systems appropriate for the area*" (Land Use Table, zone RU1 objectives).

The Project is consistent with the objectives of the Hay LEP including land zone RU1, particularly in relation to meeting, encouraging and managing ecologically sustainable development as further detailed in **Section 7.7**. Additionally, the Project will continue to provide upgraded access for ongoing agricultural activities and further provide a diversified income stream through host landowner agreement, NBSP and CEF. The income provided to landowner hosting Project's infrastructure can help make farms more resilient to the impacts of droughts, fires and commodity price fluctuations. Further, the Applicant developed the Aboriginal Benefit Sharing Program to create sustainable development and positive outcomes to the Aboriginal community of the Project.

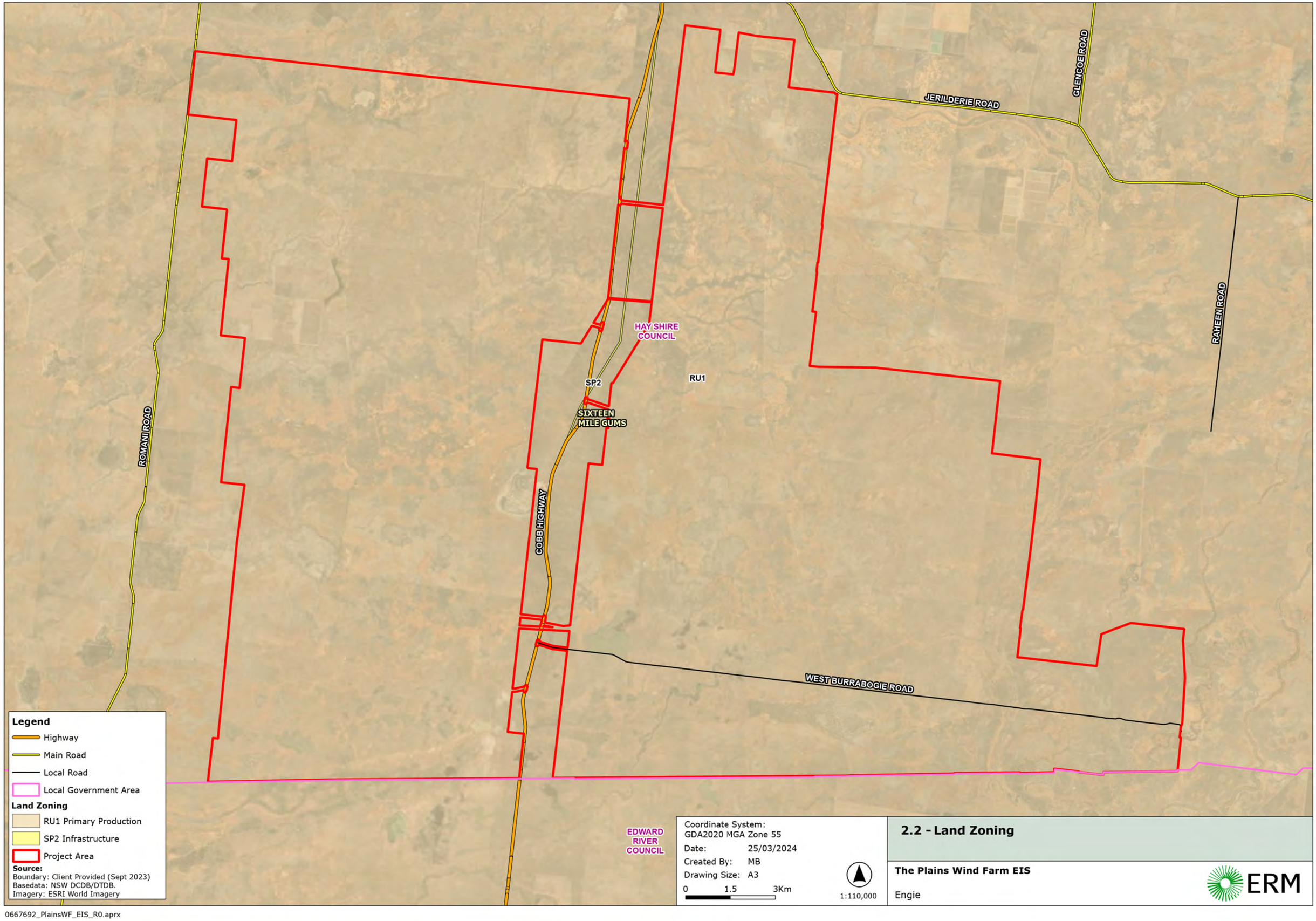
2.3.3 DEVELOPMENT CONTROL PLAN

Commensurate with the State Environmental Planning Policy (Planning Systems) 2021 Development Control Plans (DCPs) do not apply to SSD and therefore do not apply to the Project, as below:

State Environmental Planning Policy (Planning Systems) 2021, (Clause 2.10(a)) states:

> *"Development control plans (whether made before or after the commencement of this Chapter) do not apply to—*
>
> *(a) State significant development…"*

There are no DCPs listed on the Hay Shire Council website.



2.2 - Land Zoning

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2.3.4 HAY COMMUNITY STRATEGIC PLAN 2022-2032

The Hay Shire Council Community Strategic Plan 2022-2032 (Hay CSP) is a 10-year plan, which outlines the community's vision, objectives, strategies, priorities and aspirations for the Hay LGA (Hay Shire Council, 2022). The Hay CSP objectives are based on environmental sustainability, liveable and vibrant community, economic prosperity and sustainability, governance and organisational performance, and the local infrastructure.

The objectives of the Hay CSP relevant to the Project are summarised in **Table 2-2**.

TABLE 2-2 HAY CSP: OBJECTIVES RELEVANT TO THE PROJECT

Hay CSP Objectives	***Project Response***
A3 Manage our waste sustainability	The Project will adopt waste minimisation and strategies to assist with waste reduction and recycling. Wind turbines used in the Project will be recycled when they have reached the end of their life, where recycling opportunities exist.
B3 Our community has access to a range of employment opportunities	The Project will create operational and construction jobs. Where practicable, the Applicant will prioritise hiring from within the region.
C4 Our Community is innovative and adaptive	The Project will strengthen the region's identity by supporting local innovation and investment through renewable energy generation. The Project will diversify the energy market, reduce dependence on fossil energy source, contribute to managing affordability and generate employment opportunities to the region.
E1 Our community can rely on well-maintained infrastructure that is responsive to our service needs	The Project will generate renewable energy to contribute to the uptake of proven emissions reduction technologies and support the replacement of retiring coal fired generators in NSW. The Project will also provide cleaner reliable energy generation to assist with meeting current load demand.

2.3.5 COMMUNITY AND SETTLEMENT SUSTAINABILITY STRATEGY – HAY LGA

The Community and Settlement Sustainability Strategy – Hay LGA (Sustainability Strategy) was developed in response to the Hay Local Environmental Plan and aims to communicate the context for planning (Hay Shire Council, 2012). In addition, it provides recommendations to enhance and address issues relating to urban and rural use planning with inclusion of a rural settlement strategy.

The relevant recommendations to the Project are summarised in **Table 2-3.**

TABLE 2-3 SUSTAINABILITY STRATEGY RECOMMENDATIONS RELEVANT TO THE PROJECT

Sustainability Strategy Objectives and Recommendations	***Project Response***
Promote Community Capacity and economic prosperity within the Hay LGA by providing rural lifestyle options, building economic and social capital, as well as developing urban renewal opportunities to promote opportunities for growth. Ensure that more employment opportunities are created for young people in Hay.	The Project will provide renewable energy and generate employment opportunities, which also include opportunities for young people in Hay. The Project is anticipated to create direct and indirect jobs for the region and NSW during construction and during long-term operations, which will provide and promote economic growth and opportunities in Hay.

Sustainability Strategy Objectives and Recommendations	***Project Response***
Ensure land is appropriately managed according to its attributes and values. Maintain and enhance ecological integrity for environmentally sensitive land and contaminated land.	The Project has been refined to avoid or limit the need to remove native vegetation or impact on other environmental values. The Project has undertaken technical studies to identify, avoid and mitigate impacts associated with the development of the Project. Additionally, appropriate measures will be adopted to protect environmentally sensitive land and any contaminated land.
Promote Ecologically sustainable development (ESD)	The Project will promote ESD through supporting long-term and short-term economic, environmental, and social considerations for the region. Each consideration will be elaborated on below: • Economic: Employment opportunities will be generated, there will be a significant contribution to managing affordability and the Project will diversify the energy market. The Project will build sustainable business strategies for major infrastructure developments that contribute to their ongoing sustainability and the local economy. Further, the Project will provide a diversified income stream through host landowner agreement, NBSP and CEF and lead to local business stimulus generating local opportunity and attractiveness to the region. • Environmental: Reduce dependence on fossil energy source, as well as reduce greenhouse gas emissions by approximately 3.6 million t CO_2^{-e} pa. The Project will contribute to the sustainable practices by generating renewable energy and increasing efficient use of natural resources. • Social: Employment opportunities will be generated, there will be a significant contribution to managing affordability, as well as strengthening the region's identity by supporting local innovation and investment through renewable energy.

2.3.6 WORKFORCE MANAGEMENT PLAN - HAY SHIRE COUNCIL 2022-2026

The Workforce Management Plan – Hay Shire Council 2022-2026 (Workforce Management Plan) was developed to demonstrate how Council will transform the community's visions into action. The strategy outlines how Council will achieve the community's long-term goals and objectives under the Hay CSP and delivery program (Hay Shire Council, 2022a). The Workforce Management Plan address the eight key strategic themes on the National and NSW Strategy.

The relevant goals to the Project are summarised in **Table 2-4**.

TABLE 2-4 WORKFORCE MANAGEMENT PLAN OBJECTIVES RELEVANT TO THE PROJECT

Workforce Management Plan Objectives	***Project Response***
3. Facilitating a workforce that accepts growth and high performance with responding to growth Alignment with NSW Council Workforce Strategy	The Project will drive growth and high performance by providing new job opportunities within the renewable energy sector and responding to the regions service needs. High performance and growth are also promoted by increasing capacity and experience for service providers and contractors.
5. Attracting and retaining the people with capabilities to deliver now and into the future Alignment with NSW Council Workforce Strategy	The Project will create opportunities for learning and development and recognises the contemporary needs and objectives for both present and future. Further, the Project will increase the capacity and experience of local workforce, contractors and service providers and enhance employment pathways to retain skilled people that will support the Project during construction and operations.

2.3.7 HAY STRUCTURE PLAN

The Hay Structure Plan was developed to support the recommendations of the Hay Local Strategic Planning Statement (LSPS). It guides future economic, social and land use planning decisions for residential, rural residential and industrial development within Hay for the next 20 years and beyond (Hay Shire Council, 2022b).

The objectives of the Hay Structure Plan relevant to the Project are summarised in **Table 2-5**.

TABLE 2-5 HAY STRUCTURE PLAN OBJECTIVES RELEVANT TO THE PROJECT

Hay Structure Plan Objectives	***Project Response***
Support and create new local opportunities including jobs and population growth.	The Project will provide renewable energy and generate employment opportunities during construction and during long-term operations.
Investigation of development constraints and opportunities including natural hazards and biodiversity considerations. Avoidance of areas with high environmental significance and dense vegetation cover.	The Project has undertaken technical studies to identify, avoid and mitigate impacts associated with the development of Project. Additionally, the refinement was considered for Project design to avoid areas of high ecological values and appropriate measures will be adopted to protect and manage natural hazards.

2.3.8 DELIVERY PROGRAM – HAY SHIRE COUNCIL 2022-2026

The Delivery Program was developed in response to the Hay Shire Council Operational Plan. It provides guiding principles and links community outcomes to actions (Hay Shire Council, 2022c). The Delivery Program includes 5 key areas and objectives developed in alignment with the CSP.

The relevant objectives to the Project are summarised in **Table 2-6**.

TABLE 2-6 DELIVERY PROGRAM OBJECTIVES RELEVANT TO THE PROJECT

Delivery Program Objectives	***Project Response***
A3. Manage our waste sustainability	The Project will adopt waste minimisation and strategies to assist with waste reduction and recycling. Wind turbines and Project infrastructure will be recycled when they have reached the end of their life, where recycling opportunities exist.
B3. Our community has access to a range of employment opportunities	The Project will provide renewable energy and generate employment opportunities. Up to 700 FTE construction jobs, and up to 40 FTE onsite and offsite jobs during operations are expected to be created from the development of the Project.
C1. Our community welcomes new and innovative industry to support our future	The Project will strengthen the region's identity by supporting local innovation and investment through renewable energy generation. The Project will diversify the energy market, reduce dependence on fossil energy source, contribute to managing affordability and generate employment opportunities to the region.
E1. Our community can rely on well-maintained infrastructure that is responsive to our service needs	The Project will generate renewable energy to contribute to the uptake of proven emissions reduction technologies and support the replacement of retiring coal fired generators in NSW. The Project will also provide cleaner reliable energy generation to assist with meeting current load demand.

2.4 SITE SETTING AND SURROUNDING LAND USE

The Project Area and its surroundings are zoned RU1 (Primary Production) under the Hay Shire LEP as shown in **Figure 2-2**. **Table 2-7** provides a summary of surrounding land use, which is further illustrated in **Figure 2-3.**

TABLE 2-7 SITE SETTING AND SURROUNDING LAND USE

Site Setting	***Summary***
Land use	Land uses in the Hay LGA are predominantly agricultural, in which nearly 92% of the agricultural area is used for grazing, primarily comprising of grazing areas with native vegetation (ABS, 2022). Small parcels of land uses include grazing modified pasture, followed by irrigated cropping, and urban and intensive areas. Irrigated crops cultivated in the Hay LGA encompasses maize, cotton, wheat, oats, barley, cereal rye, grain sorghum, sunflowers, soya beans, rapeseed, large seeds and legumes. While pasture crops involve paspalum/ white clover and sub clover/ rye grasses (Hay Shire Council, 2023). The Project Area's land use is primarily classified as grazing of native pastures, and some small areas of river along Curtains Creek and transport along the Cobb Highway. Historically and currently, the Project Area has mainly run Merino sheep for meat and wool production.
Conservation areas	Southwest Woodland Nature Reserve is the nearest nature reserve to the Project Area and is located approximately 10 km (direct line) to the south. It is located within the NSW Southwestern Slopes, Riverina and Murray-Darling Depression bioregions, and covers about 13,840 ha. Murrumbidgee Valley Regional Park is a small reserve (50 ha) located 13 km (direct line) north of the Project Area across the Murrumbidgee River. Oolambeyan National Park is situated about 16 km (direct line) east of the Project Area. It provides opportunities for birdwatching, picnicking, bushwalking, an oval with a cricket pitch nearby and many historic buildings. Kalyarr National Park is located on the Hay Plain, about 40 km (direct line) northwest of the Project Area. The park includes cultural sites, such as

Site Setting	Summary
	hearths, earth mounds, stone artefacts and scar trees, and was once part of the area's rich pastoral development, providing now old woolsheds and homesteads for historic destination.
Catchments	The Project Area is located within the Murrumbidgee Interim Biogeographic Regionalisation of Australia (IBRA) subregion (RIV02), of the Riverina IBRA Bioregion (RIV). The Riverina IBRA Bioregion covers the alluvial fans of the Lachlan, Murrumbidgee and Murray Rivers west of the Great Dividing Range and extends down the Murray. The Project Area is situated within the Murrumbidgee River Catchment, which covers an area of about 84,000 km^2, or 8% of the total area of the Murray-Darling Basin (Australian Government, 2023). The catchment includes 14 dams plus eight large weirs, with its downstream irrigation areas containing over 10,000 km of irrigation canals (Watts, 2010). Waterbodies within the broader Project Area are largely comprised of Abercrombie Creek, Telegraph Creek, and Curtains Creek. Abercrombie Creek and Telegraph Creek are located within the central and northern portions of the Project Area, these are characterised by shallow channels of grasses that carry seasonal water. The Murrumbidgee River is about 11.8 km to the north of the Project Area, rising in the Snowy Mountains, the river flows generally westwards to its confluence with the Murray River, 1,600 km from the river source. Other watercourses in proximity to the Project Area include Nyangay Creek and Forest Creek located 4 km at 10 km to the south, respectively. Both watercourses are identified by dense clumps of black box trees, lignum, nitre goosefoot, saltbush, speargrass and forbs (Environment NSW, 2011). Swamps and floodplains are also present within the Project Area, which includes Death Adder Swamp and Box Swamp. These areas have the capacity to hold water and are generally favoured for livestock grazing. The Project Area is not mapped as flood prone land under NSW state flood information (refer **Section 6.10**). However, due to the relatively flat nature of the Hay Plains, much of the Project Area lies on land which is located below the Flood Planning Level (FPL), or below the 1% Annual Exceedance Probability (AEP) flood level.
Livestock water supply	Water for livestock is primarily provided by a piped water system supplied from private bores or pumped from the Murrumbidgee River. The water is pumped into tanks and distributed to livestock via pipes and troughs. Some areas in the south and east of the Project Area are watered by the Romani Joint Water Supply, which pumps water out of the Murrumbidgee River near Hay for irrigation, stock and domestic purposes. There is about 590 ha of land developed for irrigation in the north western part of the Project, and 280 ha in the north eastern part of the Project Area. Some of these areas have not been used for irrigation in recent years.
Landform	The Project Area is located within the Riverine and Hay Plain which is one of the world's flattest places. Landforms in the region are identifiable on a micro level only with landform development associated directly with former and current distributary channels and the effect of flooding. Key landforms across the Riverine and Hay Plains include the Murrumbidgee River Floodplain, paleochannels, alluvial plains and lakes.
Mineral resources	A search of the NSW DPE MinView mapping tool was undertaken in January 2023. The search indicated that there is no Exploration Licence (EL) within the Project Area.

Site Setting	Summary
Existing electricity transmission network	The existing 220 kV line and proposed Project EnergyConnect 330 kV line occur along the southern portion of the Project Area. Owned and operated by TransGrid, the existing 220 kV extends from Balranald to Darlington Point in NSW and the proposed EnergyConnect 330 kV line (Eastern Section) runs from Buronga to Wagga Wagga in NSW. The Project will connect either to the TransGrid network through either existing 220 kV line or to the proposed Project EnergyConnect 330 kV line and a new switching station located within the Project Area.

The development of a wind farm and ancillary infrastructure does not present any conflicts with its current, or potential future land uses. The Project Area is zoned RU1 (Primary Production) and the land is currently used for grazing. Wind farms and agricultural production can co-exist, and it is the intent of the Applicant that the majority Project Area will remain available for grazing during operation.

2.4.1 LAND DETAILS

2.4.1.1 LAND OWNERSHIP

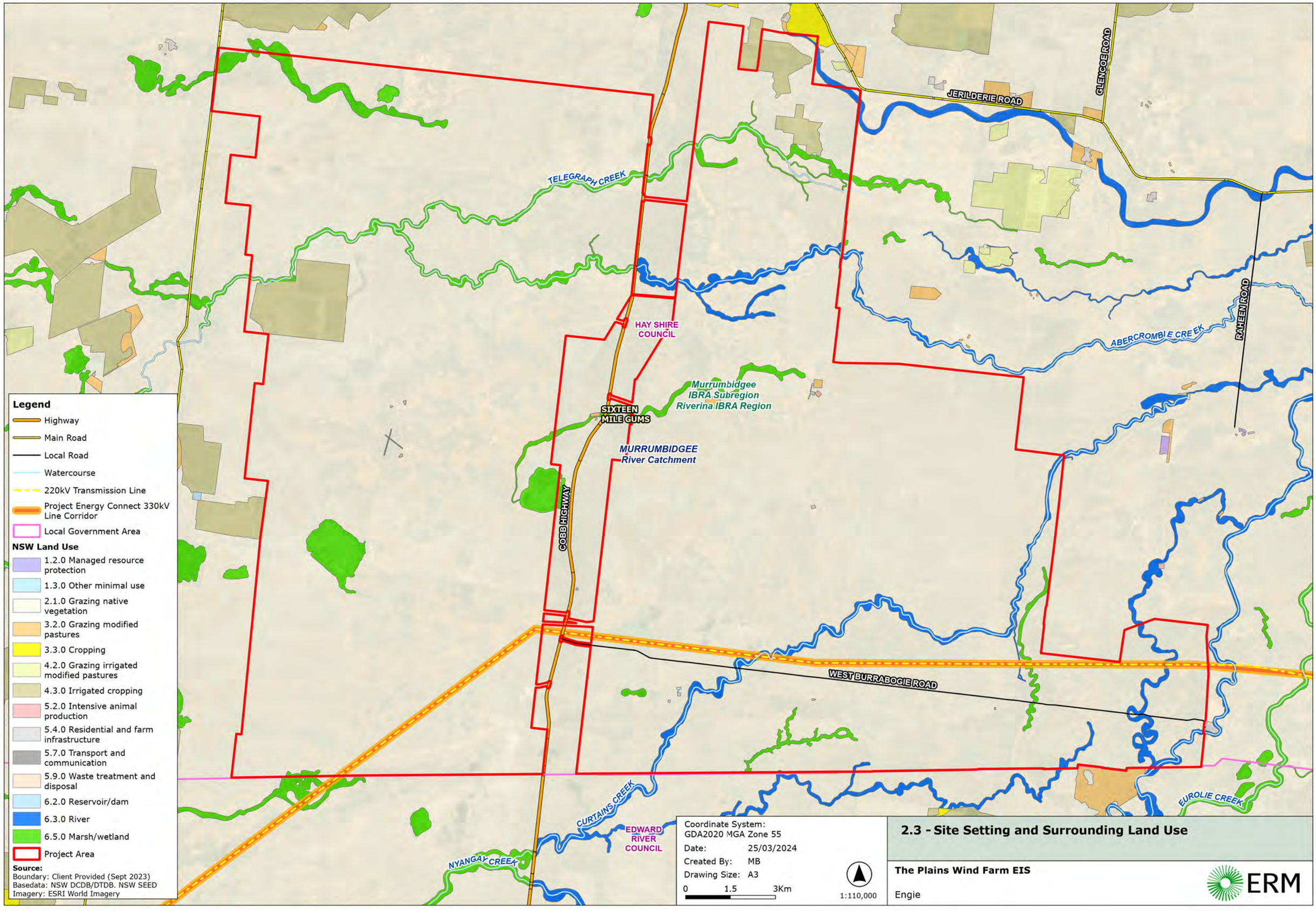
The land within the Project Area is primarily freehold as shown in **Table 2-8**, encompassing 314 individual lots and six (6) Crown land.

The Applicant has entered into agreements with five (5) landowner's hosting the Project. A small portion of the Project Area along West Burrabogie Road is 'Road Easement', where the one (1) access track for Project access will be located, and another portion along Cobb Highway is 'Crown Land'. Cadastral boundaries are shown in **Figure 2-4**.

TABLE 2-8 LAND TITLES OF THE PROJECT AREA

Lot	DP	Title
1, 2	126222	Freehold
1, 2	126223	Freehold
1, 2	529796	Freehold
2	703764	Freehold
38	722043	Freehold
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 38, 115, 116, 117, 118, 119	756732	Freehold
2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 119	756737	Freehold
1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 30	756745	Freehold
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 44	756770	Freehold

Lot	*DP*	*Title*
1, 2, 3, 4, 5, 7, 11, 12, 17, 18, 19, 24, 25, 26, 27, 28, 29, 35, 36, 37, 38, 40, 41, 42	756771	Freehold
36, 42, 43, 44, 45, 46, 50, 72, 73, 74, 76, 77, 78, 94, 95	756774	Freehold
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43	756778	Freehold
3, 4, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37	756779	Freehold
3, 4, 5, 7, 8, 9, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 41, 42, 48, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69	756785	Freehold
1, 23, 24, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47	756797	Freehold
86, 87	756809	Freehold
21, 22	831180	Freehold
1	954661	Freehold
1	1015117	Freehold
1, 2, 3, 4	1091853	Freehold
1	1101148	Freehold
1	1218600	Freehold
7002	1056492	Crown
1	1123124	Crown
7300, 7301, 7303, 7304	1149704	Crown



2.3 - Site Setting and Surrounding Land Use

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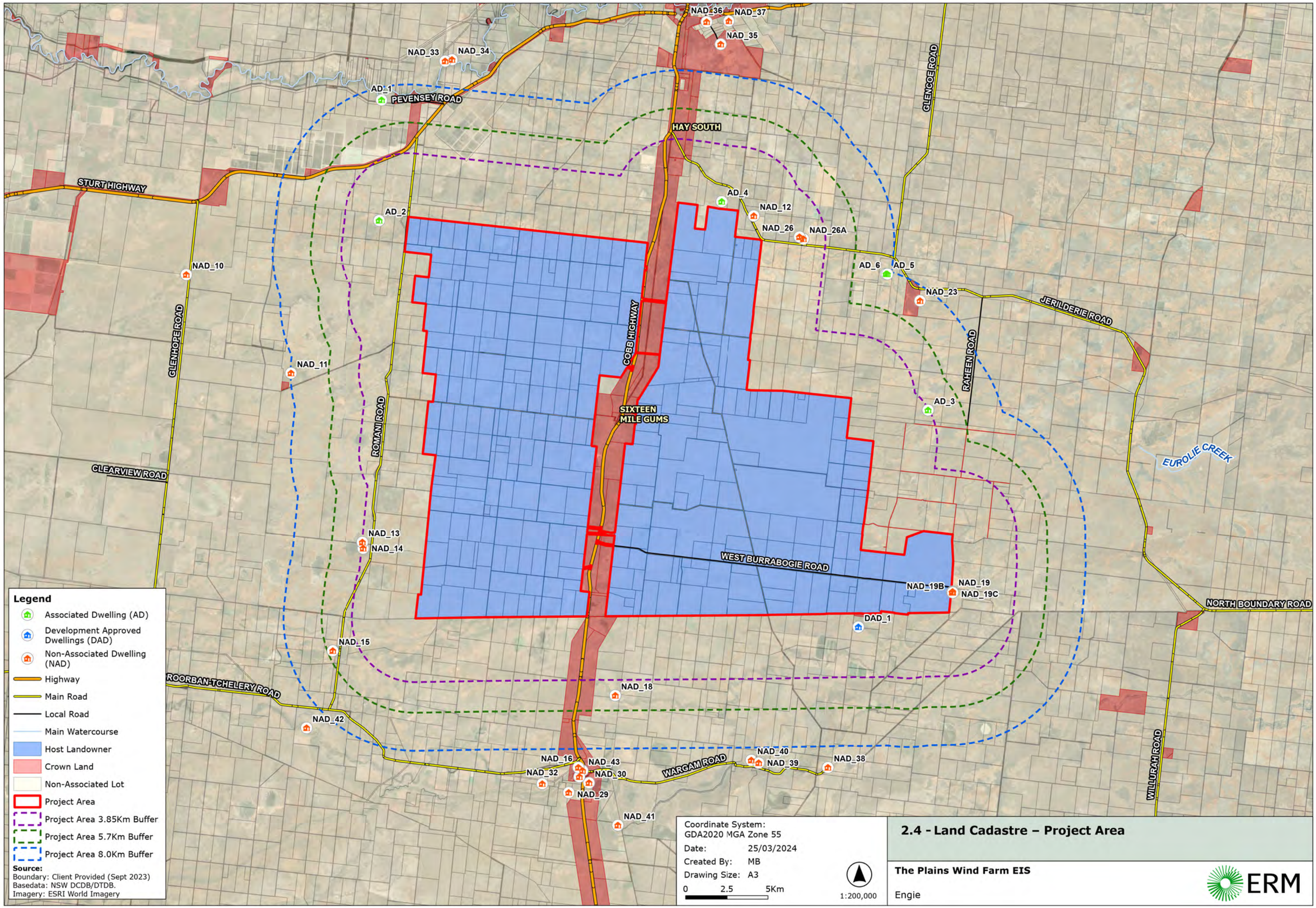

2.4 - Land Cadastre – Project Area

The Plains Wind Farm EIS

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2.4.1.2 CROWN LANDS

Crown land refers to any land which is held by the Crown and is not held in freehold by another person. Crown land is regulated by relevant State government legislation, principally the *Crown Land Management Act 2016* (NSW) and the *Roads Act 1993* (NSW) and certain requirements must be met before Crown land can be dealt with by, for example, being leased or sold.

Six parcels of Crown Land are located throughout the Project Area, as shown in in **Figure 2-4**. Consent from Crown Lands has been obtained by the Applicant. There are no Crown Reserves located within the Project Area.

Additionally, the Cobb Highway, which crosses the Project area is a designated livestock highway. The NSW Department of Industry (2017) defined livestock highways as a key network of livestock routes connecting key agricultural regions within NSW, and with Queensland and Victoria. The roadside of the highway is approximately 1.6 km wide and consists of numerous interconnected travelling stock reserves (TSRs). There are no other TSRs within the Project area.

Project access will require works on four access points on Cobb Highway and a portion of West Burrabogie Road. These works are contained to the 'Road Easement' and consent from Hay Shire Council will need to be obtained by the Applicant.

2.4.1.3 RESIDENTIAL DWELLINGS

The 'Wind Energy Guideline: For State significant wind energy development' (Wind Energy Guideline) (DPE, 2016) states that DPHI and the consent authority when assessing and determining wind energy projects will consider the following in the vicinity of the wind energy projects:

- Existing development/ dwellings;
- Approved development, including dwellings under construction or to be constructed;
- Development for which a development application has been lodged, including with councils, but a determination is yet to be made; and
- Existing dwelling entitlements.

Existing Dwellings

For the purposes of this EIS and relevant technical studies the following two categories of dwellings were identified:

- 'Associated' (or 'involved') dwellings (AD) – dwellings located within the Project Area and/ or whose owners are hosting Project infrastructure or have entered into an agreement in relation to the Project; and
- 'Non-associated' (or 'non-involved') dwellings (NAD) – all other dwellings outside the Project Area but within the relevant assessment area (8 km of a WTG).

There are:

- No associated dwellings and no non-associated dwelling located within the Project Area;
- Two (2) associated dwellings within 5 km of a WTG;
- Two (2) associated dwellings within 5 km and 8km of a WTG;
- Five (5) non-associated dwellings within 5 km of a WTG; and
- Two (2) non-associated dwellings within 5 km and 8km of a WTG.

Figure 2-4 shows the location of the identified dwellings in relation to the Project Area and **Table 2-9** provides each dwelling distance to the nearest WTG.

TABLE 2-9 DISTANCES FROM NEAREST WTG TO RESIDENTIAL DWELLINGS

WTG No.	***Dwelling ID***	***Dwelling Type***	***Distance to nearest turbine (m)***	***Nearest Dwelling Coordinates (GDA94 zone 56)***	
				X	***Y***
HW01	AD_2	Associated	6,931.8	283303.0003	6165478.245
EE16	AD_3	Associated	4,600.4	316481.5068	6154020.779
IE04	AD_4	Associated	3,163.2	304001.6047	6166626.487
CE15	DAD_1	Development Approval Dwelling	6,027.2	312275.9048	6140914.336
IE06	NAD_12	Non-associated	2,707.1	305962.8549	6165760.753
CW02	NAD_13	Non-associated	4,995.1	282289.7878	6146037.838
CW02	NAD_14	Non-associated	4,975.4	282337.9043	6145665.417
AW01	NAD_15	Non-associated	5,801.7	280477.3975	6139476.494
AW11	NAD_18	Non-associated	6,138.6	297571.4786	6136774.14
IE06	NAD_26	Non-associated	3,502.5	308723.6854	6164488.951
IE06	NAD_26A	Non-associated	3,673.5	308956.4476	6164368.53
HW01	AD_2	Associated	6,931.8	283303.0003	6165478.245

Approved and Lodged Development Applications

Based on a review of publicly available development application records on the Hay Shire Council and Edward River Council websites as of November 2023 one (1) lodged Development Application (DAD_1) was identified within 8 km of the nearest WTG.

The impact assessment with respect to the lodged dwelling DAD_1 are as follows:

- The Noise Impact Assessment (NIA) assessed the potential dwelling DAD_1 as achieving the operational noise criteria (refer Section 5.1.1 of **Appendix J**); and
- The Landscape and Visual Impact Assessment (LVIA) undertook a detail assessment and photomontage for DAD_1, which was assessed as having a low visual impact rating without any mitigation measures (refer Section 9.3 of **Appendix K**).

Dwelling Entitlements

A total of 28 lots with dwelling entitlements were identified within 5 km of the nearest WTG in the Hay Shire Council and Edward River Council LGAs, as of November 2023.

The LVIA undertook a preliminary assessment for the 28 lots to determine the extent of visibility, based on the topography alone. The preliminary assessment identified that all 28 lots have theoretical views to the majority of the Project (worst case scenario, which represents a bare ground scenario with no screening, structures or vegetation) (refer Section 9.4 of **Appendix K**). However, it is reasonable that mitigation methods may be incorporated into the design process for any future development applications for a dwelling on any of these lots to reduce visual impacts to an acceptable level.

2.4.2 ENVIRONMENTAL SETTING

The Subject Land is predominantly present in a modified condition following a long history of clearing and grazing, with a district lack of remnant treed vegetation. Native vegetation is still present in high densities; however, the sites plant community types (PCTs) are derived and largely lack canopy and shrub layers >1m. Connectivity across this open landscape is considered low, but present to some extent within the remnant treed PCTs providing connection within the Subject Land and adjoining land areas. Remnant treed PCTs and ephemeral wetlands have been identified as high importance for habitat connectivity.

2.5 NEARBY SSD PROJECTS

The Project is located within the South West REZ, which was proposed to facilitate the coordinated development of renewable energy generation projects, energy storage and transmission. This means that the region is planned to have a significant number of renewable energy developments, as well as other SSD projects that may lead to cumulative impacts relating to agricultural and land use conflicts, biodiversity, landscape and visual, traffic and transport, noise and vibration, aviation safety, and social and economic.

Potential cumulative impacts of the Project are investigated further in **Section 6.15**, in accordance with the 'Cumulative Impact Assessment Guidelines for State Significant Projects' (CIA Guidelines) (DPIE, 2021d).

2.6 CONTRIBUTIONS AND AGREEMENTS

2.6.1 HOST LANDOWNER AGREEMENT

The Applicant has entered into Agreements with five (5) landowners hosting the Project.

2.6.2 NEIGHBOUR BENEFIT SHARING PROGRAM

The Applicant intends to provide payments to neighbours within 10 km of the Project Area through the NBSP. The intent of the NBSP is to address various impacts associated with the Project specific to individual neighbours dwellings. The NBSP agreements were developed in accordance with the below guidelines and have been agreed between ENGIE and the relevant landowner:

- 'A Guide to Benefit Sharing Options for Renewable Energy Projects' (Clean Energy Council, 2019);

- 'Building Strong Communities, Wind's growing role in regional Australia' (Australian Wind Alliance, 2019); and
- 'Neighbour Consultation and Agreements' (Australian Energy Infrastructure Commissioner).

Payments will be calculated on the distance of a dwelling to Project infrastructure and will be structured as defined in agreement:

- Sign-on payment: a once-off payment when the agreement is signed to cover legal costs and to reimburse for time spent understanding the agreement;
- Construction payment: a once-off payment at the start of construction to acknowledge the disruption that may be experienced by neighbours. Payment to neighbours will be calculated based on the distance to Project infrastructure; and
- Operation payments: an annual base payment, plus payments based on distance to Project infrastructure.

There is still ongoing consultation with neighbours regarding the program and the Project will continue working with both of these stakeholder groups to come to an agreement through the assessment period and subject to approval, will continue to offer this to residents.

2.6.3 COMMUNITY ENHANCEMENT FUND

The Applicant intends to establish a range of community benefits to fund a broad range of projects and programs for the benefit of the residents and the broader community.

A key component of the benefit sharing commitments will be a VPA with Hay Shire Council and governed by Subdivision 2, of Division 7.1 of Part 7 of the EP&A Act.

The VPA will document the obligations of the Applicant to make initial and ongoing contributions to benefit sharing in the region. The VPA will be subject to indexation to consumer price index (CPI), for the operational life of the Project through to decommissioning. The project is committing to provide $1050 per MW that will to be in line with the DPHI draft benefit sharing guideline.

The Applicant has undertaken ongoing consultation with Hay Shire Council during 2022-2024 regarding the proposed CEF to fulfil the requirements of a VPA, and formally planning to submit its proposal to Hay Shire Council in Q1 2024.

The Applicant, Hay Shire Council are continuing discussions at the time of EIS submission.

2.6.4 ABORIGINAL BENEFIT SHARING PROGRAM

IPS Management Consultants, a certified majority Indigenous-owned company, have been working in partnership with ENGIE since 2021 to develop a number of engagement documents.

These include an Aboriginal Engagement Strategy which provides a roadmap for respectful and reciprocal involvement so that ENGIE and the local Aboriginal community can achieve positive outcomes for Country and community from the project. It profiles the local Aboriginal community and maps the key relevant Aboriginal stakeholders and outlines the key principles for engagement with first nations community.

An Aboriginal Benefit Sharing Program was drafted by IPS Management Consultants and developed in consultation with both the Hay Local Aboriginal Land Council (Hay LALC) and the Hay Aboriginal Working Party and is driven by a commitment by ENGIE to create sustainable development and positive outcomes for both Country and community from the Project through

a number of domains including economic, country, culture and social. A total of $180,000 per year has been offered to three different First Nations Organisations from the region to share benefits from the project.

An Aboriginal Participation Plan was also developed for the Project with the aim to provide employment opportunities and support to Aboriginal candidates with career pathways, seek out emerging and existing Aboriginal businesses, and work with them and partner with community to develop benefit sharing programs.

2.7 PROJECT ALTERNATIVES

2.7.1 NO PROJECT

The 'No Project' option needs consideration as it represents the status quo, avoids development impacts but does not realise the Projects benefits. Doing nothing would avoid potential impacts associated with the development and operation of the Project and retain the current land use - agricultural production.

The potential impacts that could be avoided include construction and operational noise, traffic, dust, visual, biodiversity, and Aboriginal heritage impacts. **Section 6** provides further discussion of these impacts and the accompanying mitigation and management measures. This EIS concludes that with appropriate mitigation and management measures, the Project will not have a significant negative impact on environmental or social aspects.

Not proceeding with the Project would forgo the benefits outlined in **Section 2.2**, particularly those relating to federal, state and regional policies, and strategies to decarbonise the NEM. Should the Project not proceed, the estimated 3.6 million t CO_2-e pa reduction in GHG emissions would not be realised. Similarly, not proceeding with the Project would forgo the social and economic benefits detailed in this EIS, including the provision of direct and indirect employment and economic stimulus, contributions to local community facilities and infrastructure through host landowner agreement, NBSP and CEF and contribution to the Traditional Owners through the Aboriginal Benefit Sharing Program.

2.7.2 ALTERNATIVE SOURCING OF ENERGY

The alternative to using wind energy is the continued use of fossil fuels, including coal (both black and brown) and natural gas. The reliance on these energy sources results in the release of GHG emissions such as CO_2 and contributes to the harmful effects of climate change. The RET discussed in **Section 2.2** outline the commitment by Australia and NSW in reducing greenhouse gas emissions and have set targets for increasing the generation of renewable energy.

Due to the abundance and reliability of wind resources, sparsely populated locality, proximity to planned and existing transmission infrastructure and existing road network, it is considered that use of the land to generate wind energy is justified. The Project is at scale potentially adding significant amounts of renewable energy supply over a 30-year period. Solar energy generation would also be a suitable use of the Project Area, which is proposed by ENGIE as part of The Plains Solar Farm. The combination of wind energy (this Project), solar energy and BESS (The Plains Solar Farm) allows for optimal use of the land to generate and dispatch VRE.

2.7.3 ALTERNATIVE SITE SELECTION

The concept for the Project initially comprised an area of about 240,266 ha across six properties including:

- Cooinbil (91,567 ha);
- Euroka (11,423 ha);
- Mungadal East (24,494 ha);
- Mungadal West (57,280 ha);
- Pooginook (20,331 ha); and
- Steam Plains (35,171 ha).

Subsequent environmental, social, constructability and operational considerations have led to the revision of the Project Area across two of the six sites originally considered - Mungadal East and Mungadal West. The Project Area assessed in this EIS covers an area of about 53,894 ha and is situated on Mungadal Station to the east and west of the Cobb Highway. These design refinements have significantly reduced the Project Development Footprint.

Various criteria were considered during site selection including:

- Proximity and access to existing and planned transmission lines (e.g., EnergyConnect);
- Accessibility to the Project via a major road;
- An area that would avoid or limit the need to remove native vegetation or impact on other environmental values;
- A site with topographical features that would require minimal earthworks / soil disturbance;
- A site with minimal flooding or bushfire risk;
- Minimal impact on surrounding privately or publicly owned land; and
- Minimal environmental impacts.

2.7.4 DESIGN EVOLUTION AND IMPACT MINIMISATION

Since the conception of the Project, the design has evolved through consideration of constraints or opportunities relating to technical, environmental, social, and commercial aspects. Significantly, the design refinement has been guided by the outcomes of engagement with host landowners, Project neighbours, the broader community, local council, state and Australian Government agencies, and business and stakeholder groups as described in **Section 5**.

In addition to engagement carried out with various stakeholders, along with technical studies undertaken for the Project, the following specific principles helped refine the Project layout presented in this EIS:

- Previously disturbed land cleared or modified for agricultural purposes was preferable for sitting of Project elements as much as possible;
- Minimal vegetation clearing particularly within areas of high biodiversity value and native vegetation. Areas containing high and medium value vegetation, woodland areas and areas of threatened ecological communities (TECs) were strategically avoided from the conception of the Project. As biodiversity surveys progressed, biodiversity values of the

Project Area were determined, which assisted with further refinements of Project elements to minimise disturbance;

- Minimal land disturbance of Project elements was considered in the design of WTGs, construction and operational compounds, electrical reticulation, substations, internal access tracks and ancillary infrastructure;
- Avoidance and protection of Aboriginal and historic heritage sites were considered through the identification and evaluation of heritage values present in the Project Area;
- Protection of agricultural activities by maintaining most of the Project Area available for ongoing grazing in parallel with wind energy generation. The iterative layout and design process for the Project has considered and addressed landowners feedback on land use and agricultural values. ENGIE's design objective was to maintain the existing agricultural activities, as far as practicable, with negotiated leases to offset forgone landowner income while providing diversified income stream for the duration of the Project;
- Minimal direct and indirect impacts on nearby landowners by designing Project elements to be located away from nearby dwellings and nearby properties, where possible; and
- Adoption of a flexible approach to layout and design to progressively responded to identified environmental and social aspects identified during preparation of this EIS. ENGIE is committed to continue with this approach through the detailed design of the Project.

Table 2-10 describes the evolution of the Project layout since the scoping phase. **Figure 2-5** shows the Initial Layout and **Figure 2-6** shows detailed constraints associated with the Project area that have informed the design of the Project.

TABLE 2-10 PROJECT AMENDMENTS

Project Element	***Initial Scoping Layout***	***Project (EIS)***	***Environmental Benefits***
Project Area	• 58,786 ha	• 53,894 ha	• Amendments to the Project elements maximise the use of existing public and internal access tracks and minimise vegetation clearance required where possible. The Project avoids occurrences of *Calotis moorei*, raptor nesting sites, remnant woodland habitat and ephemeral wetlands. The Project Area has been amended to largely avoid Plains-wanderer habitat (**Section 6.2**) • Amendment to Development Footprint to include an asset protection zone (APZ) (**Section 6.6**) • Alternate transport routes were assessed; however, they presented additional impacts relating to road upgrades, and traffic management, and Project expenses (**Section 6.5**)
Wind Turbines	• 240 WTGs on pre-scoping phase down to 226 WTGs on scoping phase • 1,800 MW • Hub height of up to180 m • Tip height of up to 280 m • Blade length of 110 m	• 188 WTGs • 1,350 MW • Hub height up to 180 m • Tip height up to 270 m • Blade length up to 90 m	
Development Footprint	• 2,959.7ha	• 1,996.9 ha	
Substation	• At least 1 x 330 kV main substation and 2 x 132 kV collector substations	• At least 1 x 330 kV main substation and 2 x 132 kV collector substations	

Project Element	***Initial Scoping Layout***	***Project (EIS)***	***Environmental Benefits***
Site access road	• Primary access via the Cobb Highway, which runs north-south through the Project Area • Secondary access via Sturt Highway, which borders the northern boundary of the Project Area.	• Four (4) access points off Cobb Highway and a portion of West Burrabogie Road	• Improving electrical efficiencies using overhead lines and collector substations; • The Project addresses community feedback; • The chosen location is in a low impact flood area based on a 1/100-year local catchment flood model (**Section 6.10**); and • Changes to the Project design including ongoing design optimisation will avoid impacting Aboriginal sites, buffers of 200 m around recorded PADs, 100 m around recorded hearths, and a buffer of 50 m around Culturally Modified Trees will also be provided (**Section 6.7**).
Potential Ports	• Appleton Dock Melbourne, Port of Geelong, Port of Portland, Port Adelaide, Port Botany, Port of Newcastle and Port Kemba	• Port of Geelong for larger plant and equipment • Port of Adelaide for wind turbine components	

STURT HIGHWAY
JERILDERIE ROAD
GLENCOE ROAD
RAHEEN ROAD
ROMANI ROAD
COBBB HIGHWAY
SIXTEEN MILE GUMS
HAY SHIRE COUNCIL
EDWARD RIVER COUNCIL
WEST BURRABOGIE ROAD

Legend
- Highway
- Main Road
- Local Road
- 220kV Transmission Line
- Local Government Area
- Project Area

Preliminary Layout:
- Turbine Location
- Indicative Site Access
- Substation
- Batch Plant
- Hardstand
- Ancillary Infrastructure Compound
- Accommodation Compound
- Access Road
- Laydown

Source:
Boundary: Client Provided (Scoping Report)
Basedata: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA 1994 MGA Zone 55
Date: 25/03/2024
Created By: MB
Drawing Size: A3
0 2 4Km
1:120,000

2.5 - Project Initial Layout

The Plains Wind Farm EIS

Engie

ERM

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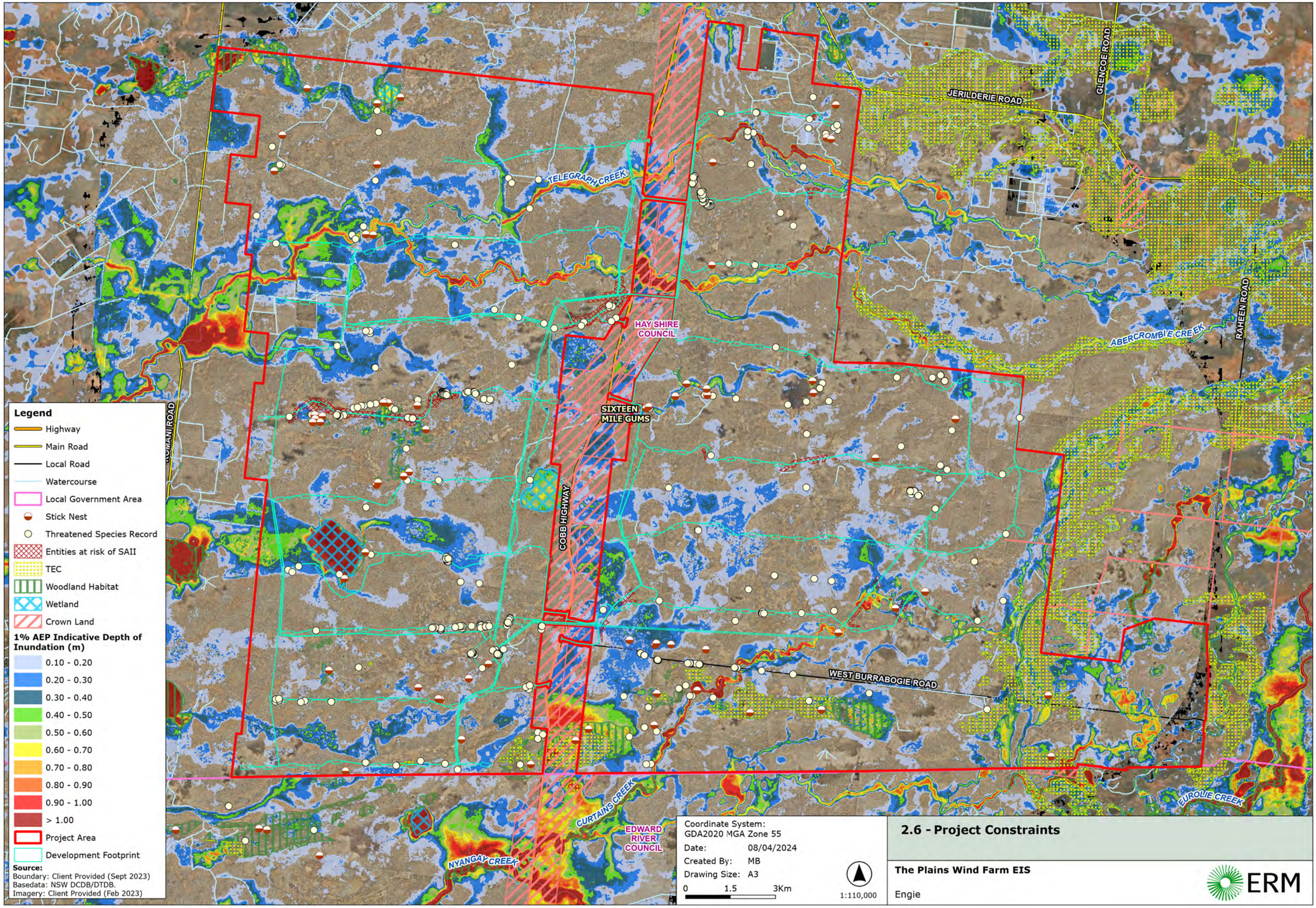

2.6 - Project Constraints

The Plains Wind Farm EIS

Engie

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2.8 KEY POTENTIAL RISKS

Key potential risks that the Project may pose to environmental and social aspects are investigated in detail in **Section 6**. Those that represent an increased risk of significant impacts due to the Project are summarised in **Table 2-11.**

As demonstrated in **Section 6** the key aspects and risks have been assessed and can be managed with standard safeguards.

TABLE 2-11 PROJECT KEY RISKS OR HAZARDS

Key Risks/ Hazards	***Summary***
Biodiversity	The Project Area is generally clear of large stands of trees and has been historically used for livestock grazing, therefore biodiversity impacts can be avoided or minimised. Measures to avoid or minimise impacts to biodiversity values were considered throughout the development of the Project, which has resulted in the avoidance of significant biodiversity values. A primary design refinement principal was to locate infrastructure in already cleared areas and avoid, where possible, impacts to high-quality native vegetation. The original Project Area covered more than double the area of the current Project Area. The reduction in area (48%) was largely driven by the need to avoid identified plains-wanderer habitat (refer **Section 6.2**). A range of mitigation measures will be adopted for the Project to mitigate the impacts to native vegetation and habitat that are unable to be avoided. These include a range of measures to be undertaken before and during construction to limit the impact of the Project.
Noise	Ancillary infrastructure required for wind farms emit a noise, which can be audible for sensitive receivers in proximity to the Project. As part of the design refinement, noise-generating infrastructure has been located within the Project Area to maximise the distance between the infrastructure and residential dwellings. Modelling of noise levels resulting from the Project elements and design during operation, construction, decommissioning and cumulatively with other SSD projects demonstrates compliance with relevant noise criteria (refer **Section 6.3**).
Landscape and Visual	Minimising visual impact was a key consideration of the Project design. Where possible, infrastructure siting considered potential visual impacts, and vegetation providing screening from adjacent residences and transport corridors was maintained. The Landscape and Visual Impact Assessment (LVIA) has assessed the Project relative to potential impacts to nearby private and public viewpoints. Although the LVIA determined that the Project would change the character of the surrounding landscape, the landscape was not determined to be sensitive, rare or natural. All viewpoints that were identified in the preliminary assessment as requiring a detailed assessment were deemed to have no potential for a high visual impact, five (5) non-associated dwellings have the potential for moderate visual impact, and remaining three (3) non-associated dwellings and lodged Development Application (DAD_1) location were assessed to have a low visual impact (refer **Section 6.4**).
Traffic and Transport	The internal access track network has been designed to minimise environmental and social impacts, utilising existing tracks, and avoiding the need for significant waterway crossing where possible.

Key Risks/ Hazards	***Summary***
	The Project has also considered the potential transport routes to bring construction components, equipment, plant and machinery to Project Area, with the objective of minimising impacts to the road network, and road users (refer **Section 6.5**).
Hazards and Risks	A review and assessment of potential incidents, as identified through the development of a hazard identification table, concluded that there would be no offsite impacts, and that risks at the site boundary were not considered to exceed acceptable risk criteria (refer **Section 6.6**).
Aboriginal Heritage	An Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared for the Project (refer **Section 6.7**). The AHIMS search undertaken for the ACHAR identified a total of 134 valid sites within the Project Area, and seven (7) additional sites recorded within the eastern portion that have been destroyed or partly destroyed. The survey programs undertaken in April 2023 and August 2023 as part of the ACHAR identified 93 new sites which have been registered on AHIMS. Based on the Development Footprint, potential harm to 36 of these Aboriginal sites was identified. The development footprint has been designed to minimise impacts on Aboriginal sites identified in the ACHAR, where possible.
Agriculture, Soils and Land Uses	The impacts of the Project on agricultural land and production are limited by the absence of cropping land on the Project Area and its low productivity. Construction and operation of the Project would have similar types of agricultural impacts. However, the extent and intensity of potential and expected impacts are greater during construction due to higher activity and larger footprint (refer **Section 6.9**). The area of agricultural production lost during construction and operation of the Project is a small fraction of the total agricultural land within the Hay Shire LGA. As such, the impacts of the Project at a regional scale are considered minimal. The highest biosecurity risk posed by the Project is the potential spread of weeds by vehicles, machinery, personnel and movement of soil and water. Biosecurity risks will be managed by implementing mitigation measures and conformation to the biosecurity protocols of the landowners.
Water	The Development Footprint has, where possible, been designed to minimise impacts on watercourses. There are several watercourses occur across the Project Area, however the placement of Project infrastructure within the Development Footprint will avoid first and second order streams, where possible. Flood modelling outputs indicted that the Project is unlikely to create measurable changes in flood levels or flood behaviour as a result of the Project construction activities. No measurable changes in flood levels or flood behaviour would result from operational activities of the Project (refer **Section 6.10**).
Social and Economic	Overall, the Project was assessed to have a net positive benefit on regional and state-wide economics, through capital investment and the provision of employment (refer **Section 6.13** and **Section 6.14**). Social considerations were also assessed and will be used to guide the development, to benefit local and regional businesses, and minimise societal impacts.

3. PROJECT DESCRIPTION

This section presents a detailed description of the construction, operation, maintenance and decommissioning phases of the Project and provides a detailed overview of the wind farm layout and infrastructure components.

3.1 OVERVIEW

The Project will involve the construction, operation, maintenance and decommissioning (where applicable) of a wind farm, with up to 188 WTGs, targeted electricity generating capacity of approximately 1,350 MW, and associated infrastructure.

The Project will supply electricity to the national electricity grid to which it proposes to connect via the existing 220 kV Darlington Point to Balranald Transmission Line or the under-construction EnergyConnect transmission line.

The Estimated Development Cost (EDC) of the Project is approximately $3,451 million, as described in **Appendix E**.
The Project description is summarised in **Table 3-1** and layout shown in **Figure 3-1**. Further detail on the Project description is provided in the following sections.

TABLE 3-1 PROJECT SUMMARY

Project Terminology	***Summary***
Project	The Plains Wind Farm
Applicant	Engie Australia Pty Ltd
Project Area	The 53,894 ha Project Area includes temporary and permanent Project infrastructure with, generally, a 100 m micro-siting buffer applied.
Study Area	Subject area for individual assessments will differ commensurate with the relevant legislation and guidelines for individual aspects
Development Footprint	Maximum directly impacted area by Project construction and operation up to 1,996.9 ha
Temporary Disturbance	The area of land that will be temporarily disturbed during construction of the Project, and later rehabilitated up to 700.6 ha
Permanent Disturbance	The area of land that will be subject to permanent disturbance as a result of construction and operation of the Project until decommissioning which is estimated to be up to 1,296.3 ha
EDC	$3,451 million
Project Elements	
Wind Turbines	• 188 WTGs, with a 7.2 MW capacity each • Maximum installed capacity up to 1,350 MW • Hub height of up to 180 m • Tip height of up to 270 m • Blade Length of up to 90 m • Hardstand of 3.6 ha per WTG required for construction.

Project Terminology	***Summary***
Electrical Reticulation Infrastructure	• One main 330 kV substation including switchyard, transformers, voltage controls, storage units control room and potentially power quality control equipment, with a total area of 59 ha • Located on Lot 27 DP 756778, Lot 9 DP 756778, Lot 10 DP 756778 and 8 &26 DP 756778 • Up to two 132 kV collector substations of 4.5 ha each, located on Lot 2 DP529796 and Lot 11 DP756737 • 33 kV medium-voltage underground and occasionally overhead lines connecting WTGs to collector substations • Approximately 222.6 km underground transmission and 81 km overhead line distance between WTGs and collector substations • 330 kV high-voltage (HV) overhead lines connecting collector substations to main substations and to the switchyard • Approximately 28 km distance between collector substation and main substations • Direct grid connection to existing 220 kV or EnergyConnect
Meteorological (met) masts	• Up to 10 permanent met masts • The met masts consist of a buried concrete base foundation and guy wires which are attached to buried anchor points. These will be marked using three-dimensional coloured objects attached to the wire or cables (for example spheres or pyramids) if necessary.
Onsite Supporting Infrastructure	• Accommodation compound • Landscaping works • Asset protection zones • Access tracks, drainage and access point (237 km total distance) Substation, O&M compound, electrical reticulation network and access tracks
Off-site Supporting Infrastructure	• Waste and wastewater disposal facilities • Existing public road and communications network • Visual screening mitigation at non-associated dwellings • Accommodation housing for workers in Hay
Construction	
Construction Duration	Approximately 40 months
Construction Hours	As per standard daytime construction working hours (or as defined in **Section 3.4.2**)
Construction Workforce	700 FTE during peak construction, with an average of 550 FTE
Onsite Temporary Infrastructure	• Temporary accommodation compounds including offices, car parking and amenities • Concrete batching plants and onsite borrow pits, laydown and storage areas and fencing • Water sourcing, power supply, access and communications
Ancillary Activities	• Delivery of Project components, including WTGs, substations, transformers and associated components • Installation of underground and overhead cabling, maintenance and environmental managements processes and equipment • Access roads upgrade

Project Terminology	*Summary*
	• Earthworks required to establish hardstand and laydown areas for turbines
Services and Utilities	• Adjustment, protection or relocation of existing utilities
Transport Route	• Main equipment deliveries via Port of Geelong and WTG components from Port of Adelaide • Associated external road upgrades (also used for operational maintenance or decommissioning activities)
Operations	
Duration	• Development Consent in perpetuity • Infrastructure life minimum of 30 years
Hours of Operation	24 hours a day, seven days a week
Operational Workforce	Up to 40 FTE onsite and 6 FTE offsite jobs during operations

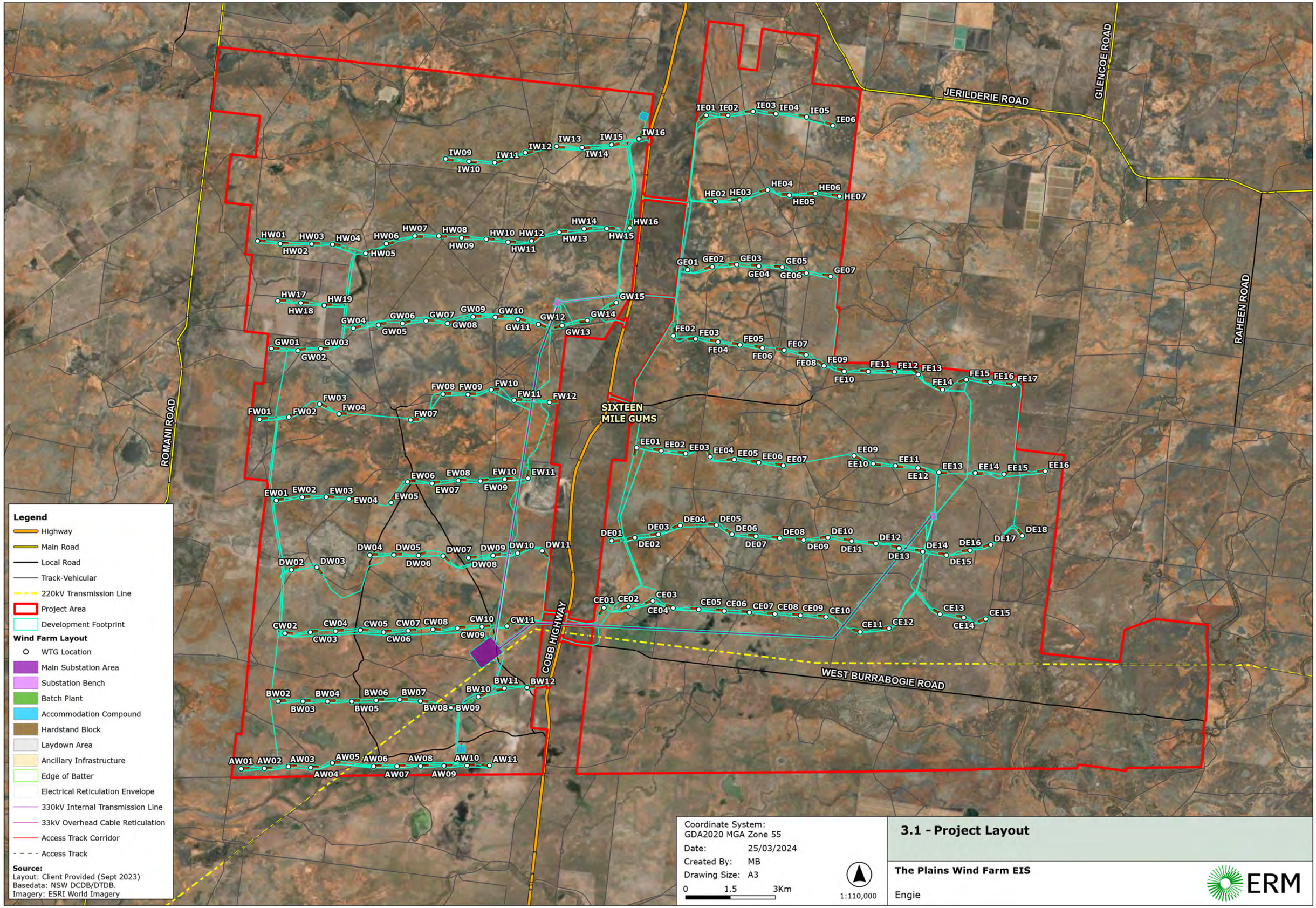
3.2 PROJECT AREA

The Project Area extends across 53,894 ha over 314 freehold land parcels and 6 parcels of Crown Land / 'Road Casement' (refer **Section 2.4**). The Development Footprint represents the maximum potential area of impact associated with the construction and operation of the Project. It encompasses an area of 1,996.9 ha, as shown in **Figure 3-1**, consisting of:

- Temporary Development Footprint, which is 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 is 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 WTGs hardstand areas, switchyard, substation and associated facilities.

A minimum asset protection zone (APZ) of 10 m has been added to the operational footprints of the WTGs, substation and associated infrastructure, as described in **Section 6.6.2**.

A flexible approach has been adopted to design for elements of the Project to ensure that the final layout can respond to identified social and environmental impacts and constraints.



Legend

- Highway
- Main Road
- Local Road
- Track-Vehicular
- 220kV Transmission Line
- Project Area
- Development Footprint

Wind Farm Layout

- WTG Location
- Main Substation Area
- Substation Bench
- Batch Plant
- Accommodation Compound
- Hardstand Block
- Laydown Area
- Ancillary Infrastructure
- Edge of Batter
- Electrical Reticulation Envelope
- 330kV Internal Transmission Line
- 33kV Overhead Cable Reticulation
- Access Track Corridor
- Access Track

Source:
Layout: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 55
Date: 25/03/2024
Created By: MB
Drawing Size: A3
0 1.5 3Km
1:110,000

3.1 - Project Layout

The Plains Wind Farm EIS

Engie

ERM

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3.3 PROJECT ELEMENTS

Figure 3-1 shows the Project layout for which approval is sought and considers:

- Maximising the energy output through suitable positioning of wind turbines where wind speeds are maximized onsite and with prevailing wind directions;
- Minimising environmental impacts and protecting sensitive areas and receivers identified through specialist assessments discussed in **Section 2.7.4** and shown in **Figure 2-6** (including but not limited to biodiversity, heritage, agriculture, etc.); and
- Optimising accessibility of Project elements through identifying topographic constraints and strategically positioning Project elements to minimise earthworks required during construction.

This section describes the Project layout. Minor changes may be made during the detailed design phase and in response to commercial and technical decisions; however, these will remain within the micro-siting corridor assessed in this EIS and commensurate with impacts assessed in **Section 6**.

3.3.1 WIND TURBINE GENERATORS

The Project will involve the construction and operation of up to 188 WTGs.

The Project has a development envelope that provides optionality for a range of turbines. We have assumed a 'worst case' envelope and turbine operating parameters for the noise and visual assessment to assess impacts on nearby receivers and public viewpoints.

Each WTG consists typically of composite metals and individual flanged sections which are bolted together. The WTGs consist of a concrete foundation, tower, nacelle, rotor hub and blades. To achieve visual consistency through the landscape, the WTGs will include:

- Uniformity in the colour, design, height, rotational speed and rotor diameter;
- Use of simple muted colours and non-reflective materials to reduce visibility and avoid drawing the eye. Blades, nacelle and tower to appear as the same colour; and
- Avoidance of unnecessary lighting, signage and logos.

Table 3-2 details specifications of the currently WTG model available and **Table 3-3** provides the central coordinates (GDA94 Zone 56). The typical components of a WTG are illustrated in

Figure 3-2.

TABLE 3-2 INDICATIVE WTG MODEL SPECIFICATIONS

WTG Feature	***Specification***
Make / Model / Power	Vestas 172 7.2MW
Power Regulation arg	Pitch regulated with variable speed
Operating data	
Rated power	7.2 MW
Cut-in wind speed	3.0 m/s
Cut-out wind speed	25 m/s
Wind class	IEC S
Standard operating temperature range	-20 +45 C deg
Sound power (Maximum)	110.1 dBA
Rotor	
Rotor diameter	172 m
Swept area	38,013 square meters (m^2)
Aerodynamic brake	Pitch system
Tip height	252 m
Hub height	166 m for the example (models of 112/117/150/164/166/175 m are also available)
Blade	
Length (incl. nacelle)	86 m
Minimum clearance (between ground and lowest point of blade)	26 m
Electrical frequency	50/60 Hz
Gearbox Type	Two planetary stages

TABLE 3-3 WIND TURBINE GENERATOR COORDINATES

WTG No.	**Coordinates**		**WTG No.**	**Coordinates**	
	X	**Y**		**X**	**Y**
AW01	285826	6141727	EW05	290825.4546	6150572.778
AW02	286596	6141739	EW06	291370.7457	6151260.318
AW03	287396	6141800	EW07	292184	6151207
AW04	288136	6141765	EW08	293056	6151299
AW05	288854	6141918	EW09	293790	6151286

WTG No.	Coordinates		WTG No.	Coordinates	
	X	Y		X	Y
AW06	290240	6141807	EW10	294596	6151343
AW07	291020	6141811	EW11	295374	6151379
AW08	291800	6141816	FE02	300200	6156108
AW09	292580	6141820	FE03	300944	6156008
AW10	293346	6141830	FE04	301687	6155909
AW11	294096	6141835	FE05	302430	6155809
BW02	287054	6143972	FE06	303174	6155709
BW03	287874	6143970	FE07	303893	6155632
BW04	288694	6143968	FE08	304628	6155478
BW05	289514	6143966	FE09	305221	6155112
BW06	290324	6143998	FE10	305889	6154928
BW07	291110	6144024	FE11	306689	6154925
BW08	291794	6143976	FE12	307552	6154916
BW09	292808	6143754	FE13	308347	6154829
BW10	293723	6144117	FE14	309151	6154318
BW11	294583	6144400	FE15	309938	6154655
BW12	295341	6144425	FE16	310733	6154568
CE01	297894	6147075	FE17	311528	6154481
CE02	298705	6147118	FW01	286436	6153339
CE03	299515	6147303	FW02	287409	6153411
CE04	300196	6147067	FW03	288431	6153839
CE05	301044	6147018	FW04	289078	6153520
CE06	301893	6146969	FW07	291471	6153315
CE07	302742	6146920	FW08	292549	6154173
CE08	303590	6146870	FW09	293372	6154161
CE09	304439	6146821	FW10	294150	6154318
CE10	305287	6146772	FW11	294908	6153969
CE11	306416	6146274	FW12	296086	6153901
CE12	307379	6146395	GE01	300676	6158306

WTG No.	Coordinates		WTG No.	Coordinates	
	X	Y		X	Y
CE13	309069	6146863	GE02	301496	6158406
CE14	309857	6146748	GE03	302322	6158479
CE15	310588	6146700	GE04	303055	6158427
CW02	287282	6146230	GE05	303833	6158389
CW03	288122	6146265	GE06	304637	6158195
CW04	288961	6146300	GE07	305438	6158083
CW05	289800	6146334	GW01	286826	6155690
CW06	290571	6146269	GW02	287710	6155619
CW07	291389	6146312	GW03	288472	6155680
CW08	292208	6146355	GW04	289564	6156361
CW09	293027	6146397	GW05	290404	6156469
CW10	293837	6146448	GW06	291203	6156523
CW11	294676	6146464	GW07	291985	6156602
DE01	298150	6149305	GW08	292696	6156525
DE02	298923	6149408	GW09	293548	6156742
DE03	299703	6149510	GW10	294286	6156729
DE04	300431	6149808	GW11	295037	6156658
DE05	301629	6149824	GW12	295716	6156492
DE06	302164	6149516	GW13	296503	6156452
DE07	302957	6149452	GW14	297342	6156622
DE08	303749	6149389	GW15	298304	6157211
DE09	304542	6149325	HE02	301591	6160576
DE10	305349	6149409	HE03	302414	6160624
DE11	306135	6149292	HE04	303347	6160959
DE12	306941	6149209	HE05	304069	6160782
DE13	307708	6149058	HE06	304933	6160833
DE14	308495	6148941	HE07	305732	6160744
DE15	309281	6148824	HW01	286371	6159261
DE16	310066	6148983	HW02	287126	6159170

WTG No.	Coordinates		WTG No.	Coordinates	
	X	Y		X	Y
DE17	310753	6149170	HW03	288167	6159160
DE18	311799	6149465	HW04	288860	6159149
DW02	287491	6148336	HW05	289980	6158850
DW03	288337	6148420	HW06	290663	6159173
DW04	290114	6148826	HW07	291614	6159429
DW05	290913	6148834	HW08	292407	6159429
DW06	291732	6148816	HW09	293162	6159366
DW07	292552	6148797	HW10	293985	6159319
DW08	293393	6148734	HW11	294707	6159222
DW09	294209	6148812	HW12	295488	6159262
DW10	295026	6148890	HW13	296405	6159551
DW11	295842	6148968	HW14	297235	6159667
EE01	298981	6152391	HW15	297989	6159672
EE02	299795	6152293	HW16	298759	6159692
EE03	300609	6152195	HW17	287043	6157273
EE04	301423	6152096	HW18	287809	6157201
EE05	302238	6151998	HW19	288583	6157123
EE06	303052	6151899	IE01	301295	6163439
EE07	303866	6151801	IE02	302024	6163435
EE09	306217	6152128	IE03	302865	6163563
EE10	306851	6151863	IE04	303622	6163485
EE11	307585	6151796	IE05	304641	6163381
EE12	308338	6151721	IE06	305511	6163091
EE13	309032	6151577	IW09	292634	6161989
EE14	310234	6151557	IW10	293407	6161907
EE15	311193	6151515	IW11	294262	6161867
EE16	312561	6151613	IW12	295283	6162196
EW01	286988	6150635	IW13	296321	6162407
EW02	287855	6150748	IW14	297169	6162368

WTG No.	Coordinates		WTG No.	Coordinates	
	X	Y		X	Y
EW03	288652	6150757	IW15	298148	6162462
EW04	289422	6150690	IW16	299055	6162656

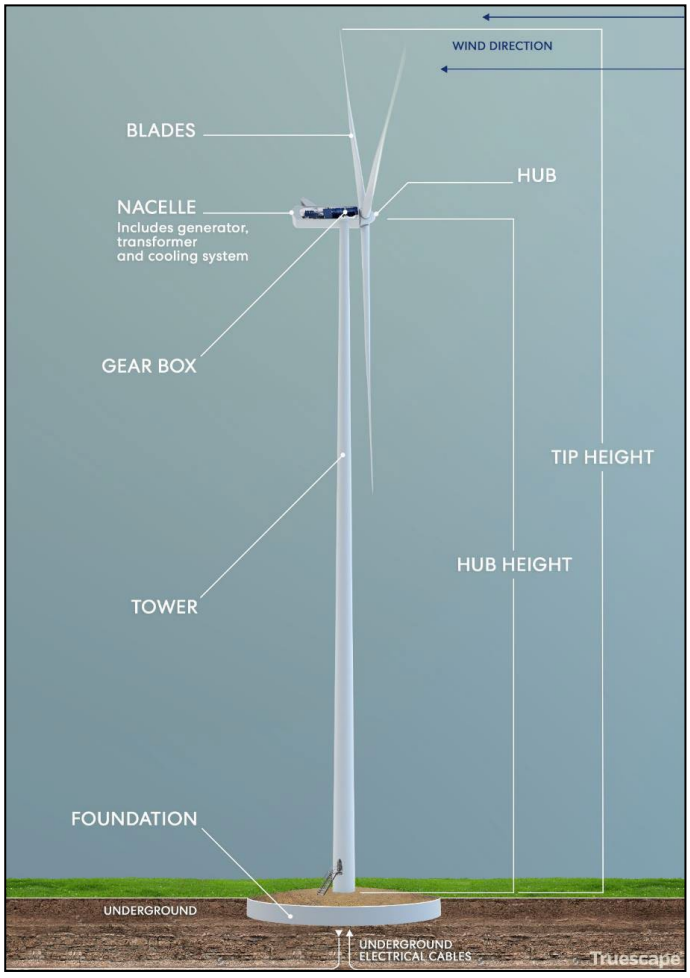


FIGURE 3-2 INDICATIVE COMPONENTS OF A WTG

3.3.1.1 FOUNDATIONS

The exact size and type of tower foundation will be based on subsurface soil conditions and the results of geotechnical surveys undertaken during the detailed design phase, prior to commencement of construction.

The three common types of foundations used for WTGs are gravity foundations, rock anchors and pile foundations or a combination of these depending on geotechnical conditions. The most common type of foundation is the gravity foundation in which an area is excavated suitable to support the burying of a "pedestal" design of concrete and reinforced steel sufficient to create a stable foundation.

WTG foundations are excavated using mechanical equipment, assisted by controlled blasting if required due to ground conditions. Topsoil and spoil from excavations will be stockpiled for reuse to backfill over the foundation and for vegetation rehabilitation of the Project Area. Excess materials will be utilised at other parts of the Project Area or exported offsite for beneficial reuse at an approved location or licensed landfill facility.

Figure 3-3 shows a typical gravity foundation. The gravity foundation is then backfilled so that only the connection to the base tower section is visible above ground as shown in **Figure 3-4**.

FIGURE 3-3 TYPICAL WTG FOUNDATION UNDER CONSTRUCTION

FIGURE 3-4 TYPICAL WTG FOUNDATION POST-CONSTRUCTION

3.3.1.2 HARDSTANDS

A hardstand will be constructed adjacent to the base of each WTG to enable the assembly and erection of the tower, nacelle, hub and blade components. Each hardstand will consist of gravel, which will be compacted and graded suitably to form a roughly rectangular area. The hardstand will include arrangements for crane boom assembly and support pad to store blades prior to construction. The hardstand area will be level with the WTG foundation with a bearing capacity of 250 kPa. The towers, nacelles and blades will be lifted off delivery trucks using mobile cranes. Larger cranes will then assist in the installation of the tower sections, nacelle and blades. **Figure 3-5** illustrates a typical hardstand area.

The total area of the hardstand during construction will be approximately 3.6 ha, subject to the topography of the surrounding land and will include a minimum of 10 m bushfire APZ around the perimeter of the hardstand area.

A portion of the hardstand will be maintained during Project operations to allow for maintenance and future decommissioning of the WTGs, there may be an opportunity to revegetate the assembly portions of the hardstand to allow grazing activities to resume in these areas if not required for Project operations.

FIGURE 3-5 TYPICAL HARDSTAND AREA

3.3.1.3 TOWER

Each WTG tower is assembled onsite and anchored to a concrete foundation. The towers include an internal ladder and service personnel lift and support the WTG nacelle, rotor hub and blades.

3.3.1.4 NACELLE

The nacelle is the housing that sits on the top of the turbine tower and accommodates the generator, gearbox, transformer, control systems, and pitch and yaw drives. The nacelle structure consists of a cast iron base frame and a rear girder structure. The base frame is the foundation for the drive train and transmits forces from the rotor to the tower through the yaw system. The bottom surface is machined and connected to the yaw bearing and the yaw gears are bolted to the base frame. The crane girders are attached to the rear structure.

The nacelle cover is made of fibreglass and is attached to the nacelle structure. Hatches are positioned in the floor for lowering or hoisting equipment to the nacelle and evacuation of personnel. The roof section is equipped with skylights, which can be opened from inside the nacelle to access the roof and from outside to access the nacelle. Access from the tower to the nacelle is through the base frame.

Aviation hazard lights can also be fitted to the top of the nacelle; however, these are not currently proposed based on the outcomes of the Aviation Assessment (refer **Appendix Q**). If required, obstacle lighting will be installed on top of the nacelle in accordance with Civil Aviation Safety Authority (CASA) requirements and the conditions imposed on any development consent granted.

3.3.1.5 ROTOR HUB AND BLADES

The rotor includes the three blades and the hub which connects the blades to the gearbox. The blades consist of fibreglass reinforced with epoxy, carbon fibre and a solid metal tip. A central WTG control unit (microprocessor) controls the rotational speed of the rotor and the pitch of the blades based on the prevailing wind conditions. The blades are continuously positioned to optimise the pitch angle, enabling the rotor to maximise energy production and ensure the safe and reliable operation of the WTG. A microprocessor controls the pitch of the blades to stop the WTG rotating, which minimises wear on the turbine components.

The rotor is connected to the gearbox through a main shaft and bearing made of cast iron. The main shaft transfers force to the bearing and torque to the gearbox, and the main gear converts the rotation of the rotor to generator rotation which generates electricity. The transformer is required to ‘step-up’ the voltage of the electricity produced by each WTG to the onsite distribution voltage of 33 kV.

3.3.2 ELECTRICAL RETICULATION AND GRID CONNECTION

3.3.2.1 SUBSTATIONS

One 330 kV main substation and two 132 kV collector substations will be constructed in the Project Area to transform the 33 kV received from the internal electrical reticulation network to the 330 kV transmission voltage. The main substation would occupy a maximum expected area of 59 ha and each collector substation an area of 4.5 ha.

The substations would comprise transformers, voltage controls, associated high voltage switchgear, storage units, potentially power quality control equipment, and control and protection equipment as well as a communication tower, and drainage and oil containment system.

Gravel will be placed under and around the substation to restrict vegetation growth and provide a safe working environment. A minimum 10 m bushfire APZ will surround the substation.

Internal structures within the substation compounds will include:

- Control building / control room, switch room with a height of approximately 5m;
- One 330 kV power transformers with a height of approximately 6m;
- Overhead line gantry structures of approximately 15m height;
- Transformer bunding and environmental controls for oil;
- Drainage and civil work including footing support for equipment;
- Cable trenching and cable conduits;
- Associated high voltage switchgear including busbars, conductors, circuit breakers, and disconnectors, with a height of approximately 6m; and
- A communication infrastructure.

A security fence will surround the substations and maintenance lighting will be installed for occasional night work including emergency operations; however the substation would normally be unlit, with the exception of low-level security lighting. Integrated systems will also be applied where required for the switching station and the substation as per:

- 'AS 1768 Lightning protection' (Standards Australia, 2021);
- 'AS 4853 Electrical hazards on metallic pipelines' (Standards Australia, 2012); and
- 'AS 3835 Earth potential rise - Protection of telecommunications network users, personnel and plant' (Standards Australia, 2006), safety criteria for telecommunications assets.

Figure 3-6 provides an example of a wind farm substation.

FIGURE 3-6 TYPICAL SUBSTATION

3.3.2.2 MEDIUM VOLTAGE RETICULATION

The internal electrical reticulation network, which connects the WTGs to the collector substations, will comprise approximately 222.6 km of underground and 81 km of overhead 33 kV cables. WTGs are connected in strings, which are then connected to the onsite substations. Where possible the cabling will be in underground trenches running parallel to access tracks. Where deviation from the access track is required due to geotechnical or other constraints, or to reduce overall cable length, these deviations will be positioned to minimise impact to ecological and heritage areas of high significance.

The trenching for underground electrical cabling will be approximately 0.6 m wide per circuit by 1.0 m deep, located within a works area of approximately 5 m to accommodate the mobile plant and stockpiling of spoil and bedding sand. Trenches will be progressively backfilled during the construction works.

Prior to excavating the cable trench, the topsoil is stripped and windrowed separately from excavated subsoils to preserve soil structure and the seedbank. The electrical reticulation is placed on bedding sands at approximately 750 mm below ground level. Once the cables are installed, another layer of sand may be placed above the cable prior to the trench being backfilled with excavated material with the excavated topsoil replaced providing a soil profile that assists revegetation of the disturbed areas. Cables will be protected in accordance with Australian Standard (AS) 3000:2007 Electrical Installations.

Where ground conditions are not suitable for open cut trench installation, overhead single circuit electricity lines will be installed using concrete poles. The aboveground conductors may have orange balls for visual identification.

3.3.2.3 HIGH VOLTAGE TRANSMISSION LINE

A 330 kV single or double circuit, three phase, twin conductor bundles overhead transmission line connection. The construction of approximately 28 km of a new 330 kV overhead transmission line will be required to connect the collector substations to main substation, and then approximately another 85 m to connect to the switchyard.

The design of the 330 kV overhead transmission line is:

- Approximately 50 m high, single circuit lattice steel tower, spaced approximately 500 m apart, subject to final design;
- Transmission footings (towers basements), which generally requires concrete footings for each of the four legs and a temporary disturbance area of approximately 0.04 ha for each tower during construction;
- Twin aluminium conductor bundles attached to ceramic insulators in the centre and the ends of the tower cross arm;
- Each conductor bundle will include orange balls for visual identification (if required) and an earth shield wire/s, protecting the line from lighting strikes; and
- A 60 m wide easement with unformed access tracks up to 4 m wide (equivalent to a farm track) to facilitate operational access by TransGrid (for maintenance, repair and hazard reduction).

It may also be possible to utilise a monopole design in place of a steel lattice tower. Monopoles would be up to 60 m high and spaced approximately 200-250 m apart, subject to final design. The monopoles would utilise a concrete footing.

Access to the transmission line for construction will be via existing property accesses and farm tracks.

For the safe operation of the transmission line, certain activities will be restricted within the easement area such as planting and growing trees, construction of buildings, or erection of antennae or masts. The transmission line will not affect the ongoing use of the land for agricultural purposes such as grazing. Maintenance of reduced bushfire fuel loads beneath transmission lines will be the responsibility of the asset owner.

3.3.2.4 SWITCHYARD

A switchyard with approximate dimensions of 320 m by 180 m for physical electrical components including required earth works will be located within a site with a maximum expected area of 6 ha. A 10 m APZ will surround the switchyard. The switchyard will connect the Project to the existing transmission line and/ or Project EnergyConnect currently under construction.

Figure 3-7 illustrates a typical wind farm switchyard.

FIGURE 3-7 TYPICAL SWITCHYARD

3.3.3 INTERNAL ACCESS TRACKS

Access to the east and west portions of the Project Area during construction and operations is proposed via up to 4 access points off Cobb Highway.

The ongoing maintenance of the Project will be accessed through the construction of approximately 237 km of new private access tracks. The internal access tracks will be connected to existing public roads.

The tracks will provide ongoing access to the WTGs, accommodation compounds and associated infrastructure. Where practicable, the internal access road network will be aligned along the route of existing farm tracks to reduce impacts to biodiversity and to provide upgraded access for ongoing agricultural activities. The indicative internal road network is shown in **Figure 3-1**.

The internal access tracks will be up to 6 m trafficable width, with localised widening on curves and where required to support transportation of the over-dimensional component vehicles. The internal access tracks will be constructed with dirt, sand, gravel or sealed pavement with the final design based on material in proximity to site.

3.3.4 METEOROLOGICAL MONITORING MASTS

Up to 10 permanent met masts will be installed in proximity to a WTG and will have a maximum height of approximately 150 m AGL. Permanent met masts will assist in verifying the performance of WTGs during operation of the Project. Each met mast each will include sensors and concrete foundation and will be designed and constructed to the appropriate aviation safety specifications.

3.3.5 MICRO-SITING

The layout presented in this EIS may require refinement based on detailed geotechnical investigations and selection of the final WTG model. As such, the Applicant requires the ability to micro-site Project infrastructure. This will allow the design to be adjusted to, for example, avoid unnecessary excavation, vegetation clearing, or to benefit constructability, plant and equipment access.

To allow the Applicant to make general design refinements without the need to modify the application, the EIS has assessed impacts for an area that includes temporary and permanent Project infrastructure with, generally, a 100 m micro-siting buffer applied. This means that micro-siting does not jeopardise the assessment of impacts as the areas within which micro-siting will occur were assessed in this EIS.

3.3.6 LIGHTING

The requirements for night lighting of ancillary infrastructure for this Project is generally limited to security lighting to the substation, within the O&M facility, and flood lights at the workers accommodation which will be installed to comply with relevant standard and guidelines. The light sources are limited to low-level lighting for security, night time maintenance and emergency purposes. There will be no permanently illuminated lighting installed.

All lighting will be designed, managed and operated in accordance with 'AS 4282 Control of Obtrusive Effects of Outdoor Lighting' (Standards Australia, 2019) and any prescribed or notified CASA requirement to reduce negligible light spill. 'The National Light Pollution Guidelines for Wildlife' (DEE, 2020) may also be considered during the detailed design phase for night lighting considerations.

3.3.7 LANDSCAPING

The landscape strategy for the Project Area will include vegetation planting in specific locations at non-associated dwellings, which will provide a visual buffer and assist in fragmenting views to turbines (further discussed in **Section 6.4**).

Conceptually, other landscaping will comprise planting of native trees, shrubs and groundcovers, designed to be low-maintenance and which will further enhance the natural habitat associated with the existing environment.

3.3.8 OTHER INFRASTRUCTURE

Additional infrastructure will generally be constructed and utilised within the Project Area, including geotechnical, visual enhancement plantings, fencing, creek crossings, water management, sediment and erosion control structures and access roads.

Other infrastructure may be installed within the Project Area utilising the Due Diligence procedure described in **Section 3.8**.

3.3.9 EXTERNAL INFRASTRUCTURE

The Project will rely on existing waste and wastewater disposal facilities, existing accommodation housing and external road network of the region. Public power and communications infrastructure may also be utilised.

The Project will operate as a stand-alone operation; however, may also utilise various access tracks, substation, switchyard, O&M compound, electrical reticulation network and other infrastructure associated with The Plains Solar Farm (upon its positive determination) as described and assessed in a separate SSD Application.

3.4 CONSTRUCTION

3.4.1 DURATION

The duration of construction from commencement to commissioning of the Project is expected to take approximately 40 months with a peak period of 24 months. For the purposes of assessment, it is assumed that construction will commence in Quarter 1, 2027.

The construction of the Project may be staged, and duration may be subject to factors including but not limited to weather and ground conditions, the availability of contractors, equipment, workers and housing, equipment transport constraints, equipment and contractor pricing, energy market pricing and availability of energy offtake, funding requirements, application approvals and relevant development consent conditions. Some of these factors can only be determined after development consent and with further investigations required to inform the Project design, procurement and commercialisation. If construction and / or operation is to be undertaken in stages, notification of such will be provided to DPHI.

Following set up of temporary construction compound areas, the upgrade of existing access roads and construction of new access roads will be the first construction activities, followed by the phasing of the wind turbines assembly and installation, then ancillary facilities.

Table 3-4 outlines an indicative timeline for the Project and **Table 3-5** presents the anticipated timing of key Project milestones as well as indicative peak workforce FTEs.

TABLE 3-4 INDICATIVE TIMELINE

Stage	***Description of works***	***Estimated Date of Commencement***	***Estimate Duration***
1	Site mobilisation and set up	January 2027	2 months
2	Construction of roads	March 2027	24 months
3	Construction of foundations and hardstands	April 2027	24 months
4	Electrical installation	May 2027	25 months
5	Substations construction and commissioning	April 2027	9 months
6	Transmission line construction and commissioning	June 2027	7 months

Stage	***Description of works***	***Estimated Date of Commencement***	***Estimate Duration***
7	Delivery of WTG components	July 2027	30 months
8	WTG installation	September 2027	30 months
9	WTG commissioning and testing	November 2027	18 months

TABLE 3-5 INDICATIVE MONTHLY CONSTRUCTION SCHEDULE

Stage	Q1-1			Q2-1			Q3-1			Q4-1			Q1-2			Q2-2			Q3-2			Q4-2			Q1-3			Q2-3			Q3-3			Q4-3			Q1-4			Q2-4		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Site mobilisation and set up																																										
Construction of Roads																																										
Construction of Foundations and Hardstands																																										
Electrical Installation																																										
Substations Construction & Commissioning																																										
Transmission Line Construction & Commissioning																																										
Delivery of WTG Components																																										
WTG Installation																																										
WTG Commissioning & Testing																																										

3.4.2 WORKFORCE AND HOURS OF OPERATION

The Project is anticipated to have a peak construction workforce of approximately 700 FTE personnel with an average of 550 FTE during construction periods, as generally shown in **Table 3-5**.

Construction activities will be restricted to standard daytime construction working hours:

- 7:00 am to 6:00 pm (Monday to Friday);
- 8:00 am to 1:00 pm (Saturday); and
- No construction will occur on Sundays or Public Holidays.

Construction outside these hours will be undertaken in accordance with the 'Interim Construction Noise Guideline' (DECC, 2009) as follows:

- For the delivery of materials required by the NSW Police or other authorities for safety reasons; and
- Where it is required in an emergency to avoid the loss of lives, property and / or prevent environmental harm.

In addition, construction outside recommended standard hours might be undertaken as follows:

- Activities that are inaudible at non-associated dwellings; and
- With agreement by the Department.

3.4.3 SITE PREPARATION AND CONSTRUCTION ACTIVITIES

The final infrastructure positioning and placement will be confirmed following geotechnical and other site surveys within the development footprint. Given the Project Area is relatively flat, it is expected that only minimal site preparation and civil works will be required prior to construction.

Site preparation works and may include clearing, erosion and sediment control, site levelling, construction of access roads, site drainage works, fencing, foundations, trenching and construction of hardstands, office and car parking areas.

Most of the infrastructure will be prefabricated off site and delivered to the Project area, where it will be assembled and installed. Set up of the temporary construction compound areas and ancillary facilities, the upgrade of existing internal access tracks and construction of new access roads will be the first construction activities. This will be followed by the phased installation of the Project elements in **Section 3.3**.

Construction activities will include (at a minimum):

- Civil works including:
  - Upgrade of existing access roads and construction of new access roads;
  - Grading, levelling and earthworks (including the construction of hardstands for key infrastructure items);
  - Sediment and erosion control measures and water management structures;
  - Visual enhancement plantings if deemed necessary in the landscape and visual assessment (LVIA);

  - Creek crossings;
  - Minor earthworks to facilitate installation of security fencing;
- Excavation of trenches and the laying of power and instrumentation cables;
- Installation of site compounds and concrete batching plants;
- WTGs and met masts:
  - Excavation works for foundation;
  - Construction of met mast footings and WTG footings;
  - Erection and installation of met masts and WTG's towers;
- Installation of substations, switchyard, permanent compounds and associated infrastructure;
- Installation of internal electricity network (underground cables/overhead power lines);
- Test and commission infrastructure; and
- Site rehabilitation and revegetation.

3.4.4 TEMPORARY INFRASTRUCTURE AND ACTIVITIES

3.4.4.1 TEMPORARY ACCOMMODATION COMPOUND

Temporary facilities will be required to facilitate construction of the Project. Two accommodation compounds will be provided to accommodate the construction workforce. One compound will be located to the north (Lot 23 DP 756797), and one to the south (Lot 23 & 24 DP 756778) of the western portion of Project Area, with a total area of approximately 6.4 ha each.

Each compound will include accommodation and amenity facilities, car parking, food and catering facilities, recreational facilities, first aid facilities and telecommunication services for personal use. Accommodation facilities will consist of prefabricated demountable units, that will be delivered and installed on site.

The accommodation compound would be able to cater for the expected peak construction workforce of approximately 350 personnel.

Additionally, a construction compound including storage areas, material stockpile, and temporary power supply for construction will be available for the Project construction.

Upon completion of construction works, all temporary facilities will be removed and rehabilitated in line with **Section 3.4.8**, or as agreed with the landowner.

3.4.4.2 TEMPORARY CONCRETE BATCHING PLANTS

Temporary rock crushing facilities and concrete batching plants are proposed to process excavated material for the WTGs foundations, electrical infrastructure, internal access roads, substations and switchyard. Use of materials sourced onsite will be confirmed through geotechnical testing prior to works.

Up to five temporary concrete batching plants and rock-crushing facilities will be established within the Project Area. While the exact details of the facilities will be determined closer to construction, the area required for the plant and storage of materials are estimated to be approximately 5.2 ha in total, located within the Development Footprint.

The temporary concrete batching plants will comprise:

- Cement silos;
- Stockpile areas for the storage of the aggregates, sand and other raw materials;
- Water tanks;
- Wastewater settling pit (to recycle water and prevent wash out overflowing onto unsealed ground and entering waterways);
- Parking for truck mixers and pumps;
- Fuel bunker and bunded area for concrete additives; and
- Rock crushing facility.

The demand for concrete for access road and other construction purposes is likely to exceed the license threshold of 150 tonnes per day or 30,000 tonnes per year defined under the *Protection of the Environment Operations Act 1997* (NSW) (POEO Act). Therefore, an Environmental Protection Licence (EPL) from the EPA (under the POEO Act), will be required. The daily onsite rock crushing capacity will be quantified following pre-construction geotechnical assessments to determine the availability of suitable onsite material.

3.4.4.3 ANCILLARY ACTIVITIES

Materials including gravel, aggregate and sand will be required to facilitate the construction of Project infrastructure. It is anticipated that the road formation will be constructed using a cut and fill balance with excavated materials used for the final hardstand surfaces of the roads. Use of materials sourced onsite will be confirmed through geotechnical testing prior to works.

Should volumes of fill required exceed those available onsite, materials will be transported to the Project Area using medium and heavy rigid vehicles (MRV and HRV respectively), truck and dog and/or oversized over mass (OSOM) vehicles. This material will be stockpiled within the laydown areas.

Construction material equipment will be sourced locally from Hay, Edward River and Carrathool LGAs subject to availability and cost considerations. Existing operating quarries in the Project locality (less than 100 km from site entry) and their material resources are shown in **Table 3-6**.

TABLE 3-6 EXISTING OPERATING QUARRIES

Facility	***Location***	***Aggregate***	***Sand***	***Concrete***	***Roadbase***
Milbrae Quarries Services	Warburn, NSW	✓	✓	-	✓
Milbrae Hay Concrete Plant	Hay, NSW	✓	✓	✓	✓
Milbrae Coleambally Concrete Plant	Argoon, NSW	✓	✓	✓	✓
Rocks Road Quarries	Deniliquin, NSW	✓	-	-	✓
Mawsons	Berrigan, NSW	✓	-	-	✓

3.4.5 SERVICES AND UTILITIES

3.4.5.1 WATER SUPPLY

A non-combustible static water tanks will be included within the APZ for the substation, and associated infrastructure as defined in **Section 6.6.2**. The volume and location of static water

tanks will be confirmed in consultation with the NSW RFS, although it is likely to require minimum 50,000 L tanks, based on refilling six tanker units (4,000 L) twice each. An additional water tank/s with storage of approximately 50,000 L may also be included within the Development Footprint for the purposes of construction and maintenance of the Project.

The Project will require approximately 10 megalitres (ML) per year of potable or drinking water for workforce associated with the construction of the Project and 3 ML per year during operations, as shown in **Table 3-7**. Potable water required for the Project construction and operations will be collected in the static water tank provided within the Project Area or trucked into site, as needed.

Approximately 790 ML per annum of water will be required during the construction phase for concrete, road works and earthworks, dust suppression and potential watering of revegetated areas (refer **Table 3-7**).

TABLE 3-7 INDICATIVE WATER REQUIREMENTS

Water Requirement	***Construction Water Requirements***	***Operation Water Requirements***
Civil works	174.33 ML/year	-
Dust suppression	89 ML/year	4 ML/year
Workforce use	3.2 ML/year (Construction Compound)	
	4 ML/year (Accommodation Compound)	

Note: Water requirements provided are estimates only and will be confirmed following detailed design.

Water required for construction will be supplied from existing or new onsite dams, surface water pumps or groundwater bores (subject to seasonal availability and water licence permissions) or alternatively from an offsite local source from an approved facility (refer **Section 6.10**).

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

No water network upgrade will be required for the Project construction and operation. Water supply agreements would be secured in consultation with Hay Shire Council, Edward River Council and/or local water suppliers to ensure adequate water supply is secured for construction and operation.

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

3.4.5.2 POWER SUPPLY

The power supply for construction will be from local low-voltage distribution supplied via agreements with the local network operator and supported by diesel generators as required. Power sourced from existing 220 kV line or EnergyConnect will not be available during the construction phase. No additional supply will be required for the Project operations.

3.4.5.3 WASTE MANAGEMENT

Waste storage locations will be provided within the Project Area for both the construction and operation phases. Sufficient space will be allowed for the separation and storage of different waste and sufficient space will also be provided for recycling and reuse of items.

Section 6.12 describes the storage, management and disposal of waste generated during the Project construction, operation and decommissioning. It also describes primary waste streams expected to be generated during all phases of the Project.

3.4.5.4 TELECOMMUNICATIONS

Communications networks will be constructed and used within the Project Area including but not limited to fibre optics (with cellular and/or landline backup) and radio support (type, channels and call-signs). Telecommunications ensure the secure control of the wind turbines and substations, which includes emergency shutdowns and management of any maintenance requirements.

3.4.5.5 PLANT AND EQUIPMENT

Table 3-8 lists the indicative plant and equipment required to facilitate construction, and the vehicles required to transport these items to the Project Area. A water cart, forklift, telehandler, excavator, piling rig, grader, trencher, loader, crane, dump trucks, rollers and light vehicles will be on site for all construction activities. Construction machinery will generally remain on site for the duration of the earthworks portion of the construction and will therefore be only required to access and egress the site once for the construction works.

Construction equipment will be sourced locally from the Hay, Edward River and Carrathool LGAs, subject to availability and cost considerations. Steel used for concrete foundations will be sourced from within NSW, subject to cost and availability.

TABLE 3-8 INDICATIVE CONSTRUCTION PLANT

Item	***Delivery Vehicle***
Equipment	
Wind Turbines	Oversize and overmass vehicles (OSOM) vehicles
Substation	Semi-Trailer
Switchyard	Semi-Trailer
Transformer and crane	OSOM vehicles
Total cables	Semi-Trailer
Steel posts, tables and brackets	Semi-Trailer
Heavy Machinery	
Telehandler	Semi-Trailer

Item	*Delivery Vehicle*
Tractors/bulldozers	Semi-Trailer
Miscellaneous trucks	Standard truck
Water Tankers	Semi-Trailer
Buildings	
Control room	Semi-Trailer
Offices and warehouse	Semi-Trailer
Security Fence	
Posts and wire mesh	Semi-Trailer
Earthworks	Semi-Trailer
Construction and Operational Workforce	
Workforce	Shuttle buses, light vehicles (passenger and four-wheel drive)

3.4.6 TRANSPORT ROUTE

The Port of Adelaide in South Australia will be used for import and unloading of the major Project components. Other specialist equipment will be sourced from various areas whilst consumables will be sourced locally from the Hay region (where available and commercially viable).

Heavy vehicles will transport materials and equipment associated with the Project construction. These will consist of vehicles including articulated vehicles (AV), B-Doubles (standard vehicles), 'truck and dogs', MRV and HRV, and light vehicles.

Due to the size of some of the Project components, there will be OSOM deliveries. OSOM vehicles / Restricted Access Vehicles (RAVs) will be utilised for delivery of WTGs, large substation equipment (e.g., transformers), and crane. The Project will generate up to 350 light and 310 heavy vehicles per day vehicle movements per week during construction.

The proposed transport route for all vehicles transporting blades components including OSOM deliveries travelling from the Port of Adelaide to the Project will travel along Ocean Steamers Road onto Eastern Parade, along the Port River Expressway, North-South Motorway, Port Wakefield Highway, Angle Vale Road, North-South Motorway, Horrocks Highway, Barrier Highway, crossing to NSW onto Cobb Highway. The proposed transport route for OSOM deliveries for towers components includes travelling along Ocean Steamers Road onto Eastern Parade, along the Port River Expressway, before turning onto Wilkins Highway, Jamestown-Yarcowie/Whyte Road, and rejoining to the Barrier Highway to follow the same route as the blade components.

The traffic assessment for the Project is provided in **Appendix N** and summarised in **Section 6.5.3**.

3.4.7 ROAD UPGRADES

A route survey along the transportation routes from the Port of Adelaide to the Project Area identified the following the road upgrades, also conceptually shown in **Figure 3-8**:

- Widen port access (gate) in southwestern corner of intersection at Port of Adelaide.

- Relocate light pole and traffic signals at intersection (if required) on southern side of Eastern Parade and Port River Expressway;
- Temporary removal of W-beam barriers along Port Wakefield Highway median, or replacement with removable bollards, and installation of approximately 900 m^2 hard stand to be installed on median strips;
- Relocation or removal of one (1) traffic sign, and two (2) signs checked for tip clearance on Angle Vale Road southwestern corner (at Angle Vale Road and North-South Motorway);
- Relocation of two (2) traffic signs and a light pole and installation of approximately 420 m^2 total hardstand near the intersection at Sturt Highway and Horrocks Highway;
- Minor tree trimming of overhanging branches along Horrocks Highway;
- Relocation of two (2) traffic signs (or signs made removable) and installation of approximately 550 m^2 of hardstand near the intersection of Barrier Highway and Copperhouse Road; and
- Tree trimming and removal on Copperhouse Street and approximately 150 m^2 hardstand to be laid down;
- Construction of new temporary gravel bypass track to Gaffney St (approx. 5.5km) (to be wind farm specification of minimum 5.5m width, suitable for min 14 tons per axle loading) on Barrier Highway at Barrier Highway (2.4 km form Broken Hill);
- Construction of new temporary gravel bypass track to Gaffney St (approx. 3.7km). A new intersection off Barrier Highway (2.4 km from Broken Hill) will be required and one (1) sign will need to be made removable;
- Construction of temporary gravel track through private land (to wind farm specification) and one (1) sign to be made removable at the intersection of Crystal Street and Barrier Highway;
- Construction of temporary gravel track private land (to wind farm specification) and an egress gate installed in Barrier Highway;
- Construction of temporary gravel track through private land (to wind farm specification). Remove trees, relocate one (1) power pole and installation pf approximately 550 m^2 of temporary hardstand and fence realignment at the intersection of Sturt/Chettle Street and Barrier Highway;
- Relocation of three (3) traffic signs and three (3) light poles on Cobb Highway and Sturt Highway in Hay, NSW. Installation of approximately 300 m^2 total hardstand in southern corner;
- Basic Right Turn (BAR) and Basic Left Turn (BAL) treatments at the intersection of Cobb Highway and West Burrabogie Road as shown in Appendix F of the Traffic Impact Assessment (TIA) (refer **Appendix N**); and
- BAR and BAL treatments at Site Access A, Site Access B and Site Access D along Cobb Highway as shown in Appendix G, Appendix H and Appendix I, respectfully of the TIA (refer **Appendix N**).

All treatments required for the Project are suitable to accommodate the future traffic volumes associated with the Project.

3.4.8 POST CONSTRUCTION SITE REHABILITATION

The Project Area will be progressively rehabilitated throughout construction. When construction is completed, temporary plant and equipment will be removed, and disturbed areas will be revegetated and rehabilitated in consultation with associated host landowners.

Adequate sediment, soil and erosion controls will be implemented during ground disturbing works. Rehabilitation activities will be generally in accordance with the 'Managing Urban Stormwater: Soils and Construction - Volume 1' (Blue Book) (Landcom, 2004).

Post-construction rehabilitation requirements and processes will be detailed in the Environmental Management Strategy (EMS) and undertaken in accordance with relevant conditions of development consent (refer **Section 3.8**).

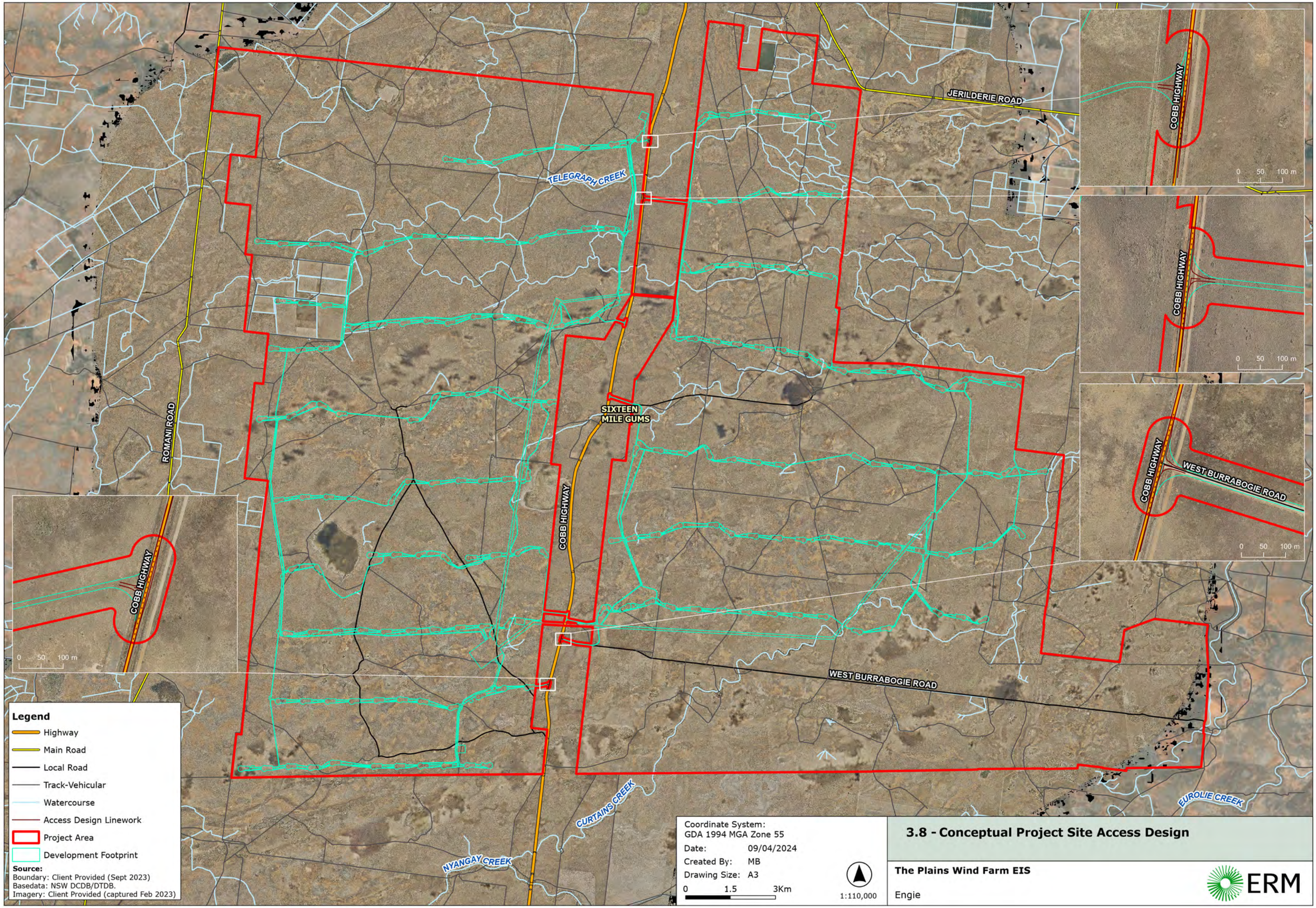
3.5 OPERATION

3.5.1 COMMISSIONING

The commissioning of the Project would be based on an agreed schedule which will be staged to allow for partial commissioning of select plant while the Project is under construction. Final commissioning works will involve checks and authorisation on all high voltage equipment prior to connection to the grid.

Operational infrastructure includes (but is not limited to):

- Met Masts;
- WTGs;
- O&M Facility;
- Substation equipment;
- Communications equipment;
- Electrical Reticulation and Grid Connection;
- Internal access roads;
- Gates and fencing; and
- Lighting.



3.8 - Conceptual Project Site Access Design

The Plains Wind Farm EIS

Engie

ERM

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3.5.2 OPERATIONAL HOURS AND WORKFORCE

While the Project will be monitored remotely, the WTGs and other equipment will require regular maintenance. An operations workforce of up to 40 FTE including onsite and offsite jobs is anticipated to be required for this purpose. Site maintenance will be undertaken by staff on an ongoing basis with activities scheduled consistently throughout each year. Site maintenance will include at least the landscaping, maintaining access roads and APZs (if required), repair and replacements of Project's components (e.g., WTGs, reticulation network, substations, and transmission line).

Most of the maintenance will be undertaken during routine maintenance; however, circumstances may arise where additional specialist technical maintenance staff are required (e.g., such as unplanned equipment failure). Over the life of the Project, infrastructure will be maintained and/or upgraded, as required, to ensure health and safety of occupants of buildings.

Daily maintenance will occur during standard working hours. Outside of emergencies or major asset inspection or maintenance programs, night works or works on Sundays or public holidays will be minimal; however, will be undertaken in accordance with the 'Interim Construction Noise Guideline' as described in **Section 3.4.2**.

Whilst most activity is anticipated to occur during business-hours Monday to Friday, access to the Project will be required on a 24-hour basis, seven days a week.

3.6 DECOMMISSIONING AND REHABILITATION

The Applicant has entered into Agreements with host landowners for the construction and operation of the Project as described in **Section 2.6.1**.

Although Development Consent is sought in perpetuity, Project elements will operate for a minimum of 30 years. At the end of Year 30, one of the following options will be undertaken:

- Repower as a wind farm using the existing or "best practice" at the time technology; or
- Replacement of WTGs and other infrastructure where generally within the predictions and criteria in this EIS; or
- Decommission the Project and remove WTGs and associated infrastructure in accordance with a 'Decommissioning and Rehabilitation Plan'.

If replacement infrastructure is installed, these will remain within the Project description and predicted impacts for which any development consent is granted (unless a modification is sought and granted).

The Applicant will fund and execute the decommissioning of the Project. When decommissioning occurs:

- Key stakeholders including landowner and relevant regulators will be consulted;
- In general, all above ground structures will be removed and the land rehabilitated;
- Some infrastructure may be retained in situ (e.g., internal access roads) where beneficial and as agreed with the landowner;
- Some below ground infrastructure may be left in situ to avoid further disturbance and minimise clearing of revegetated areas, unless otherwise agreed with the landowner and/or specified in the conditions of development consent.

The Applicant aims to recycle all dismantled and decommissioned infrastructure and equipment, removed from the Project Area, where possible. Materials that cannot be recycled will be disposed of at a licensed waste management facility (refer **Section 6.12**).

A Decommissioning and Rehabilitation Plan will be prepared for the Project no less than five years prior to decommissioning and / or in accordance with any Project approval requirements. It is anticipated that the decommissioning and rehabilitation phase would take up to 6 months to complete, with the Project Area being returned, as far as practicable, to its condition prior to the commencement of construction.

3.7 LAND SUBDIVISIONS

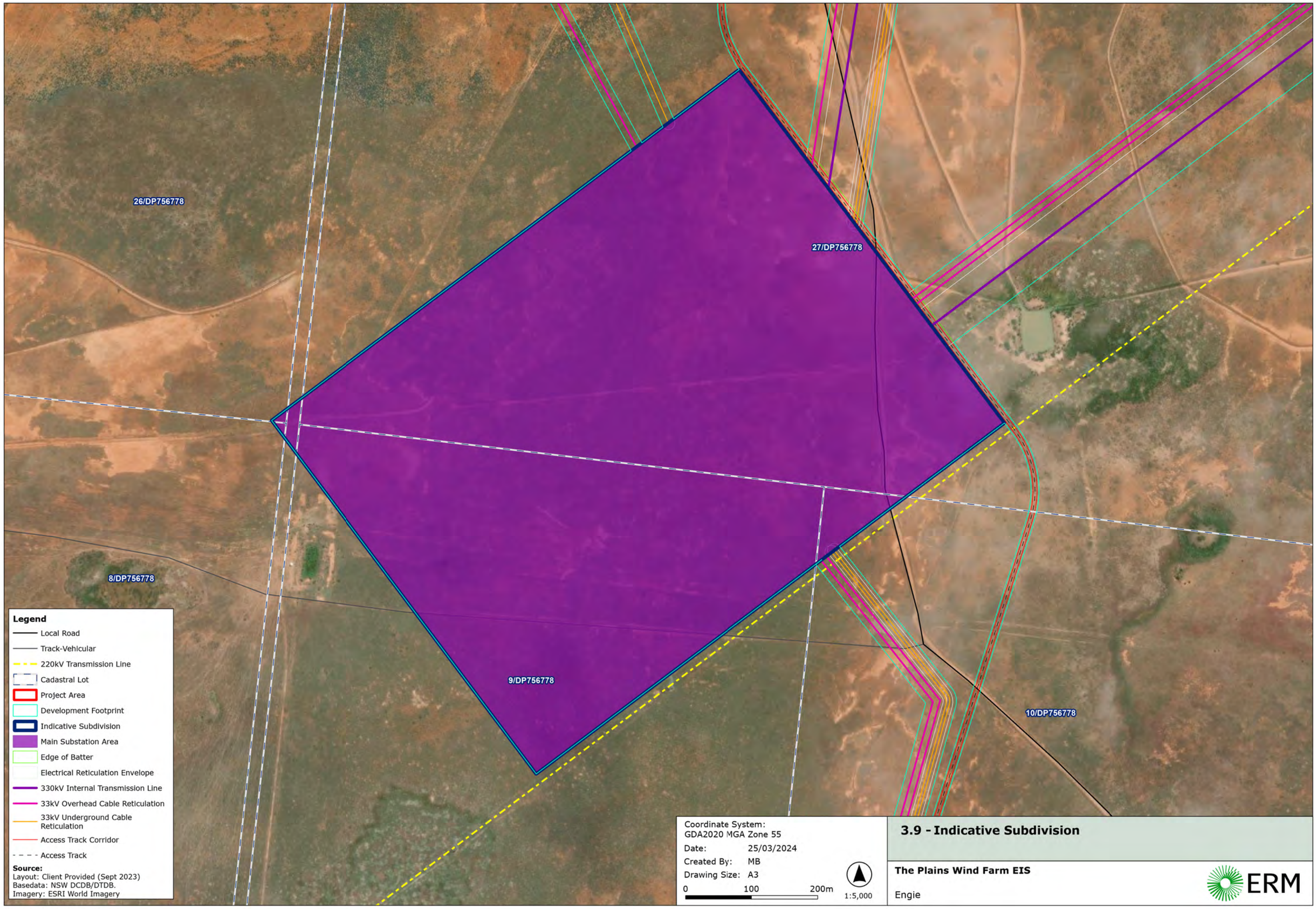
TransGrid requires freehold title to the switchyard lot(s) to proceed with the construction of the relevant electrical connections and infrastructure. A new title(s) in a subdivision of Lot 27 and Lot 9 of DP 756778 will be required to enable land ownership of the switchyard assets to be transferred to TransGrid. TransGrid will obtain freehold title through either transfer, dedication, or acquisition.

Figure 3-9 identifies the required subdivision for the substation and switching station. The lot size and configuration are indicative and subject to further detailed design and confirmation with TransGrid and the landowner during the detailed design phase.

3.8 ENVIRONMENTAL MANAGEMENT

An environmental management system (EMS) will be developed to provide the overall framework for environmental management during the construction, operation, decommissioning and rehabilitation of the Project to ensure that appropriate measures and processes are in place to manage identified environmental risks and provide for ongoing continual improvement. The EMS will incorporate mitigation measures that have been identified throughout this EIS and will include relevant management plans consistent with any conditions of development consent.

Any minor works described in the Project description, required outside the Study Area but within the Project Area will be subject to an internal archaeological and ecological (at least) due diligence assessment before proceeding. The activities and relevant mitigation will be described in relevant management plans.



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4. STATUTORY CONTEXT

This section outlines the key statutory requirements for the Project under the EP&A Act and other relevant NSW and Commonwealth legislation. It describes the power to grant approval, permissibility, the any post approvals required under other relevant acts.

4.1 POWER TO GRANT APPROVAL

Approval for the Project is sought under Part 4, Division 4.7 of the EP&A Act, which outlines the approval pathway for development deemed to be SSD. Clause 4.36(2) of the EP&A Act states:

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

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

Under the provisions of Clause 2.6(1) of Planning Systems SEPP, a development is classified as SSD if it is specified in Schedule 1 or 2 which states:

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

Schedule 1, Clause 20 of Planning Systems SEPP determines "electricity generating works" to be SSD if it meets the following criteria:

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

The Project meets the definition of "electricity generating works" which are defined in Clause 2.35 of T&I SEPP as follows:

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

The Project involves development for the purpose of electricity generating works using wind power, which will have a Estimated Development Cost of more than $30 million (see **Appendix E**).

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

4.2 PERMISSIBILITY

4.2.1 SEPP (TRANSPORT AND INFRASTRUCTURE) 2021

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

Clause 2.36 of the T&I SEPP states that "electricity generating works" may be carried out with development consent on land within a prescribed rural, industrial or special use zone.

The Project Area is contained within the Hay Shire LGA and is subject to the provisions of the Hay LEP. The Project Area is zoned RU1 – Primary Production under the Hay LEP.

As RU1 is a prescribed rural zone, therefore, the Project is permissible with consent under the provisions of Clause 2.36 of T&I SEPP.

4.2.2 ELECTRICITY INFRASTRUCTURE INVESTMENT ACT 2020

Clause 23 of the Electricity Infrastructure Investment Act 2020 identifies REZs in NSW. The Project Area is located within the South West REZ which was formally declared on 4 November 2022 (NSW Government Gazette, 2022) by the NSW Government as shown in **Figure 1-1**.

4.3 OTHER APPROVALS

Other approvals that are potentially required under relevant NSW and Commonwealth legislation are discussed in **Table 4-1**. It also identifies pre-conditions to exercising the power to grant approval (including mandatory conditions) and identifies in which section of the EIS each is addressed.

Table 4-1 provides a statutory compliance table which identifies key statutory requirements required for the Project and indicates how and where each has been addressed.

TABLE 4-1 OTHER APPROVALS REQUIRED

Approval Category	***Legislation***	***Discussion***	***Where Addressed***
Consistent Approvals Section 4.42 of the EP&A Act outlines that these approvals cannot be refused if necessary for carrying out an approved SSD and are to be consistent with the terms of the SSD approval.	*Roads Act 1993* (Roads Act)	Consent from the appropriate roads' authority under section 138 of the Roads Act will be required as the Project will undertake works on public roads.	**Section 6.5** and **Appendix C**
Native Title	*Native Title Act* 1993 (NT Act)	Under section 13 of the NT Act, an individual can apply to the Federal Court for a determination of native title. A review of the potential for native title found that The Project Area is not located within the boundaries of a native title claim or determination.	**Section 6.7** and **Appendix H**
EPBC Act Approval	*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Approval from the Minister for the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is required for any action that will or is likely to have a significant impact on one or more Matters of National Environmental Significance (MNES).	**Section 6.2** and **Appendix G**

Approval Category	*Legislation*	*Discussion*	*Where Addressed*
		The Project was referred under the EPBC Act (EPBC Ref: 2022/09404) and was determined to be a controlled action on 20 March 2023. The controlling provisions that apply to the Project under the EPBC Act were determined to be Listed threatened species and communities (Sections 18 & 18A).	
	Amending Agreement No.1 - New South Wales Assessment Bilateral Agreement	The Project will be assessed in accordance with the bilateral assessment agreement Amending Agreement No. 1 (Commonwealth of Australia & NSW, 2020). Under the Amending Agreement No.1 (Commonwealth of Australia & NSW, 2020), the NSW determining authority's Assessment Report will be provided to DCCEEW inclusive of a recommendation as to whether the project should be approved and conditions that may be applied to any Federal approval. DCCEEW will subsequently make a determination, inclusive of any conditions.	**Section 6.2** and **Appendix G**
Other Approvals	*Water Management Act 2000* (WM Act)	There is no groundwater extraction activity associated with the Project and water access licences will not be required under the WM Act.	Not Applicable
	Crown Land Management Act 2016	There is Crown Land located within the Project Area and works proposed in these areas may require a Section 5.21 licence to authorise the use or occupation of these areas. The Applicant has obtained landowner consent for areas which are Crown Land within the Project Area.	**Section 2.6.1**
	Conveyancing Act 1919	The Project will require a lease from the owners of the affected land. Under Section 23F of the *Conveyancing Act 1919*, a plan for a lease of land for more than 5 years (including any options of renewal). Wind farm leases do not normally trigger this requirement as they are treated by NSW Lands and Property Information as being leases for premises rather than land (NSW Land Registry Services, 2022). Where consent is not required, the 'Subdivision Certificate' or 'Councils Certificate' panel on the Administration Sheet should be ruled through prior to lodgement of the plan. The Project will however require subdivision as described in **Section 3.7**.	Not Applicable

Approval Category	*Legislation*	*Discussion*	*Where Addressed*
	Biodiversity Conservation Act 2016	The BDAR has been prepared to accompany the EIS and provides a discussion of the management and protection of listed threatened species of native flora and fauna and Threatened Ecological Communities (TECs). The BDAR assesses biodiversity offsets consistent with the Biodiversity Offset Scheme (BOS). Given the Project is SSD, entry into the Biodiversity Offset Scheme is automatically triggered.	**Section 6.2** and **Appendix G**
Approvals not required under SSD Section 4.41 of the EP&A Act states the following approvals; permits, etc are not required for an approved SSD.	*Fisheries Management Act 1994*	The Project will not require a dredging or reclamation work permit under section 201, a marine vegetation regulation of harm permit under section 205, or a passage of fish not to be blocked permit under section 219.	Not Applicable
	Heritage Act 1977	The Project will not require a Part 4 approval to carry out an act, matter or thing referred to in section 57(1), or an excavation permit under section 139.	**Section 6.7**, **Appendix H**
	National Parks and Wildlife Act 1979	As the Project is assessed as being State Significant Development (SSD), an Aboriginal Heritage Impact Permit (AHIP) is not required under Part 4.7 Clause 4.41 (1)(d) of the EP&A Act. Instead, Aboriginal cultural heritage will be managed by an Aboriginal Cultural Heritage Management Plan (ACHMP).	**Section 6.7**
	Rural Fires Act 1997	The Project will not require a bushfire safety authority under section 100B, as the development does not involve subdivision for residential or rural residential development. Under Section 100C, emergency bush fire hazard reduction and management works can be undertaken on any land without consent or approval under the EP&A Act. A Bushfire Risk Assessment has been prepared as part of the EIS.	**Section 6.6.2** and **Appendix R**
	Water Management Act 2000	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 is not required for the Project. No new aquifers interference would be required for the Project.	Not Applicable

4.4 MANDATORY MATTERS FOR CONSIDERATION

The consent authority is required to consider a range of mandatory matters when deciding whether to grant consent for the Project under various legislation.

Appendix A and **Appendix C** describes each mandatory matter and identifies where each is addressed in the EIS. It also identifies pre-conditions to exercising the power to grant approval (including mandatory conditions) and identifies in which section of the EIS each is addressed.

4.5 EIS REQUIREMENTS

This EIS has been prepared in accordance with Part 8, Division 5 of the EP&A Regulation, which specifies the form and content of an EIS. **Appendix A** and **Appendix C** indicates each requirement and where each is addressed in this EIS.

5. STAKEHOLDER ENGAGEMENT

This section provides a summary of the stakeholder engagement undertaken for the Project. It provides an overview of the engagement process, the findings that have been incorporated into this EIS, and the Applicant's commitment to ongoing engagement.

Stakeholder engagement is an integral part of any major development. As part of the development of the Project and preparation of the EIS, engagement has been and will continue to be undertaken with a range of stakeholders including various local and NSW Government agencies, the local community, special interest groups and neighbouring and proximate landowners.

ENGIE is committed to ensuring public concerns and comments are considered, and that attempts are made to avoid, minimise or mitigate potential impacts where possible.

Key documents described in this Section are located on the Project's website (Home - The Plains - Renewable Energy Park | The Plains | Engie (theplainsenergypark.com.au)).

5.1 STAKEHOLDER ENGAGEMENT OBJECTIVES

ENGIE is committed to an open and responsive engagement process that builds trust and constructive relationships with the community and stakeholders.

The key objectives of the Project's consultation and engagement process are to:

- Develop and maintain positive working relationships with Project stakeholders and deliver best practice engagement;
- Proactively identify stakeholders that may be affected by the Project and ensure they have access to balanced, objective, timely and up-to-date information about the Project's potential impacts and benefits and the planning and environmental assessment process;
- Collect representative stakeholder inputs and ensure there are highly accessible mechanisms and multiple opportunities for stakeholders to provide inputs on the Project;
- Identify and consider stakeholder insights and concerns through effective two-way engagement to inform Project planning, design, mitigation, management and monitoring measures;
- Identify long-term community needs and design initiatives that can lead to well-designed support programs for the long-term benefit of the community;
- Develop a sense of local ownership in the Project and a social licence to operate;
- Maintain a positive image for the Applicant and the renewable energy industry;
- Ensure stakeholders are adequately informed and have sufficient understanding of:
    - The justification and need for the Project;
    - The well proven technology proposed as part of the Project;
    - How the Project may affect them and how they can be involved in the approval process;
    - How their views are considered in a meaningful way and used in Project planning, refinement and design, mitigation measures and monitoring and management frameworks;
    - The benefits of the Project, including local investment and employment, reduced GHG emissions, replacement of aging coal fired generation in the NSW context;

- How the Project can contribute to the local community;
- How the Project complies with relevant regulatory requirements and policies; and
- How the requirements of the SEARs and technical assessment lead to further information to be taken into consideration to remove, reduce and offset impacts and improve social and environmental outcomes while maintaining a viable Project.

5.2 STAKEHOLDER ENGAGEMENT STRATEGY

A Stakeholder Engagement Strategy was prepared to guide consultation with stakeholders during the scoping report, EIS, response to submissions and further amendments. The Strategy has been updated several times during the progression of the Project and evolution of stakeholder engagement and is provided in **Appendix D**.

The purpose of the Strategy is to guide effective consultation by identifying:

- Stakeholders of relevance to the Project;
- An engagement approach to ensure targeted and effective consultation;
- Timing and methods for engagement with each stakeholder group; and
- Community attitudes towards renewable energy.

The Strategy was prepared in accordance with the 'Undertaking Engagement Guidelines for State Significant Projects' (Engagement Guidelines), which requires upfront and ongoing engagement for all State significant projects (DPIE, 2022). The engagement incorporated best practice objectives for community participation in the Project, which is open and inclusive, easy to access, relevant, timely and meaningful, as required in the Engagement Guidelines.

ENGIE is committed to continuously evaluate community engagement and modify when needed, to ensure stakeholder expectations are met.

Additionally, to ensure alignment with leading practice, the approach to engagement also incorporated the 'International Association of Public Participation (IAP2)' (IAP2, 2022) engagement spectrum in which engagement activities were designed to 'Inform', 'Consult', 'Involve', 'Collaborate' and 'Empower'.

The engagement undertaken by ENGIE includes consideration of the SEARs (**Appendix A**) and the following polices, guidelines and standards:

- Engagement Guidelines (DPIE, 2022);
- 'Social Impact Assessment Guideline for State Significant Projects' (SIA Guidelines) (DPIE, 2023);
- 'Wind Energy Guideline (DPE, 2016)';
- 'State Significant Development Guidelines – Preparing an Environmental Impact Statement' (DPE, 2022);
- 'International Association for Public Participation's Quality Assurance Standard' (IAP2, 2015); and
- 'Aboriginal Cultural Heritage Consultation Requirements for Applicants' (DECCW, 2010b).

5.3 STAKEHOLDER IDENTIFICATION

Stakeholders are persons or groups who are directly or indirectly affected by a project as well as those who have interests and/or the ability to influence its outcomes either positively or negatively.

ENGIE has identified stakeholders that may be affected by or have an interest or influence in the Project. Identification was undertaken during the scoping phase of the Project to enable community members to be part of the Project planning and development process, and to provide them with the opportunity to engage in a meaningful way at an early stage in the assessment process for the Project. Stakeholder identification was then updated during the development of the EIS for the Project.

Stakeholders were identified through various methods, including:

- The compilation of land ownership information;
- Consideration of the local and wider community, industry and service providers;
- Networking with different individuals and community organisations;
- Media advertisements;
- Newsletter distribution and community information sessions;
- Discussion with regulators; and
- Inclusion of all stakeholders referenced in the SEARs.

Table 5-1 lists the key stakeholders relevant to the Project, which have been grouped based on organisation type, individual interest or interaction with the Project.

TABLE 5-1 STAKEHOLDERS IDENTIFIED

Category	***Stakeholder***	***Description***
Community		
Landowners	• Host landowner (refer Section 2.4.1.1) • Associated landowners (refer Section 2.4.1.2)	Landowners hosting infrastructures of the Project or that have entered into an agreement. The Project could affect hydrology, soil, land capability and agricultural production. Agricultural activities will continue during operation of the Project, and disturbance to soil will be temporary and minimal. The Project will provide a diversified income stream, which can assist host Landowner in making farm more resilient to the impacts of droughts, fires and commodity price fluctuations.
	• Adjacent landowners - non-associated (refer Section 2.4.1.2)	Landowners located on land adjacent to the Project Area, with a potential to be affected by the Project construction and/ or operation. Impacts may include noise, visual, land use and agriculture. Based on technical assessments undertaken for this EIS and the implementation of mitigation measures, the Project will not impact any adjacent non-associated landowners located within the Study Area. As necessary, the Applicant will engage with immediate non-associated Project neighbours regarding agreements that may be executed to address 'perceived' impacts of the Project.
	• Nearby landowners - non-associated (refer Section 2.4.1.2)	Nearby Landowners with a potential to be affected by the Project construction and/ or operation, particularly along the Project construction access route, or that may have views of the Project. Based on technical assessments undertaken for this EIS and the implementation of mitigation measures, nearby non-associated Landowners will not be affected by the Project.
Nearby communities, business and groups	• Local community members • Local religious organisations, schools and clubs • Local churches, such as Hay Baptist Church of Hope, Saint Andrew's Presbyterian Church, St Fergal's Catholic Church • Primary and high schools, such as Hay Public School, Hay Memorial High School and Saint Mary's Primary School • Sporting organisations, such as Hay Bowling & Golf Club Regional Centres • Local media	Nearby communities and community groups have the potential to be affected by the Project, particularly during the construction phase of the Project with the influx of workforce and service and infrastructure requirements. Impacts will generally be positive through capital investment, the provision of employment and generation of clean energy.

Category	*Stakeholder*	*Description*
	• 2Hay FM Community Radio • ABC Radio Riverina • Deniliquin Pastoral Times • The Land (Australian Community Media) • The Riverine Grazier • WIN News Riverina • Business groups, suppliers and economic groups • Industry Capability Network • Murray-Riverina Business Chamber • Regional Development Australia – Riverina and Murray Murray-Riverina Business Chamber • Regional/local suppliers and businesses	
Industry and interest groups	• Clean Energy Council • NSW Farmers Association • Local Land Services • NSW Irrigators' Council • CAN Assist • Interreach • Country Women's Association • Agricultural Tours Riverina • Murray Regional Tourism • Destination Riverina Murray • TAFE – Lani Houston (local team leader)	
Aboriginal Stakeholders		
Aboriginal communities and groups	Registered Aboriginal Parties (RAPs) groups and individuals: • Wakool Indigenous Corporation • Pappin Family Aboriginal Corporation • Hay Local Aboriginal Land Council (LALC) • Deniliquin LALC • Bangerang Aboriginal Corporation • Yarkuwa Indigenous Knowledge Centre Other Aboriginal groups and individuals: • Hay Aboriginal Working Party (HAWP) • Konanggo Aboriginal Cultural Heritage Service • Miyagan Culture & Heritage • Riverina Murray Regional Alliance	Specific cultural values of importance to Aboriginal parties may be affected by the Project. Refer to **Section 6.7** and **Appendix H**. Individual names have been removed from the public exhibition version.

Category	Stakeholder	Description
Aboriginal Agencies	• Office of the Registrar - Aboriginal Land Rights Act 1983 • Heritage NSW • Hay LALC • Deniliquin LALC • Riverina Local Land Services (LLS) • National Native Title Tribunal (NNTT) • Native Title Services Corporation (NTS Corp)	
Other Industry and Stakeholders		
Infrastructure Owners	• Water NSW • TransGrid • NSW Government Telco Authority • Geoscience Australia • Optus • Telstra • Vodafone • Bureau of Meteorology	Infrastructure located within the Project Area could be affected by the Project during construction. Restrictions and covenants have been considered in this EIS and will not be impacted by the Project.
Exploration holders	• None (as per Section 2.4)	
Regulatory		
Federal Government representatives	• Member for Farrer, the Hon Sussan Ley MP • Australian Energy Infrastructure Commissioner, Andrew Dyer	The Project is aligned with specific regulatory requirements and provides mitigation measures to achieve compliance as required (refer **Appendix B**).
State Government representatives	• NSW Minister for Energy and Environment, the Hon Penny Sharp • Member for Murray, Helen Dalton MP	
Local Councils	• Hay Shire Council representatives and executives including: – General Manager: David Webb – Director Planning and Development: Jack Treblanche – Mayor – Cr Carol Oataway – Deputy Mayor – Cr Lionel Garner – Cr. Geoff Chapman – Cr. Jenny Dwyer – Cr. Peter Handford	

Category	Stakeholder	Description
	– Cr. Paul Porter – Cr. Martyn Quinn – Cr. Darren Clarke • Edward River Council representatives and executives including General Manager, Phil Stone, Director Infrastructure, Mayor, and Deputy Mayor • Other Local Councils including Berigan Shire Council, Carrathool Shire Council, Murray River Council, Murrumbidgee Council, and Riverina & Murray Joint Organization (RAMJO)	
State Government Agencies and Representatives	• DPHI – Planning, Crown Lands • Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Water, Heritage NSW, Biodiversity and Conservation Division (BCS) • DPI – Agriculture, Fisheries • NSW National Parks and Wildlife Service (NPWS) • NSW Rural Fire Service (NSW RFS) • Fire and Rescue NSW (FRNSW) • Mining, Exploration and Geoscience (MEG) • Transport for NSW (TfNSW) • NSW Environmental Protection Authority (EPA) • Member for Murray • NSW Minister for Energy • NSW Minister for Environment and Heritage • Riverina LLS • Office of the National Wind Farm Commissioner • Regional Development Australia (RDA)	
Australian Government Agencies and Representatives	• Australian Department of Climate Change, Energy, Environment and Water (DCCEEW) • Civil Aviation and Safety Authority (CASA) • Airservices Australia • Australian Energy Infrastructure Commissioner • Member for Farrer • Minister for the Environment and Water	

5.4 ENGAGEMENT CONDUCTED

ENGIE has developed communication materials and an extensive engagement program to discuss the Project with stakeholders and to build an understanding of potential concerns, opportunities and mitigation strategies as part of the EIS and scoping phase. It also aimed to gather information that could inform the broader communication required to support future stages of the Project including during the delivery stage.

Appendix D provides a summary of a range of engagement activities and tools deployed to consult with and seek feedback from the various stakeholders of the Project.

The engagement activities used in the engagement process with various stakeholders include:

- Stakeholder and feedback database to record stakeholders engagements and feedback received during engagement;
- Project's website, email address, phone calls and video calls were established to promote community awareness on the most up to date information of the Project and address any concerns;
- Community Information Hub (Hub) is a dedicated Project's physical space for the community and stakeholders to speak with a representative from the Project and get informed. The hub also provides a space for school groups to learn more about renewable energy and REZs;
- Frequently Asked Questions (FAQs), Project visualisation video, public relations and media advertisement, briefings, factsheets and newsletters were developed to share Project key updates, messages, milestones, announcements and answer community common questions;
- Project site visits, community survey, community drop-in/ information sessions and one-on-one meetings were undertaken during development of the EIS to discuss the Project, answer questions and address concerns on a range of technical environmental and social aspects; and
- Sponsorship programs:
    - Rainbow on The Plains Festival is a 3-year sponsorship wit funds provided by the Applicant; and
    - The Community sponsorship program established by the Applicant with the aim to support the local community and share the benefits of the Project. **Table 5-2** provides a summary of the fundings, over $40,000, awarded to 14 local community groups and not for profit organisations assisting key areas including mental health, environment, First Nations, and education.

TABLE 5-2 RECIPIENTS OF 2023 SPONSORSHIP PROGRAM

Community Group	***Project/Event***	***Amount (AUD)***
Women About Hay Inc	Wellness Day	$2500.00
Hay Junior Rugby League	Hay Junior Rugby League competition season-uniform purchase(jersey/shorts/socks)	$1000.00
Hay Local Aboriginal Lands Council (LALC)	HAY NAIDOC CELEBRATIONS	$5000.00
Nari Nari Tribal Council	Men's Mental Health Weekend	$2000.00
Hay Plains Landcare	Native Garden and Bush Tucker Demonstration Site	$5000.00
Hay Public School Parents and Citizens Association	New Playground Equipment for Hay Public School	$1000.00
CASE (Community Action 4 Suicide Elimination, Hay)	Ongoing Training and Education in support of Mental Health Issues in the Community.	$5000.00
Hay Incorporated	Hay Inc Rural Education Program	$4000.00
Hay Tennis Club	Hay Tennis Club Entry and Fence Upgrade	$1000.00
Country Education Foundation Edward River Region	CEFERR - supporting young people to follow their post school aspirations'	$2000.00
Hay Aboriginal Community Corporation Working Party	Empowering Futures: Expanding Aboriginal Services	$5000.00
HAY SHOW SOCIETY INC	Annual Hay Show	$5000.00
Hay Amateur Swimming Club	Dive into Safety: Funding for the Ultimate First Aid Kit for Hay Amateur Swimming Club	$3,621.75
Hay Lions Football Netball Club	Indigenous round	$1000.00

A total of 572 engagement activities have been undertaken since the launch of the Project as shown in **Figure 5-1** and a number of topics have been discussed as shown in **Figure 5-2**.

Since the conception of the Project there have been 8 campaign emails, 9 phone calls, 60 emails, 21 meetings and 1 community information session with government agencies as shown in **Figure 5-3**.

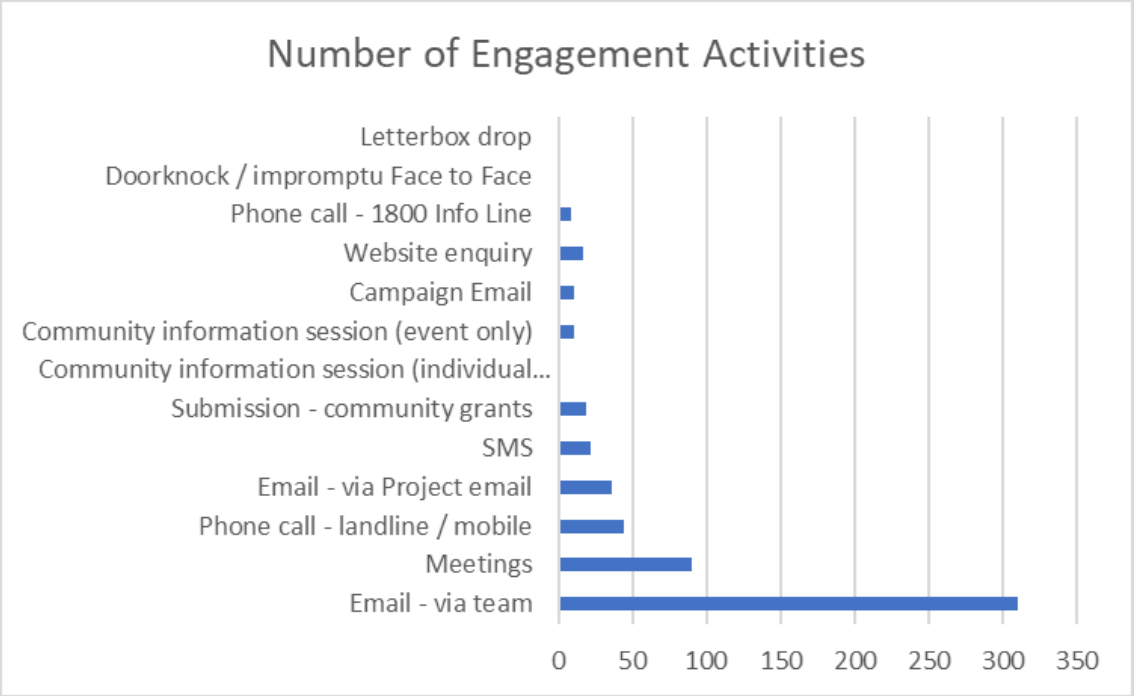


FIGURE 5-1 ENGAGEMENT ACTIVITIES FOR ALL STAKEHOLDERS UNDERTAKEN FOR THE PROJECT

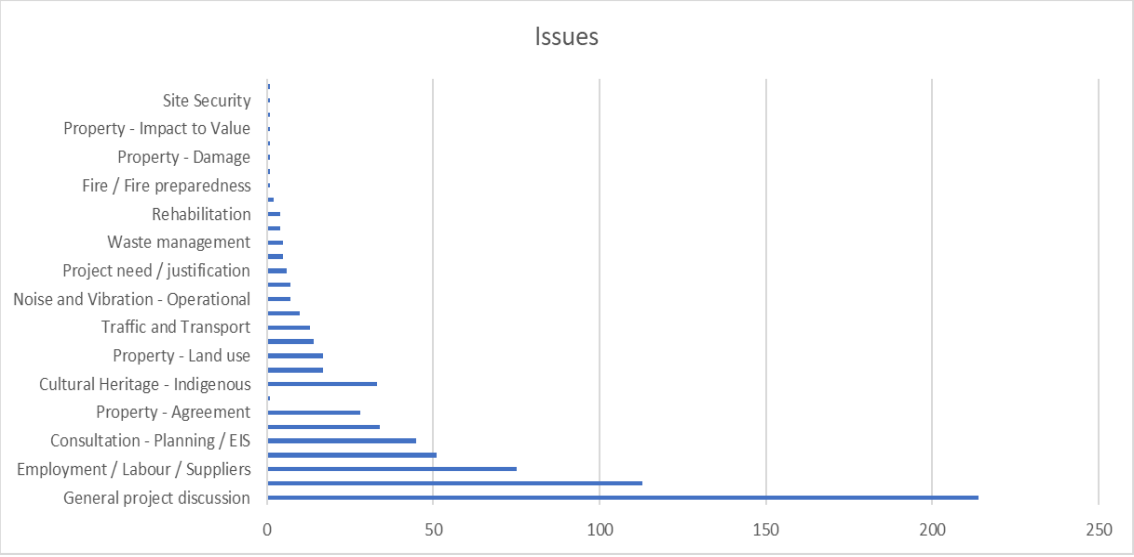


FIGURE 5-2 TOPICS RAISED DURING ENGAGEMENT ACTIVITIES FOR THE PROJECT

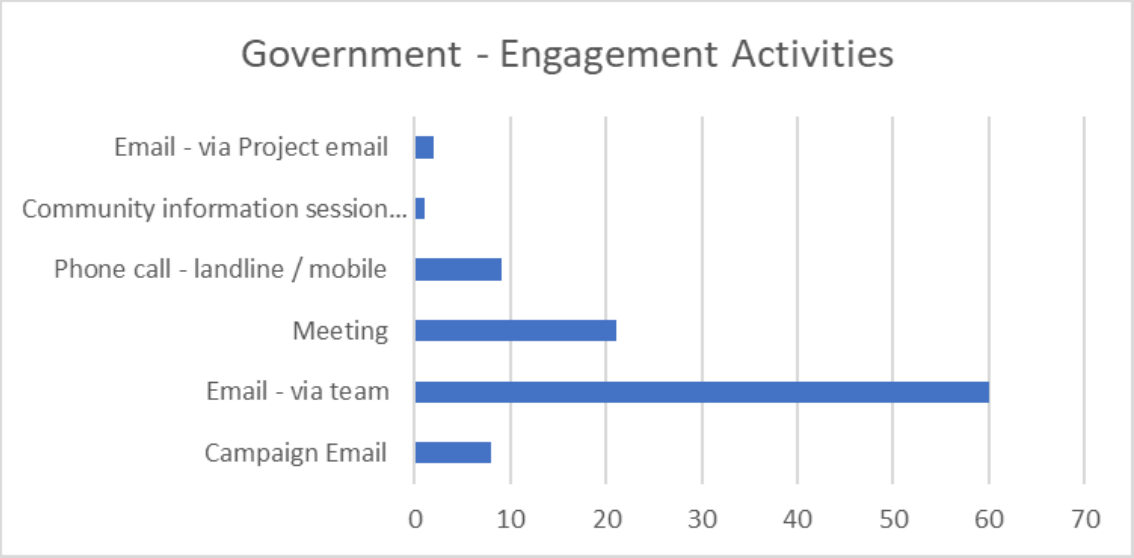
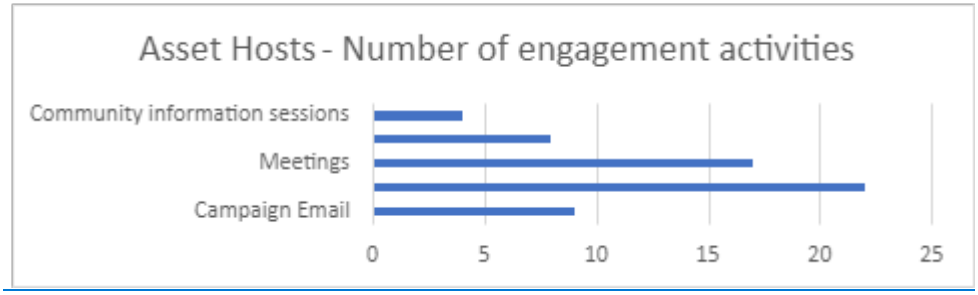
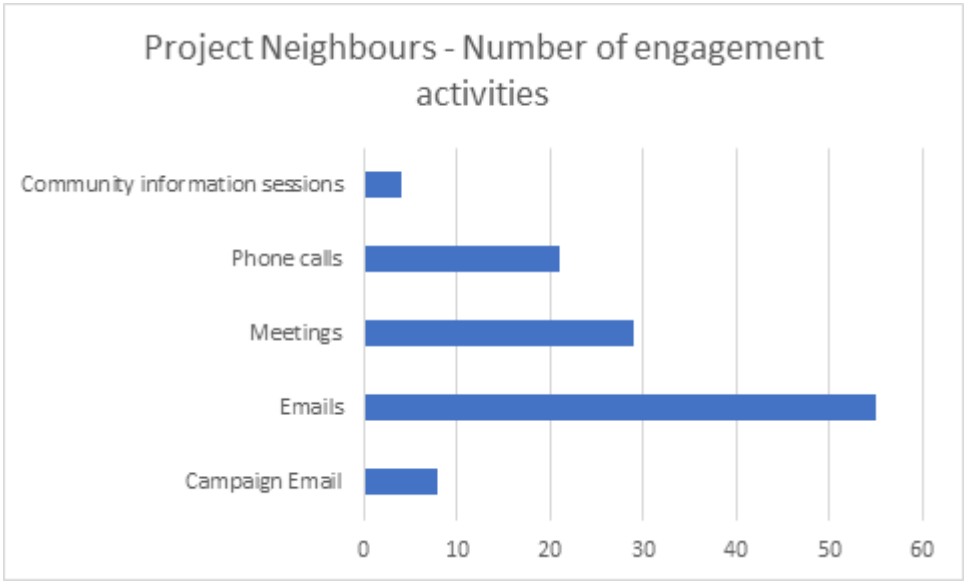


FIGURE 5-3 ENGAGEMENT ACTIVITIES FOR GOVERNMENT AGENCIES

Table 5-3 provides a summary of the engagement activities undertaken with the community during EIS progression.

TABLE 5-3 COMMUNITY/INDUSTRY STAKEHOLDER ENGAGEMENT

Stakeholder	***Engagement Activities***
Nearby Landowners	Specific targeted engagement was undertaken with nearby landowners including face to face meetings, phone and email correspondence. The purpose of the engagement was to inform these stakeholders of the Project and specific matters, encourage them to ask questions and seek their feedback. It was also to understand specific concerns and provide information regarding the potential extent of the impact. The consultation included sharing preliminary results through photomontages and noise results which allowed these concerns to be addressed early and a more open attitude towards the Project to be explored. As shown in **5-4**, 9 campaign emails, 8 phone calls, 22 emails, 17 face-to-face meetings and 4 community information sessions were carried out with host landowners.  **Figure 5-4 Engagement activities with host landowners** As shown in **Figure 5-5**, there have been 9 campaign emails, 9 phone calls, 34 emails, 12 face-to-face meetings and 4 community information sessions with neighbours to the Project.

Stakeholder	Engagement Activities
	 **Figure 5-5 Engagement activities with nearby landowners**
Community Members/ Individuals	Specific one-on-one meetings were undertaken with interested community members including engagement at the Community Hub, face to face meetings, phone and email correspondence and tailored emails to community member's interested. Community members were encouraged to ask questions and provide feedback. Regular updates were provided throughout the EIS preparation. Details of the NBSP was communicated to the community via the April 2023 newsletter delivered to 1396 residences, and via email to 92 subscribers.
Traditional Owners	An Aboriginal Engagement Strategy was developed by the Applicant to provide a roadmap for respectful and reciprocal involvement. The strategy aimed to assist ENGIE and the local Aboriginal community to achieve positive outcomes for Country and community from the Project. It profiles the local Aboriginal community and maps the key relevant Aboriginal stakeholders and outlines the key principles for engagement with first nations community. Consultation for the Aboriginal Engagement Strategy was undertaken with three Traditional Owners in Hay including the Hay LALC, the Southern West Yiradyuri Clans Land, Water and Sky Country Aboriginal Corporation and the HAWP with face to face meetings, a co-design workshop, emails and phone calls.

5.5 STAKEHOLDER VIEWS SUMMARY

Table 5-5 provides a summary of the community views on the Project and how the issues raised have been addressed in this EIS. Most of the interest was received from the local community (within 5 km of the Project Area), and moderate interest from the regional community (between 5 km and 100 km of the Project Area). Issues beyond scope raised during engagements include the access rights process for the South West REZ.

Evaluation and Justification of the Project in relation to the issues identified are discussed in detail in **Section 6** and **Section 7**.

Community and regulators engagement undertaken during the EIS phase are detailed in **Appendix D**. A summary of stakeholder consultation held during the Scoping phase regarding the Project is provided in Section 5.3 of the Scoping Report (The Plains Wind Farm | Department of Planning Housing and Infrastructure).

5.6 RESPONSE TO ENGAGEMENT REQUIREMENTS

The Engagement Guidelines require upfront and ongoing engagement for all SSD projects.

Table 5-4 provides a response to the Engagement Guidelines, how the Project was consistent with the community participation objectives and the engagement requirements during EIS phase.

TABLE 5-4 ENGAGEMENT GUIDELINES AND WHERE ADDRESSED

Requirement	***Where Addressed***
Consistent with the community participation objectives:	
• *Identify the people or groups who are interested in or are likely to be affected by the Project*	**Section 5.3**
• *Use appropriate engagement techniques when engaging with specific groups;*	**Section 5.4**
• *Ensure the community are provided with safe, respectful and inclusive opportunities to express their views*	
• *Involve the community, councils and government agencies early in the development of the proposal, to enable their views to be considered in project planning and design*	**Section 5.4**
• *Be innovative in their engagement approach and tailor engagement activities*	**Section 5.2**
• *Provide clear and concise information about what is proposed and the likely impacts for the relevant people or group they are engaging with*	
• *Clearly outline how and when the community can be involved in the process*	
• *Make it easy for the community to access information and provide feedback*	
• *Seek to understand issues of concern for all affected people and groups and respond appropriately to those concerns*	**Sections 5.5** and **5.6** **Appendix D**
• *Provide feedback about how community and stakeholder views were used to shape the project or considered in making decisions*	

Requirement	***Where Addressed***
• *Be able to demonstrate how the demography of the area affected has been considered in how and what engagement activities have been undertaken*	**Section 5**
Preparing the EIS the Applicant must:	
• *Implement any engagement activities required by the SEARs (including engagement with relevant government agencies, council and the community)*	**Section 5** **Appendix D**
• *Inform the community about the opportunities to engage*	**Section 5**
• *Explain how community feedback will be considered and documented*	**Section 5.5** **Appendix D**
• *Provide relevant information in plain English so that potential impacts and implications can be readily understood*	**Section 6**
• *Be clear about the level of influence engagement will have by identifying what elements can be changed as a result of feedback*	**Sections 5** and **6**
• *Give the community the opportunity to voice their concerns or share local knowledge so that this information can be considered early on in the planning, design and assessment*	**Section 5**
• *Consider the issues raised by the community, council and relevant government agencies when making Project refinements and accurately reflect how these issues have been addressed in EIS documentation*	**Sections 2.7.4** and **6**
• *Keep the community, council and relevant government agencies informed with up-to date information on the Project.*	**Section 5.5**
The community is able to:	
• *Seek clarification about the Project and its impacts*	**Section 5**
• *Provide timely feedback to the Applicant about aspects of the Project which they support, do not support or wish to be adjusted*	**Section 5**
• *Provide clear reasons for any concerns to enable the Applicant to consider possible alternative approaches to address the issues*	**Section 5.5** **Appendix D**

TABLE 5-5 STAKEHOLDERS ISSUES SUMMARY

Stakeholder Category	***Level of Interest / Geographic Extent1***	***Stakeholder Views on the Project***				
		Strategic Context	***Design and Alternatives Where Addressed***	***Statutory Issues***	***Engagement***	***Impacts Assessment***
Community						
Host Landowners	High Interest and Local	The flat nature of the plains	Project design has undergone host landowner consultation since 2021 with regular ongoing engagements	Agriculture	Ongoing as the Project develops, as discussed in Section 5 and Appendix D	**Section 6.9**
Neighbours	High Interest and Local	The flat nature of the plains	Regular engagement with Project neighbours began in August 2022 and has been ongoing regularly with monthly visits to the area and email and phone calls.	Visual, Benefit Sharing	Ongoing as the Project develops, as discussed in Section 5 and Appendix D	**Section 6.4** and **Section 2.6**
Local Community	Medium Interest and Local	Historic buildings, flat nature of the plains	The wind farm area has been optimised to avoid impacts to sensitive areas of biodiversity.	Glint and Glare, Traffic and Transport, Benefit Sharing	Throughout the EIS, as discussed in Section 5 and Appendix D	**Section 6.6.1** **Section 6.5** and **Section 2.6**
First Nations Community	High Interest and Local	Aboriginal Heritage and areas of Cultural significance	Engagement with Hay LALC and HAWP has taken place since 2022 to understand any areas of concern and address them appropriately with avoidance being the key first design step.	Aboriginal Cultural Heritage	As per State guidelines. Ongoing as the Project develops, as discussed in Section 5 and Appendix D	**Section 6.7**

[1] As specified in the EIS Guidelines - Local < 5 km from the Project Area, regional: 5-100 km and state > 100 km.

Stakeholder Category	***Level of Interest / Geographic Extent1***	***Stakeholder Views on the Project***				
		Strategic Context	***Design and Alternatives Where Addressed***	***Statutory Issues***	***Engagement***	***Impacts Assessment***
Regulatory						
Biodiversity Conservation Directorate (BCD)	High Interest and Regional	Biodiversity	Engagement with BCD as mentioned in Appendix D to discuss the Project design, survey methodology and opportunities for optimising design to avoid impacts to biodiversity and reduce where possible.	Biodiversity, Hydrology	Ongoing engagement or as per guidelines, as discussed in Section 5 and Appendix D	**Section 6.2** and **Section 6.10**
Hay Shire Council	High Interest and Local	Planning	Regular engagement with Hay Shire Council on a range of topics to improve Project planning and design, housing, traffic, and transport, visual, benefit sharing	Planning, benefit sharing, VPA	Ongoing as the Project develops, as discussed in Section 5 and Appendix D	**Section 2.6**
Heritage NSW	Medium and Regional/State	Aboriginal Heritage	Meetings and discussions with Heritage NSW regarding surveys and AHIP process.	Aboriginal Cultural Heritage	Ongoing engagement or as per guidelines, as discussed in Section 5 and Appendix D	**Section 6.7**

5.7 FUTURE ENGAGEMENT

Ongoing engagement with stakeholders will be undertaken during the EIS public exhibition and assessment phase to ensure up to date information is provided and two-way communication continues. This engagement will include (but not be limited to):

- Enter into a VPA;
- Ongoing meetings with relevant regulators regarding planning and design, especially required intersection upgrade, and construction programming;
- Ongoing consultation with other regulatory agencies during preparation of the response to submissions report;
- Ongoing consultation with community and regulatory stakeholders via various methods;
- Create a Community Guide to the EIS and distribute to the local community and publish online;
- Create a factsheet based on community feedback received during the social research undertaken in May 2023
- Ongoing monitoring of community phone line and email for complaints and other feedback from the community;
- Maintaining the Project website and other social media channels with regular updates during development and construction period of the Project; and
- Ongoing media relations into the future to drive community awareness around the Project.

ENGIE recognises the importance of consistent, targeted and meaningful engagement and will continue to work with stakeholders and the local community and create opportunities for them to provide input and feedback throughout the planning approval process and throughout construction and ongoing operations.

Engagement approaches will also be regularly monitored, reviewed and adapted over the course of the Project to ensure it remains effective and encourages community participation.

Should the Project be approved, a Construction Environmental Management Plan (CEMP) will be prepared prior to the commencement of construction for the Project that will include a process for receiving and responding to community complaints.

6. IMPACT ASSESSMENT

This section provides information on the range of economic, environmental and/or social aspects that may be influenced to varying degrees by the Project. These aspects are assessed with consideration of the Project SEARs, supplementary SEARs, relevant standards and/or performance measures and stakeholder engagement as described in **Section 5.**

6.1 CATEGORISATION OF IMPACTS

Preliminary investigation undertaken during the preparation of the scoping report (ERM, 2022) helped to identify the potential impacts to environmental and social aspects associated with the Project and the required level of assessment (detailed or standard). These assessments are addressed in this EIS.

Where an issue has been established as standard, this has been on the basis that it is well understood, industry-wide and non site-specific, has been found to not apply to wind farms, or an industry standard approach is available which adequately addresses the issue.

This section considers all regulatory requirements as listed in **Appendix A**.

Table 6-1 lists the environmental, social and economic aspects relevant to the Project.

TABLE 6-1 PROJECT RISK ASSESSMENT

Level of Assessment	***Aspect***	
Detailed	Biodiversity	Noise
	Landscape and Visual	Traffic
	Aviation	Bushfire
	Blade Throw	Preliminary Risk Screening
	Telecommunications	Health and Electric and Magnetic Fields
	Aboriginal Heritage	Historic Heritage
	Soils and Agriculture	Water Resources, Hydrology and Flooding
	Economic	Social
Standard	Air Quality	Waste Management

6.2 BIODIVERSITY

A Biodiversity Development Assessment Report (BDAR) has been prepared to assess the impacts of the Project in accordance with the *Biodiversity Conservation Act 2016* (BC Act). The BDAR is summarised below and provided in **Appendix G**.

Field surveys were undertaken over eight (8) events from November 2021 to December 2023. The planned Spring 2022 surveys for threatened flora were abandoned due to weather events and flood conditions resulting in survey effort shortfalls (i.e., the project site was inaccessible for surveys). ENGIE have consulted with the BCS on 25th October 2022 and 28th June 2023 and commit to undertaking additional targeted threatened flora surveys.

Field surveys were undertaken over eight (8) events as follows:

- 26th October – 12th November 2021: Surveys included a general habitat assessment, paddock tree assessments, targeted flora surveys, nocturnal driven transects, bird utilisation surveys (BUS), biodiversity assessment method (BAM) plots, targeted avian area searches (in habitat suitable for the bush-stone curlew and major-mitchell cockatoo) and nocturnal call playback and spotlighting;
- 14th February – 25th February 2022: Surveys included a general habitat assessment, paddock tree assessments, BAM plots, anabat deployment, amphibian aural-visual survey, diurnal driven transects and BUS;
- 16th May – 20th May 2022: Surveys included a general habitat assessment, paddock tree assessments and BUS;
- 8th August – 18th August 2022: Surveys included a general habitat assessment, paddock tree assessments, BUS and nocturnal call playback.
- 21st February – 3rd March 2023: Surveys included a general habitat assessment, paddock tree assessments, BAM plots, targeted flora surveys, anabat deployment, Koala tree assessment, amphibian aural-visual survey, diurnal driven transects, nocturnal call playback and spotlighting and bird census;
- 18th September – 29th September 2023: Surveys included threatened flora transects;
- 13th November – 16th November 2023: Surveys included BUS; and
- 5th December 2023: Surveys included BAM plots.

A five-day survey was also undertaken between 17th and 21st of July 2023 by one ecologist to assess the transport route between the Port of Adelaide and the Subject Land. The NSW portion was assessed between the 18th and 21st July 2023. Surveys were undertaken via a meander of the pinch point sites. Vegetation at these survey locations was assessed via rapid vegetation assessment only, with no BAM Plots undertaken, nor vegetation zones delineated.

The definition of Subject land and Development footprint used in the BDAR differs from that used throughout the EIS. The terms used in the BDAR are prescribed under the Biodiversity Assessment Method (BAM) and are defined as:

- **Development Footprint**, which includes all permanent and temporary disturbance areas that may result from the construction and operation of the Project;

- **Subject Land**, which includes the Development Footprint plus a 100 m buffer applied to the this; and
- **Assessment Area**, which includes the Subject Land and a 500 m buffer surrounding the outside edge of the boundary of the Subject Land.

6.2.1 EXISTING ENVIRONMENT

6.2.1.1 LANDSCAPE FEATURES

The Project landscape context was assessed within the Subject Land and Assessment Area in accordance with Section 3.1 of the BAM and is outlined in **Table 6-2**.

TABLE 6-2 LANDSCAPE CONTEXT FOR THE STUDY AREA

Landscape Feature	***Description***
IBRA Bioregions and Subregions	The Subject Land and Assessment Area occur within the Murrumbidgee IBRA subregion (RIV02), of the Riverina IBRA Bioregion (RIV). This bioregion is dominated by river channels, floodplains, backplains, swamps, lakes and lunettes that are all of Quaternary age
NSW Landscape Regions (Mitchell)	The Subject Land is situated across two NSW Landscape Regions: • Murrumbidgee Scalded Plains; and • Murrumbidgee Depression Plains. Murrumbidgee Depression Plains has been applied to the BAM-C as it covers a greater portion of the Subject Land.
Rivers, streams, estuaries and wetlands	The Subject Land is located south of the Murrumbidgee River and north of the Coleambally Outfall Drain. There are four (4) first-order ephemeral creeks that intersect the Subject land, including Telegraph Creek, Abercrombie Creek, Curtains Creek and Nyangay Creek. There are no Ramsar Wetlands or Important Wetlands as listed in the Directory of Important Wetlands of Australia located within the Subject Land. Large ephemeral wetlands are present across The Plains Wind Farm Project Area, particularly within the western area of the site. Farm dams occur throughout the Subject Land. These artificial features possess relatively low vegetation quality with limited emergent or submerged vegetation, however, still provide a valuable resource for fauna.
Habitat connectivity	The Subject Land is predominantly present in a modified condition following a long history of clearing and grazing. Treed vegetation is present in low densities, largely restricted to natural drainage lines, with woodlands also scattered on sandy rises. The extent of this woody vegetation cover has been dramatically reduced by land clearing for agriculture. Native shrubland and grasslands are present in high densities, largely lacking canopy and shrub layers >1m. Connectivity across this open landscape is considered substantially low, with only remnant isolated patches of treed habitat identified.

Landscape Feature	***Description***
Areas of geological significance	There are no karsts, caves, crevices, cliffs or other geological features of significance within the Subject Land.
Area of outstanding biodiversity	The Subject Land is not identified as an area of outstanding biodiversity value, as identified under the BC Act.
Soil hazard features	There are no known significant soil hazard features within the Subject Land. A search of the NSW EPA Contaminated Sites Register, identified the closest sites recorded to the Subject Land. There is one site within the Hay Shire Council LGA and one site within Edward River Council LGA with former Declarations of Significantly Contaminated Land. All located in the town of Deniliquin over 60 km from the Subject Land.

A transport route is proposed for the delivery of Project components from the Port of Adelaide, South Australia (SA), to the Subject Land. The area of impact for this component of the Project is delineated separately to the Subject Land and Development Footprint. The Applicant proposes to undertake upgrades and modifications as required to 11 pinch points (PP) identified along the proposed transport route between the Port of Adelaide to the Subject Land.

The BDAR has only assessed the three (3) transport route PPs located in NSW. The area of disturbance as a result of the transport route, is referred to as the 'Transport Route Disturbance Footprint' (Transport Route DF, also referred to as Haul Route DF in the BDAR). Impacts associated within the Transport Route DF, associated with one identified PP (PP09A), requires assessment under the biodiversity offset scheme (BOS). As such, all impacts referenced throughout related to the Transport Route DF are associated with PP09A. The landscape features of the Transport Route DF are presented in **Table 6-3**.

TABLE 6-3 LANDSCAPE FEATURES (TRANSPORT ROUTE DF)

Landscape feature	***Description for the Transport Route DF***
IBRA Bioregions and Subregions	The Transport Route DF occurs within the Barrier Range IBRA subregion of the Broken Hill Complex IBRA Bioregion.
NSW Landscape Regions (Mitchell)	The Transport Route DF occurs within the Barrier Downs NSW Landscape Region.
Rivers, streams, estuaries and wetlands	No rivers, streams, estuaries or wetlands are present.
Habitat connectivity	The Transport Route DF is largely situated along existing tracks, bounded by Acacia and chenopod shrublands. This vegetation is considered to provide low levels of connectivity.
Karst, caves, crevices, cliffs, rocks or other	No Karst, caves, crevices, cliffs, rocks or other geological features of significance are present.

Landscape feature	***Description for the Transport Route DF***
geological features of significance	
Soil hazard features	A review of the Australian Soil Classification (ASC) Soil Type Map reveals Sodosols occur across the Pinch Point. Sodosols are texture-contrast soils with impermeable subsoils due to the concentration of sodium. These soils occupy a large area of inland Queensland. Generally, Sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed.
Areas of outstanding biodiversity value	Not applicable.

6.2.1.2 THREATENED AQUATIC ECOLOGICAL COMMUNITIES

The Subject Land is located south of the Murrumbidgee River and north of the Coleambally Outfall Drain. There are four (4) creeks mapped as intersecting the Subject Land:

- Telegraph Creek;
- Abercrombie Creek;
- Curtains Creek; and
- Nyangay Creek.

All mapped creeklines are ephemeral, first order waterways. During field survey events across 2021, 2022 and 2023 all natural creeklines were observed to be dry, presenting as minor depressions no greater than 1 m in relief. The creekline vegetation presents at times dominated by Lignum (Muehlenbeckia florulenta), Canegrass (Eragrostis australasica) and Nitre Goosefoot (Chenopodium nitrariaceum), common of low-lying depressions of the Hay Plains, with chenopod shrublands also occurring. These features are ephemeral, likely to only form water passage during and post heavy rainfall events.

There are no waterways mapped across the Transport Route DF.

A likelihood of occurrence assessment was undertaken for threatened aquatic entities across the Subject Land, informed by desktop sources (e.g., PMST and BioNet search results within 10 km) and the field survey results. Desktop sources identified *flathead galaxias* and *silver perch* as aquatic threatened species listed under the EPBC Act and BC Act that have been recorded previously or are predicted to occur within a 10 km buffer of the Subject Land.

No threatened aquatic species are known or likely to occur within the Subject Land. As such, and in accordance with the Threatened Species Assessment Guidelines: Assessment of Significance (DPI 2008), an assessment of significance for threatened species listed under the FM Act is not required.

The Lower Murray River endangered ecological communities (EEC) is a community that includes all native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes of the regulated portions of the Murray River downstream of Hume Weir, the Murrumbidgee River downstream of Burrinjuck Dam, the Tumut River downstream of Blowering Dam and all their tributaries anabranches.

The creeklines across the Subject Land are within the distribution of the EEC; however, largely present as degraded, dried creek beds with a lack of native fish and aquatic invertebrates.

6.2.1.3 PLANT COMMUNITY TYPES (PCTS)

Native vegetation across the Subject Land is comprised of ten PCTs. Vegetation Zones (VZs) across the Subject Land were identified and delineated based on these confirmed PCTs and their associated BAM plots to categorise VZs with similar levels of disturbance to growth form groups and/or extent of exotics. Nine (9) VZ's were identified as shown in **Table 6-4** and **Figure 6-1.**

Four (4) PCTs were identified within the haul route DF; however, each was found to present as a single condition state. In accordance with the streamlined assessment module for small area developments (applied only to the Transport Route DF), the dominant PCT for the Transport Route DF was identified as PCT 155. In the absence of plot-based data, a single VZ has been applied to this PCT, using the precautionary principal to assign high condition, as follows:

- Zone 10 – PCT 155 of high condition.

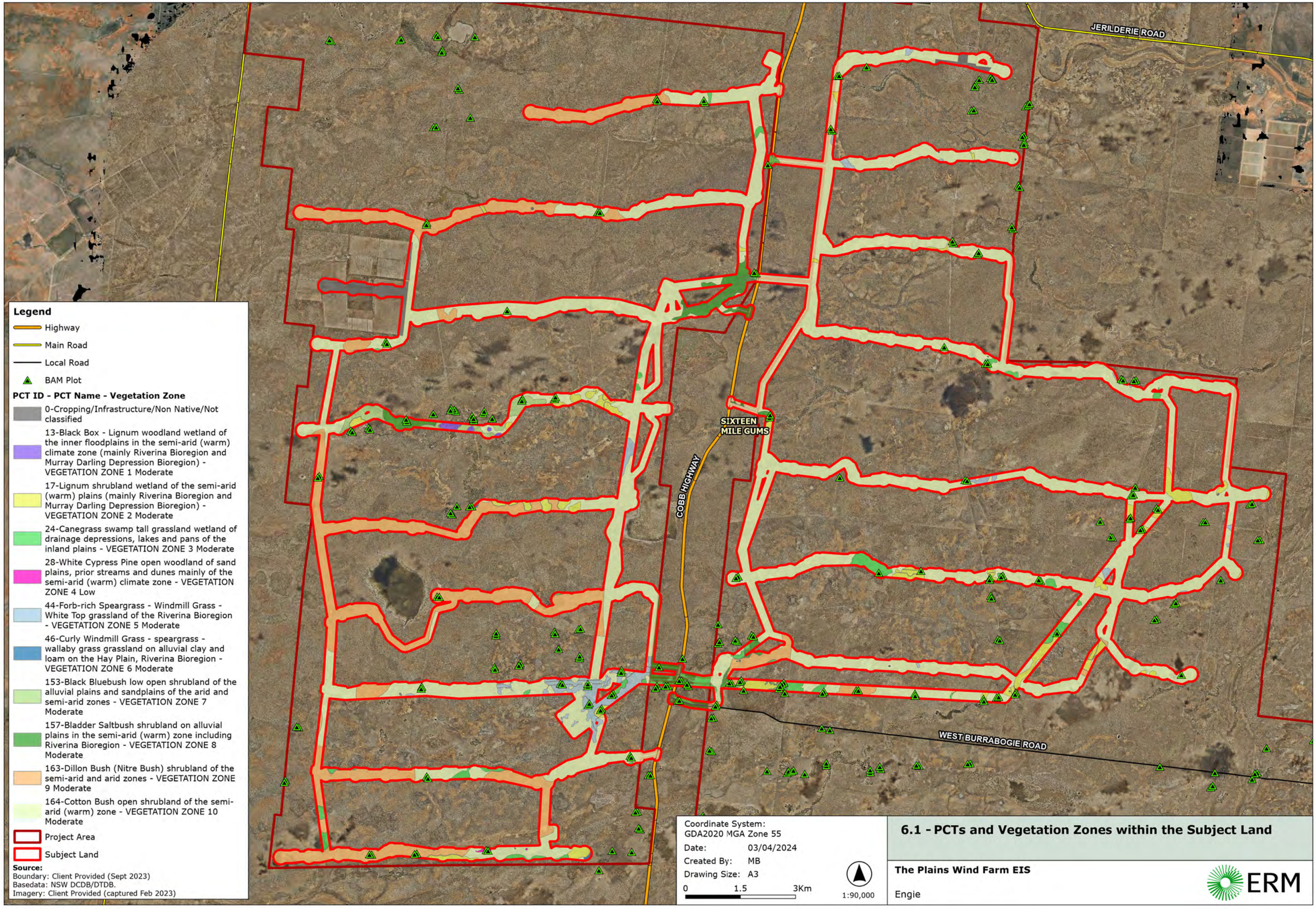
This is automatically populated in the Transport Route DF BAM-C as Vegetation Zone 1; however, is referred to as Vegetation Zone 10 throughout the BDAR.

TABLE 6-4 PCTS IDENTIFIED WITIHN THE SUBJECT LAND

PCT ID	PCT Name	Vegetation Zone ID	Condition	Disturbance Footprint (ha)	Subject Land (ha)
Within the Subject Land					
13	Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	1	Moderate	2.01	16.84
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	2	Moderate	87.09	355.96
24	Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	3	Moderate	57.33	254.71
28	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	4	Low	0.69	3.24
44	Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion	5	Moderate	73.63	222.56
46	Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	-	-	0.00	3.67
153	Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones	6	Moderate	18.48	98.31

PCT ID	***PCT Name***	***Vegetation Zone ID***	***Condition***	***Disturbance Footprint (ha)***	***Subject Land (ha)***
157	Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	7	Moderate	48.41	256.14
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	8	Moderate	392.64	1,600.89
164	Cotton Bush open shrubland of the semi-arid (warm) zone	9	Moderate	1,285.02	5,226.47
Total area				**1,965.33**	**8,038.78**
Within the Transport Route DF					
128	Nelia tall open shrubland of semi-arid sandplains	-	-	0.02	-
136	Prickly Wattle open shrubland of drainage lines on stony rises and plains of the arid climate zone	-	-	0.04	-
139	Prickly Wattle tall open shrubland of dunes and sandplains of semi-arid and arid regions	-	-	0.08	-
155	Bluebush shrubland on stony rises and downs in the arid and semi-arid zones	10	High	0.53	-
Total Area				**1.93**	-

While identified within the Subject Land, the mapped extent of PCT 46 (Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion) is wholly outside of the Development Footprint.



6.1 - PCTs and Vegetation Zones within the Subject Land

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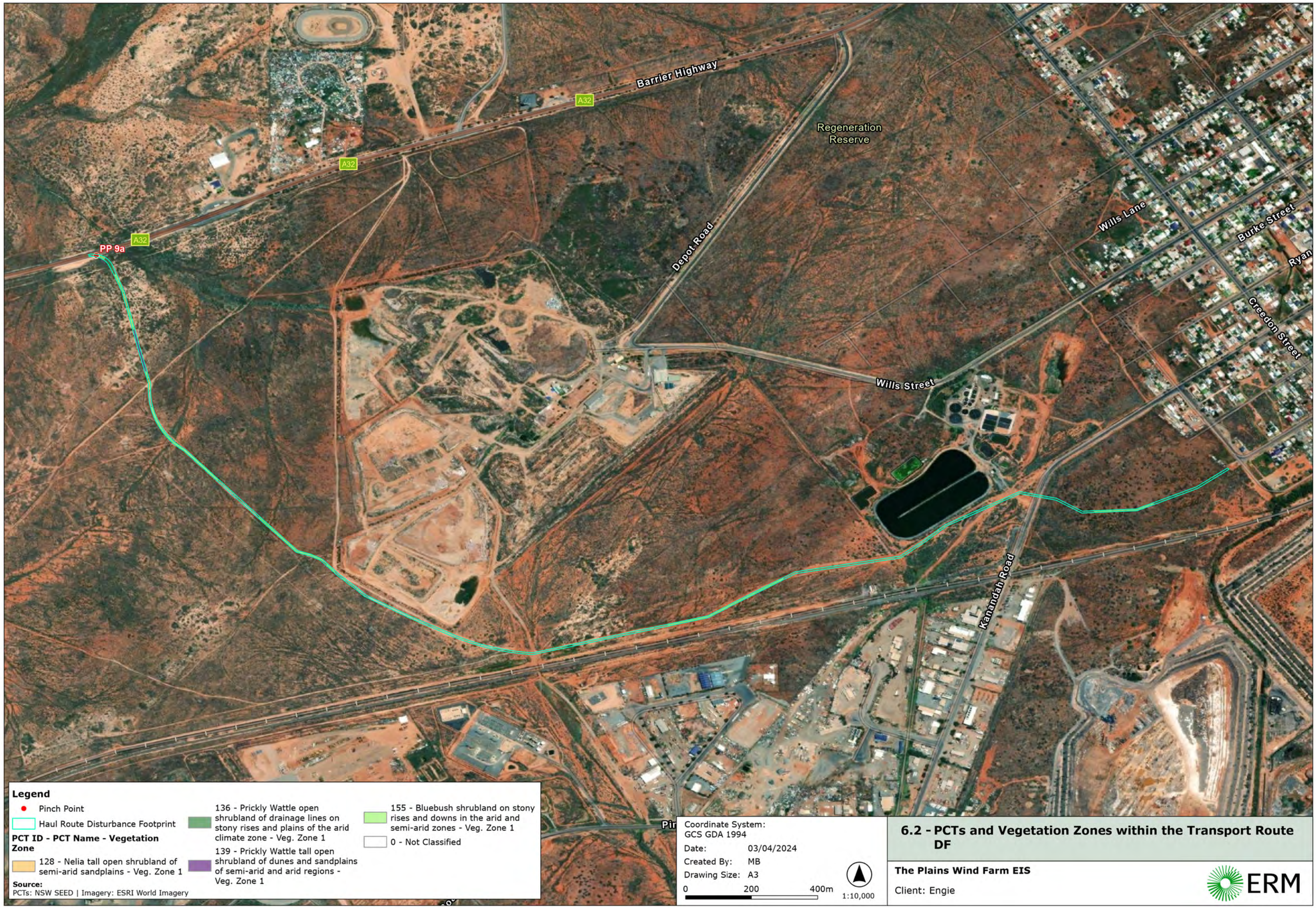

6.2 - PCTs and Vegetation Zones within the Transport Route DF

The Plains Wind Farm EIS

Client: Engie

ERM

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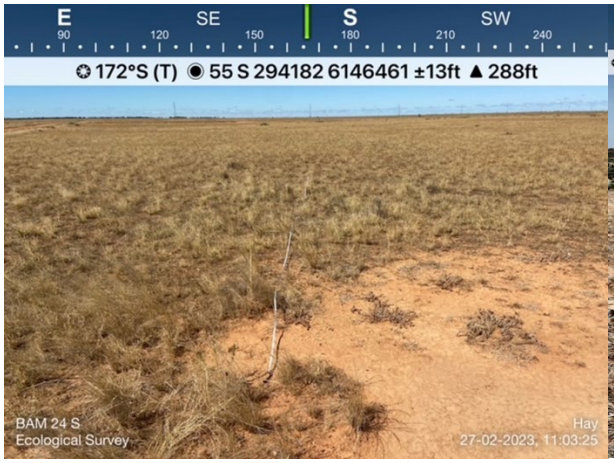
PHOTOGRAPH 1
PCT 13, VEGETATION ZONE 1

PHOTOGRAPH 2
PCT17, VEGETATION ZONE 2

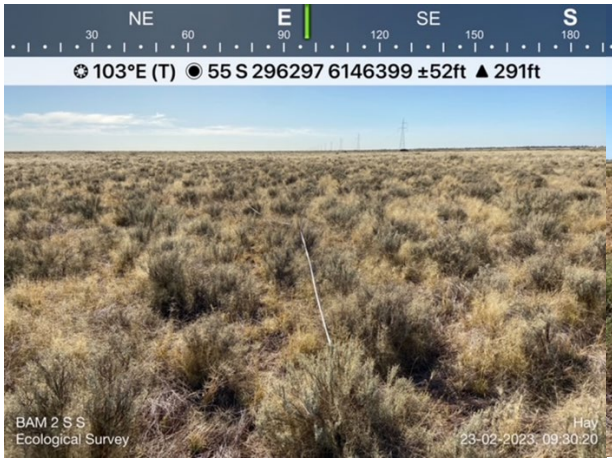
PHOTOGRAPH 3
PCT24 VEGETATION ZONE 3

PHOTOGRAPH 4
PCT 28, VEGETATION ZONE 4

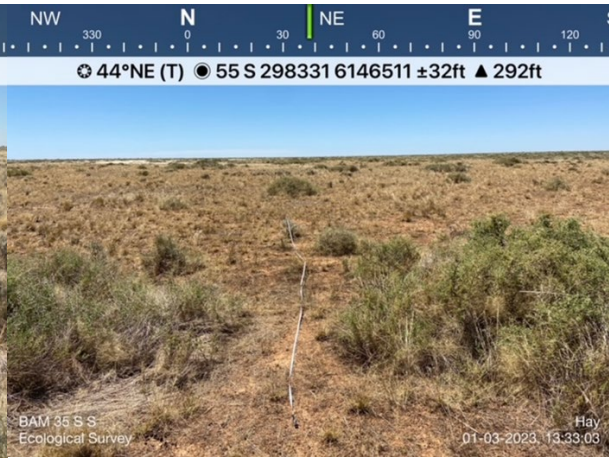


PHOTOGRAPH 5
PCT 44, VEGETATION ZONE 5

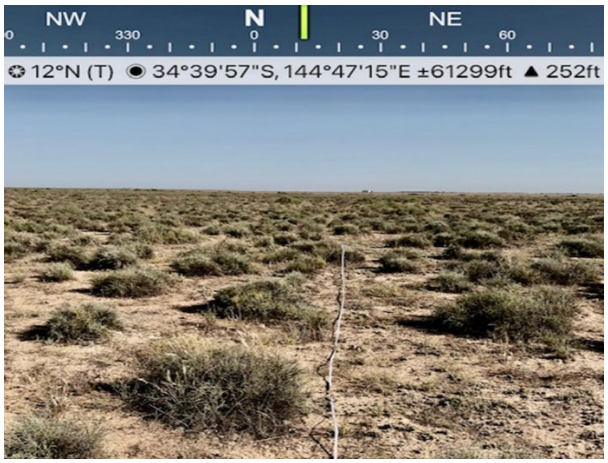
PHOTOGRAPH 6
PCT 153, VEGETATION ZONE 6



PHOTOGRAPH 7
PCT 157, VEGETATION ZONE 7



PHOTOGRAPH 8
PCT163, VEGETATION ZONE 8



PHOTOGRAPH 9
PCT164, VEGETATION ZONE 9

Four (4) EPBC Act Threatened Ecological Communities (TECs) were identified from desktop sources as having the potential to occur within the Subject Land. An additional five (5) TECs listed under either the BC Act and/ or EPBC Act have the potential to occur based on their association with PCTs. These communities are presented in **Table 6-5**.

TABLE 6-5 THREATENED ECOLOGICAL COMMUNITIES INVESTIGATION (SUBJECT LAND)

TEC	***BC Act***	***EPBC Act***	***Associated PCT***	***Recorded within the Subject Land***
Acacia loderi shrublands	E	-	PCT 153	No – No form of *Acacia* shrublands recorded across the Subject Land
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression Bioregions	E	-	PCT 28	No - No form of *Acacia* shrublands recorded across the Subject Land

TEC	***BC Act***	***EPBC Act***	***Associated PCT***	***Recorded within the Subject Land***
Artesian Springs Ecological Community in the Great Artesian Basin	CE	-	PCT 24, 163	No – Subject Land is situated outside distribution, TEC is restricted to north-western NSW.
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	-	E	-	No - No associated PCTs nor record of key diagnostic species, Buloke, recorded across Subject Land.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia	-	E	-	No – No associated PCTs nor key diagnostic species, Grey Box (*Eucalyptus microcarpa*), recorded across Subject Land.
Natural Grasslands of the Murray Valley Plains	-	CE	PCT 44, 46	No – The Natural Grasslands of the Murray Valley Plains TEC is listed as 'Critically Endangered' under the EPBC Act and at current, has no associated TEC under the BC Act. A substantial part of the ecological community lies within Victoria, in which it is listed under the Flora and Fauna Guarantee Act (FFG Act) as the threatened Northern Plains Grassland ecological community and this listing does not extend into the Murray-Darling Depression IBRA Bioregion.
Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions	-	CE	-	No - No associated PCTs nor mallee box woodland communities recorded across Subject Land.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E	-	PCT 28	Yes - Within the Subject Land, the BC Act listed TEC has been assessed against the 0.69 ha of PCT 28, prior streams and dunes mainly of the semi-arid (warm) climate zone present.
Weeping Myall Woodlands	-	E	-	No - No associated PCTs nor key diagnostic species, Weeping Myall (*Acacia pendula*), recorded across Subject Land.

Based on field verification surveys undertaken across the Subject Land, one (1) TEC (Sandhill Pine Woodland in the Riverina) is identified as occurring within the Subject Land and conforms to the BC Act listed TEC.

Three (3) PCTs mapped within the Transport Route DF have potential to be associated with TECs listed as Endangered under the BC Act. These include:

- *Acacia loderi* shrublands (PCT 155, 128 ,139); and
- *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (PCT 128).

Acacia loderi shrublands are a community dominated by the tall shrub or small trees, *Acacia loderi* with a low, diverse understorey dominated by chenopod sub-shrubs, herbs and grasses. Other tree species may occur in association with *Acacia loderi.* During the field survey event, rapid vegetation assessments were conducted across the entirety of the transport route to identify vegetation present. No occurrences of *Acacia loderi* were recorded, nor communities dominated by the species.

Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions is a community dominated by *Acacia melvillei*, typically occupying sandhills and undulating sandplains in south-western NSW. The communities shrub/tree layer is dominated by *Acacia melvillei,* either in pure stands or with a range of other less abundant trees or tall shrubs. During the field survey event, rapid vegetation assessments were conducted across the entirety of the transport route to identify vegetation present. No occurrences of *Acacia melvillei* were recorded, nor communities dominated by the species.

Based on field verification surveys, occurrences of *Acacia loderi* and *Acacia melvillei* are not present. The vegetation observed does not conform to any TECs listed.

6.2.1.4 BIRD COMMUNITY COMPOSITION

All habitats across the Subject Land were observed to conform to raptor habitat. While only woodland habitat was observed to support resident raptor nesting sites and had a relatively high levels of raptor activity, resident raptors are anticipated to inhabit the entire site.

During field surveys, raptor activity was observed to decrease with increasing distance to woodland patches, demonstrated through a decline in raptor observations at survey sites >300 m from such habitat. Despite this, raptor species are highly mobile and likely to use grassland, shrubland and non-native vegetation habitat across the site to support foraging behaviours (refer **Table 6-6**).

TABLE 6-6 RAPTOR HABITAT TYPE AND EXTENTS

Broad Habitat Type	***Vegetation Class (Keith 2004)***	***Extent in Subject Land (ha)***	***Extent in Development Footprint (ha)***
Woodlands	Inland Floodplain Woodland	16.84	2.01
	Riverine Sandhill Woodlands	3.24	0.69
Grasslands	Riverine Plain Grasslands	226.23	73.63

Broad Habitat Type	Vegetation Class (Keith 2004)	Extent in Subject Land (ha)	Extent in Development Footprint (ha)
Shrublands	Inland Floodplain Shrublands	610.67	144.42
	Aeolian Chenopod Shrublands	3.67	0
	Riverine Chenopod Shrublands	1955.34	459.57
Non-native Vegetation	Non-native Vegetation	139.90	31.69

Bird survey data was collected from 29 sites across four seasons.

6.2.2 HABITAT SUITABILITY FOR THREATENED SPECIES

Based on the PCTs that are within the Disturbance Footprint and that require assessment, the BAM-C identified a total of 16 species credit species for assessment (refer **Table 6-7**). Excluded species and justifications are included in Section 5 of **Appendix G**.

TABLE 6-7 THREATENED SPECIES AND SAII ENTITIES ACROSS THE SUBJECT LAND

Common Name	Scientific Name	BC Act Status	EPBC Act Status	SAII Entity and Record notes
Candidate Species				
Plains-wanderer	*Pedionomus torquatus*	E	CE	Subject Land
Winged Peppercress	*Lepidium monoplocoides*	E	E	PCT 44 across Subject Land.
Chariot Wheels	*Maireana cheelii*	V	V	PCT 44 across Subject Land.
Slender Darling Pea	*Swainsona murrayana*	V	V	Recorded across the Subject Land
Mossgiel Daisy	*Brachyscome papillosa*	V	V	Assumed present (Subject Land)
A Burr Daisy	*Calotis moorei*	E	E	Recorded within the Subject Land
A spear-grass	*Austrostipa wakoolica*	V	V	Assumed present within the Subject Land
Small Scurf-pea	*Cullen parvum*	E	-	Assumed present within the Subject Land
Creeping Darling Pea	*Swainsona viridis*	E	-	Assumed present within the Transport Route DF

Common Name	***Scientific Name***	***BC Act Status***	***EPBC Act Status***	***SAII Entity and Record notes***
Ecosystem Credit Species				
Black Falcon	*Falco subniger*	V	-	Subject Land & Transport Route DF
Redthroat	*Pyrrholaemus brunneus*			Transport Route DF
Spotted Harrier	*Circus assimilis*	V	-	Subject Land
Yellow-bellied Sheath-tailed Bat	*Saccolaimus flaviventris*	V	-	Subject Land
White-fronted Chat	*Epthianura albifrons*	V	-	Subject Land & Transport Route DF
Other Listed Species				
Southern Myotis	*Myotis macropus**	V	-	Subject Land
Southern Whiteface	*Aphelocephala leucopsis*	-	V	Subject Land

Based on candidate ecosystem credit species, species credit species, and result of field surveys, the potential Serious and Irreversible Impact (SAII) for the Subject Land and Transport Route DF were identified, with assessments for SAII impacts assessed for (refer **Figure 6-3**):

- Plains-wanderer (*Pedionomus torquatus*);
- A burr-daisy (*Calotis moorei*); and
- Creeping Darling Pea (*Swainsona viridis*).

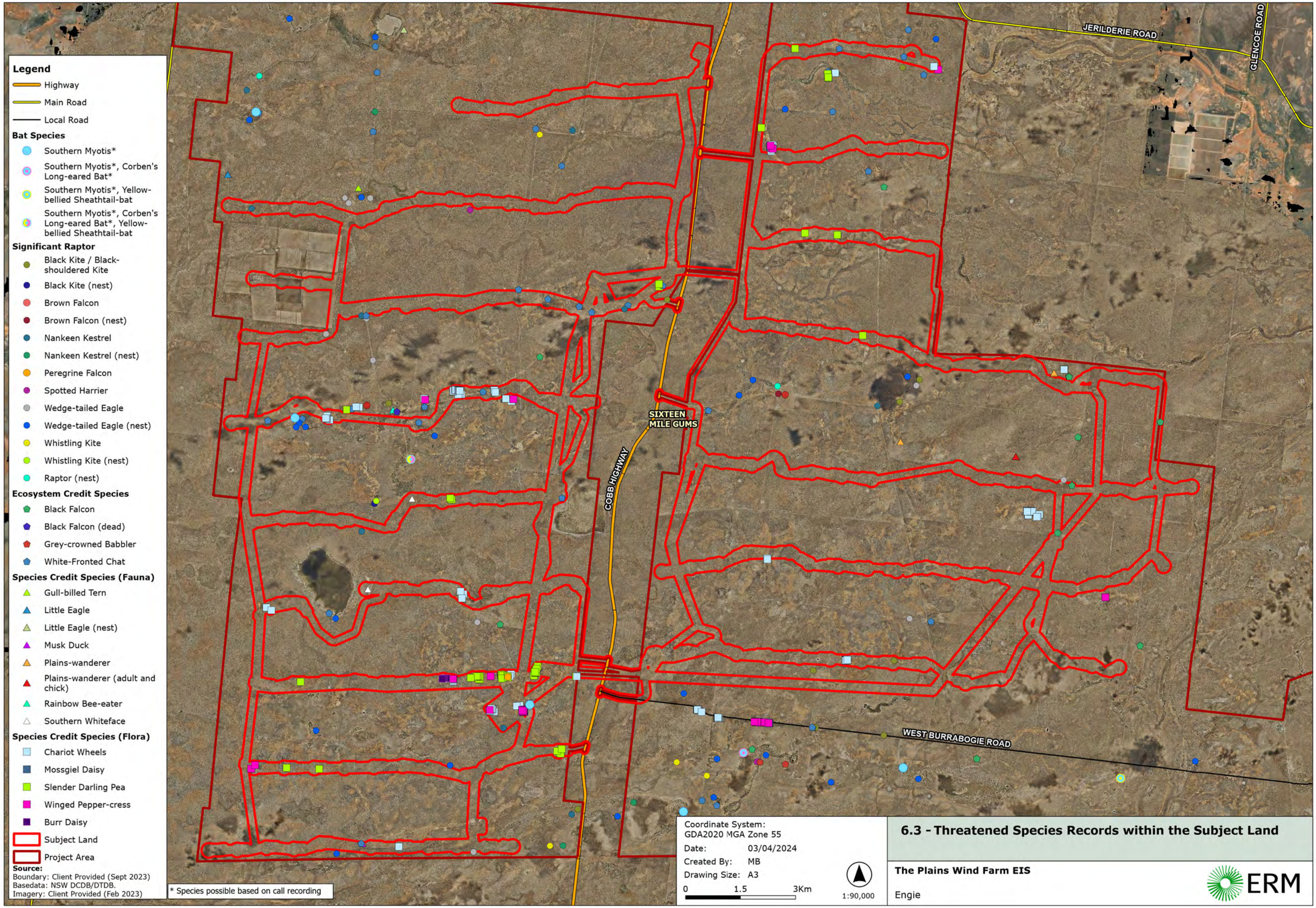
Targeted threatened flora surveys were completed across the Subject Land and Transport Route DF. Survey effort for several species did not meet BAM requirements due to adverse weather events and flood conditions restricting project site access; therefore, the following three (3) species credit species were assumed to be present the mapped extent across the Subject Land, including:

- A Spear-grass (*Austrostipa wakoolica)*;
- Mossgiel Daisy (*Brachyscome papillosa*); and
- Small Scurf-pea (*Cullen parvum)*.

One (1) species credit species is assumed to be present within the Transport Route DF:

- Creeping Darling Pea (*Swainsona viridis*).

The Applicant commits to undertaking additional targeted surveys during the response to submissions phase and in response to detailed project design for the above species where required.



6.3 - Threatened Species Records within the Subject Land

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6.2.3 IMPACT ASSESSMENT

6.2.3.1 DIRECT IMPACTS

The construction and operational phase of the development will result in unavoidable direct impacts to biodiversity values (e.g., change in vegetation integrity and habitat suitability) within the Subject Land and Transport Route DF. Direct impacts include habitat clearance, noise and disturbance associated with clearing and construction, and presence of infrastructure which may create barriers to movement.

The direct impacts of the development on native vegetation and threatened ecological communities are outlined in **Table 6-8**, and on threatened species and threatened species habitat are outlined in **Table 6-9**.

TABLE 6-8 DIRECT IMPACTS OF THE DEVELOPMENT

Entity directly impacted	***BC Act status***	***EPBC Act status***	***SAII entity***	***Project phase/timing of impact***	***Extent (ha)***
Zone 1 (PCT13_Moderate)	-	-	No	Construction	2.01
Zone 2 (PCT17_Moderate)	-	-	No	Construction	87.09
Zone 3 (PCT24_Moderate)	-	-	No	Construction	57.33
Zone 4 (PCT28_Low)	E	-	No	Construction	0.69
Zone 5 (PCT44_Moderate)	-	-	No	Construction	73.63
Zone 6 (PCT153_Moderate)	-	-	No	Construction	18.48
Zone 7 (PCT157_Moderate)	-	-	No	Construction	48.41
Zone 8 (PCT163_Moderate)	-	-	No	Construction	392.68
Zone 9 (PCT164_Moderate)	-	-	No	Construction	1,285.02
Zone 10 (PCT155_High)*	-	-	No	Construction	0.67

**Zone 10 relates to the Transport Route DF only*

TABLE 6-9 SUMMARY OF RESIDUAL IMPACTS TO THREATENED SPECIES AND THREATENED SPECIES HABITAT

Candidate Species Credit Species	***BC Act***	***EPBC Act***	***SAII entity***	***Project phase/ timing of impact***	***Loss of habitat (ha)***
Plains-wanderer Pedionomus torquatus	E[2]	CE[3]	Yes	Construction	5.35
A spear-grass Austrostipa wakoolica	V[4]	V	No	Construction	87.78
A burr-daisy Calotis moorei	E	E	Yes	Construction	46.29
Small Scurf-pea Cullen parvum	E	-	No	Construction	72.81
Winged Peppercress Lepidium monoplocoides	E	E	No	Construction	367.42
Chariot Wheels Maireana cheelii	V	V	No	Construction	1,036.75
Slender Darling Pea Swainsona murrayana	V	V	No	Construction	1,331.03
Creeping Darling Pea Swainsona viridis*	E	-	Yes	Construction	0.67

**Relates to the Transport Route DF only*

6.2.3.2 INDIRECT IMPACTS

Indirect impacts on native vegetation, threatened species and their habitat include those that may occur because of the Project in beyond the development footprint. These have been considered in accordance with the BAM. Despite the likelihood for indirect impacts, it is considered that the mitigation measures proposed (refer **Appendix B**) can minimise these impacts without causing harm to the adjoining environment. As such, no residual indirect impacts are expected.

6.2.3.3 PRESCRIBED IMPACTS

The Project is anticipated to have prescribed impacts as outlined below:

- Increased risk of mammal predatory species;
- Risk of Turbine Strike; and
- Increased risk of vehicle strike.

[2] Listed as endangered (E) under the BC Act or EPBC Act
[3] Listed as critically endangered (CE) under the BC Act or EPBC Act
[4] Listed as vulnerable (V) under the BC Act or EPBC Act

6.2.3.4 WIND TURBINE STRIKE

A worst-case scenario collision risk assessment has been undertaken for the Project (refer Section 7.1.4 of **Appendix G**). The collision risk model (CRM) indicates that approximately two birds are expected to collide with the WTGs per year assuming the lowest avoidance rate of 95%. Under scenarios with avoidance rates of 98% and 99% less than one bird is expected to collide with WTGs per year across all species.

In accordance with the draft BBAMP guidance provided by DPE (27th July 2023), the following aspects of the draft BBAMP have been detailed in **Appendix G**:

- BBAMP objectives and consent conditions;
- Baseline data;
- Proposed monitoring program;
- Preliminary turbine risk assessment;
- Proposed trigger action response plan;
- Offsetting and compensatory means; and
- Proposed turbine strike notification process.

The final BBAMP is to be prepared in consultation with the BCS, following approval of the Project.

6.2.4 AVOID, MINIMISE, AND MITIGATE

The Project design has been revised and refined for the EIS based on detailed assessments and in response to the identification and assessment of environmental limitations, constructability requirements, and consideration of the outcomes of agency, landowner, and community consultations. The Project design has aimed to avoid areas of biodiversity values as follows:

- Remnant woodland habitat and ephemeral wetlands across the Subject Land were identified as having high biodiversity value for resident and nomadic fauna, and in areas woodland constituted threatened ecological communities. The mapped extent of this habitat was avoided by the Project;
- Resident raptor nesting sites were identified during survey events and largely avoided, WTGs have been amended to be situated over 2 km from an identified Little Eagle nest;
- The Project has been designed to maximise use of existing public and internal access tracks across the Subject Land where possible, minimising vegetation clearance required and where possible preventing an increase to predatory access routes and activity;
- Where possible all occurrences of *Calotis moorei* will be avoided during final micrositing design;
- A Bird and Bat Adaptive Management Plan (BBAMP) will be prepared for the Project. The BBAMP will aim to minimise and manage the impact of operation of the WTGs associated with the proposed development on birds and bats that occur within the vicinity of the wind farm;

- A review of Important Mapped Areas for the Plains-wanderer and the mapped extent of suitable habitat in association with PCT 44 delineated areas across The Plains Wind Farm Project Area was undertaken. The Development Footprint has been designed to largely avoid Important Mapped Areas, with the impact being restricted to 5.35 ha associated with access tracks to be developed between transmission line towers and WTGs; and
- The transport route due diligence assessments were undertaken to identify the proposed transport route for oversized and overmass (OSOM) vehicles. Alternate transport routes were considered by the Applicant; however, they presented additional impacts relating to road upgrades, traffic management, and Project expenses.

A range of mitigation measures have been developed for the Project to mitigate the impacts to native vegetation and threatened species habitat that are unable to be avoided. These include a range of measures to be undertaken before and during construction to limit the impact of the Project. Each mitigation measure is discussed in detail in Appendix G, and a summary is provided in **Table 6-10**.

TABLE 6-10 SUMMARY OF PROPOSED MITIGATION AND MANAGEMENT MEASURES

ID	Mitigation measure	Method	Timing	Frequency	Responsibility
Removal of native and threatened species habitat and habitat features					
Bio1	Offsets	Residual impacts on habitat will be offset through the Biodiversity Offset Scheme. The residual impact of the Project is to be verified for all candidate species by way of completing seasonally appropriate targeted surveys. A revised offset liability is to be calculated for any reduction in the residual impact as calculated and stated in this report.	Detailed design	Planning phase	Applicant
Bio2	Vegetation clearing protocol	There is limited treed habitat present within the Subject Land, however where vegetation is to be removed it will be undertaken in accordance with specifications provided in a vegetation clearing protocol, detailed within the CEMP.	Pre-construction and construction phase	Throughout planning and construction phase	Construction contractor
Bio3	Plain wire instead of barbed used on perimeter fence and stock fencing	Plain wire perimeter fencing (opposed to barbed-wire fencing) will be used to avoid potential entrapment of fauna on fences.	Construction phase	Ongoing	Construction contractors
Bio4	Chemical Protocols	Protocols for the use of spraying exclusion zones around Plains-wanderers and their habitat to be implemented	Construction phase	Ongoing	Construction contractors
Impact to native vegetation					
Bio5	Delineation of clearing areas	To avoid unnecessary removal or damage to retained vegetation, the limit of clearing will be clearly demarcated with temporary fencing and signed as 'Environmental Sensitive No-Go Zones' prior to the commencement of clearing. This will be detailed within the CEMP, including measures: • Vehicles or machinery will not be permitted to park within or drive through areas of retained vegetation.	Pre-construction and construction phase	Throughout planning and construction phase	Construction contractor

ID	Mitigation measure	Method	Timing	Frequency	Responsibility
		• Construction materials will not be stockpiled or stored within areas of retained vegetation. • Ancillary facilities, such as site compounds and construction zones, will not be located beyond the limits of clearing. • Temporary fencing and signage will be maintained throughout construction. • Site inductions will be given by the civil contractor to all personnel and visitors to ensure all site workers and visitors are aware of any No-Go Zones.			
Light/noise/dust					
Bio6	Daily/seasonal timing of construction activities to reduce impact of noise and light spill	The CEMP will include measures to avoid light encroachment on adjacent habitats such as restricting construction works to daylight hours and incorporating sensitive lighting arrays that shield the adjoining native vegetation and habitat from stray light, with low-level lighting installed for all required external lighting.	Pre-construction and construction phase	Throughout planning and construction phase	Construction contractor
Bio7	Adaptive dust monitoring programs to control air quality	The Applicant will implement daily monitoring programs to monitor the generation of dust during construction activities. All activities relating to the Project would be undertaken with the objective of preventing visible dust emissions from the development footprint.	Construction phase	Clearing phase	Construction contractor
Invasive flora/pathogens					
Bio8	Weed management	To minimise the spread of weeds throughout the Subject Land and surrounding patches, appropriate weed control activities will be undertaken in accordance with all state and regional weed management plans. The Subject Land is subject to the Riverina Regional Strategic Weed Management Plan 2017 – 2022 (LLS, 2017) and management of Weeds of National Significance. The NSW Biosecurity Act 2015 and regulations provide specific legal requirements for state level priority weeds and high-risk activities. In order to comply with the objectives of the Riverina Regional Strategic Weed Management Plan 2017 – 2022 (LLS,	Construction and operations phase	Ongoing	Construction and operations contractor

ID	Mitigation measure	Method	Timing	Frequency	Responsibility
		2017), the following measures be implemented as part of the CEMP for the Subject Land: • Initial weed treatment - Including eliminating woody species and targeting infestations of exotic herbs. In particular, High Threat Exotic weed species occurring within the subject land will be managed in order to prevent further spread. Prior to any vegetation clearance, High Threat Exotic weeds should be demarcated in order for these to be disposed of separately from native material. • Containment – Follow-up monitoring and maintenance should be undertaken in areas of the development site that have received past primary weeding treatments in the following months, to contain any re-emergence of weed species. • Minimisation – Minimisation of weed species that cannot be effectively controlled on the site, such as exotic grasses, will be prevented from further spread through construction and operational phase site hygiene procedures. The CEMP will include provisions for elevated non-native vegetation (i.e *Lycium ferocissimum*) with potential to provide perches for known predators of the Plains-wanderer, this non-native vegetation is to be removed within 300 m of suitable habitat for the species.			
Bio9	Pathogen management	A pathogen management protocol will be implemented. Infection of native plants by *Phytophthora cinnamomic* is listed as a key threatening process under the BC Act and EPBC Act. *P. cinnamomic* is known to occur within the Riverina IBRA Bioregion can lead to death of trees and shrubs, resulting in devastation of native ecosystems. The risk of spreading pathogens and the mitigation measures required on site will be regularly communicated to staff and contractors e.g. during inductions and toolbox talks.	Construction and operations	Ongoing	Construction and operations contractors

ID	Mitigation measure	Method	Timing	Frequency	Responsibility
Increased pest species presence					
Bio10	Pest management programs	Feral pest management programs will be developed and implemented for the Project, with focus on Feral Cats and European Foxes. All control methods will be completed in accordance with relevant legislation / standard operating procedures, including but not limited to the following: • Regional Pest Management Strategy 2012-2017: Western Rivers Region (NSW OEH, 2013); • NSW Code of Practice and Standard Operating Procedures for the Effective and Humane Management of Feral Cats (NSW DPI, 2022); and • NSW Threat Abatement Plan: Predation by the Red Fox (Vulpes vulpes) (NSW OEH, 2010).	Construction and operations	Ongoing	Construction and operations contractors
Erosion and sediment					
Bio11	Erosion and sediment control plan	A site-specific Erosion and Sediment Control Plan will be developed and implemented to minimise erosion and sediment control risks. The Plan will include arrangements for managing wet weather events, and working with high surface water levels, including monitoring of potential high-risk events and specific controls and follow-up measures to be applied in the event of wet weather to avoid adverse impacts to hydrological processes, wetlands and ephemeral creek lines; Curtains Creek, Telegraph Creek and Abercrombie Creek.	Construction phase	Ongoing	Construction contractors
Turbine Strike					
Bio12	BBAMP	A Bird and Bat Adaptive Management Plan will be developed in accordance with the Draft Wind Farm Assessment Guidance for the SW REZ, released by DPE in July 2023.	Pre-construction, construction and operations	Ongoing	Environmental consultant contractors

6.2.5 ASSESSING AND OFFSETTING IMPACTS

6.2.5.1 SERIOUS AND IRREVERSIBLE IMPACTS

A SAII is an entity listed under the BC Act for which an impact is likely to contribute significantly to the risk of extinction of the threatened entity. An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct.

There were three entities that were identified as being at risk of SAII (refer **Figure 6-4** and Figure 9-2 in **Appendix G**):

- Plains-wanderer (*Pedionomus torquatus*) (mapped within the Subject Land);
- A burr-daisy (*Calotis moorei*) (recorded within the Subject Land); and
- Creeping Darling Pea (*Swainsona viridis*) (assumed within the Transport Route DF).

This assessment took into consideration the impacts of the Project and avoidance, minimisation and mitigation measures proposed, and concluded that the severity of the impact was not of a kind that would contribute to an increase in the decline of the species such that it would become extinct. It is anticipated that these species would likely respond to the management proposed (e.g., weed control).

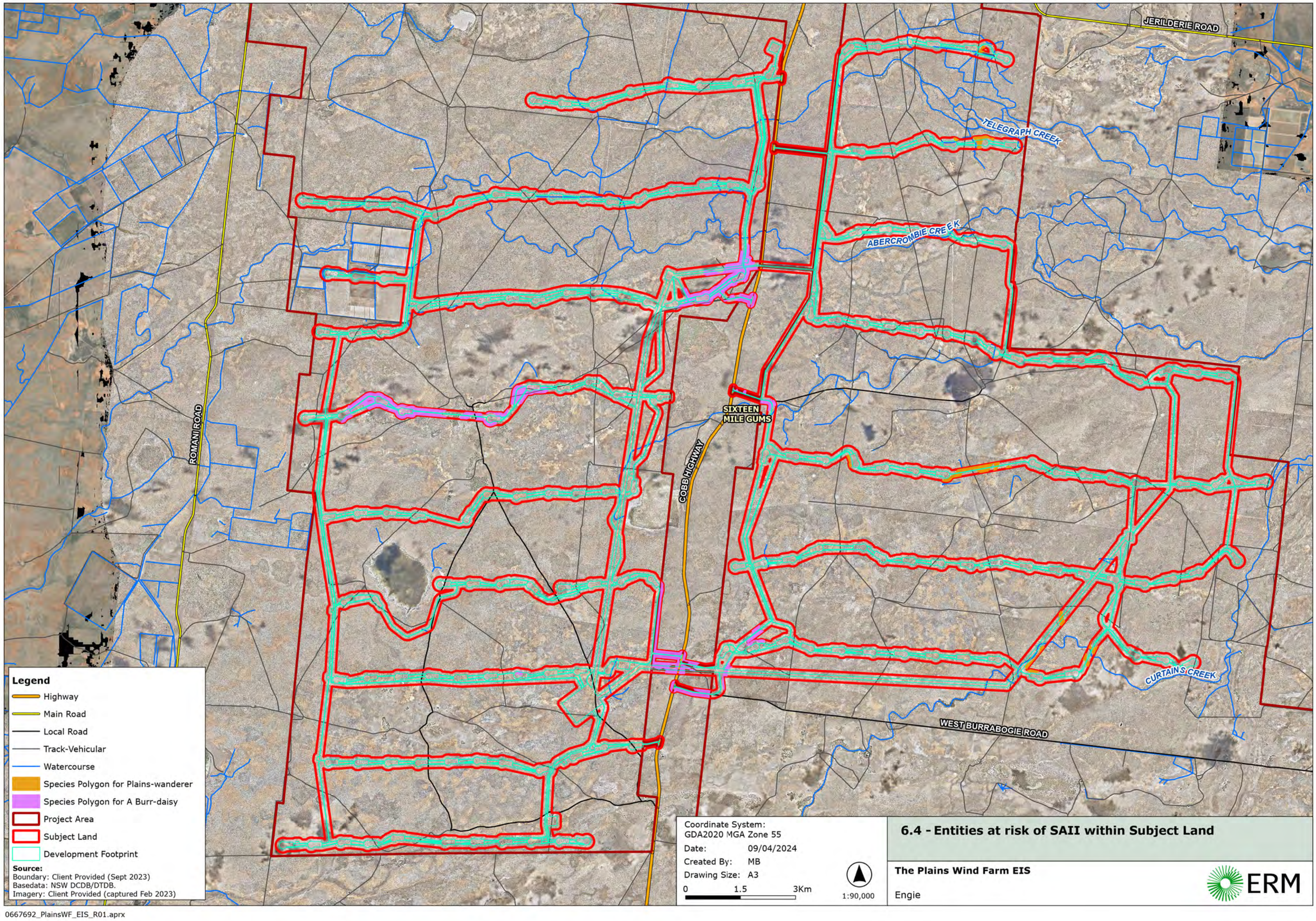
6.2.5.2 ECOSYSTEM CREDITS

The offset liability for the Project was calculated for the Subject Land and the transport route (refer Appendix H and Appendix I of **Appendix G**). Ecosystem credits that will require an offset are presented in **Table 6-11**, and species credits in **Table 6-12**.

TABLE 6-11 IMPACTS THAT REQUIRE AN OFFSET – ECOSYSTEM CREDITS

Vegetation zone	***PCT ID/Condition***	***Impact area (ha)***	***Change in Vegetation Integirty score***	***Number of ecosystem credits required***
1	13_Moderate	2.01	-51.1	45
2	17_Moderate	87.09	-79.2	3,016
3	24_Moderate	57.33	-47.8	1,028
4	28_Low	0.69	-35.3	12
5	44_Moderate	73.63	-84.7	3,119
6	153_Moderate	18.48	-84.6	586
7	157_Moderate	48.41	-59.2	1,254
8	163_Moderate	392.68	-76.9	11,320
9	164_Moderate	1,285.02	-86.4	41,766
*10**	155_High	0.67	-100	29

**Vegetation Zone 10 relates to the Transport Route DF only.*



6.4 - Entities at risk of SAII within Subject Land

The Plains Wind Farm EIS

Engie

ERM

0667692_PlainsWF_EIS_R01.aprx

TABLE 6-12 IMPACTS THAT REQUIRE AN OFFSET – SPECIES CREDIT

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha)	Biodiversity risk weighting	Number of species credits required
Plains-wanderer	*Pedionomus torquatus*	E	CE	5.35	3	305
A spear-grass	*Austrostipa wakoolica*	V	V	87.78	2	3,459
A burr-daisy	*Calotis moorei*	E	E	46.29	3	2,176
Small Scurf-pea	*Cullen parvum*	E	-	72.81	2	3,084
Winged Peppercress	*Lepidium monoplocoides*	E	E	367.42	2	13,441
Chariot Wheels	*Maireana cheelii*	V	V	1,036.75	2	44,233
Slender Darling Pea	*Swainsona murrayana*	V	V	1,331.03	2	55,536
Mossgiel Daisy	*Brachyscome papillosa*	V	V	1,376.57	2	56,517
*Creeping Darling Pea**	*Swainsona viridis*	E	-	0.67	3	40
Plains-wanderer	*Pedionomus torquatus*	E	CE	5.35	3	305
A spear-grass	*Austrostipa wakoolica*	V	V	87.78	2	3,459
A burr-daisy	*Calotis moorei*	E	E	46.29	3	2,176
Small Scurf-pea	*Cullen parvum*	E	-	72.81	2	3,084
Winged Peppercress	*Lepidium monoplocoides*	E	E	367.42	2	13,441

**The Creeping Darling Pea relates to the Transport Route DF only*

The area from which the Species credits can be obtained is limited to the State of NSW.

6.2.5.3 OFFSET STRATEGY

The No Net Loss standard involves the retirement of ecosystem and species credits for Project related direct impacts in accordance with the BOS. The BOS requires all biodiversity impacts to be calculated using the BAM-C, which provides an output determining the final Species credit and Ecosystem credit obligations for the Project. Typically, the final credit obligations are to be 'retired' prior to construction or in accordance with an approved staged approach.

The Applicant is developing a biodiversity offset strategy in parallel with the BDAR. This strategy will detail the offset approach to be undertaken to retire credit obligations and will be achieved by:

- Retiring 'like for like' credits to the amount and from the regions indicated;
- Funding a biodiversity conservation action instead of, or in combination with, the retirement of species credits; or
- Payment into the Biodiversity Conservation Trust (BCT) in lieu of satisfying the offset liability.

The fee associated with the latter option is to be determined through formal consultation with the BCT.

Due to insufficient targeted survey during the specified season, this BDAR has assumed presence for the following species:

- A Spear-grass (*Austrostipa wakoolica*);
- Mossgiel Daisy (*Brachyscome papillosa*);
- Small Scurf-pea (*Cullen parvum*); and
- Creeping Darling Pea (*Swainsona viridis*).

The offset credit summary report is based on 'assumed presence' and represents the maximum theoretical credit liability for the development.

However, it is possible/likely that the offset liability for each of the species credit species listed is substantially less than indicated (i.e., future survey results do not show uniform occurrence throughout PCTs associated with these threatened species). If this is proven to be the case through the completion of mitigation measures to improve avoid and/or minimize outcomes through (i.e., infrastructure micrositing using data obtained from seasonally appropriate targeted survey), then the offset credit liability should be reduced accordingly such that it is commensurate with the final residual impact of the development.

6.3 NOISE

A Noise Impact Assessment (NIA) has been prepared to assess the potential noise impacts associated with the construction and operation of the Project (SONUS, 2024), and is provided in **Appendix J**. The NIA responds to the relevant SEARs (**Appendix A**) and considers all relevant stakeholder engagement described in **Section 5**. The NIA was prepared in accordance with 'The Interim Construction Noise Guidelines' (ICNG) (DECC, 2009), 'Noise Policy for Industry' (NPI) (NSW EPA, 2017) and 'NSW Wind Energy: Noise Assessment Bulletin' (DPE, 2016) (Noise Bulletin).

A noise model was prepared to predict at what levels noise generated by the operation of Project infrastructure, as well as construction traffic and construction activities may be audible at nearby residences and sensitive locations. Environmental noise predictions have been made using a noise propagation model that provides noise predictions for worst-case conditions for both day and night time activities.

The assessment also recommends feasible and reasonable noise mitigation and management measures, as necessary.

6.3.1 BACKGROUND

6.3.1.1 NOISE ASSESSMENT CRITERIA

The PNTLs are a benchmark level above which noise management measures are required to be considered. They are derived from the more stringent value of the Project Intrusiveness Noise Level (PINL) and the Project Amenity Noise Level (PANL).

According to the NPI the project intrusiveness is generally acceptable if the level of noise from the source measured over a 15-minute period ($L_{eq,15min}$) does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. As such the PINL for the Project is 40 dB(A) during the day period, 35 dB(A) during the evening period and 35 dB(A) during the night period.

6.3.1.2 CONSTRUCTION NOISE CRITERIA

Noise Management Levels

The ICNG provides noise management levels (NML) for construction work that occurs within and outside of the recommended standard work hours. The NMLs are determined based on the rating background level (RBL) which is an overall, single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.

Table 6-13 provides a summary of RBL and NMLs relevant to the Project, and in accordance with the ICNG.

TABLE 6-13 INTERIM OUTSIDE OF CONSTRUCTION HOURS NOISE MANAGEMENT LEVELS

Land Use	***Time of Day***		***RBL***	***NML***
Residential	Recommended Standard Hours	Monday to Friday (7 am – 6 pm) Saturday (8am – 1 pm)	35 dB(A)	45 dB(A)
	Outside Recommended Standard Hours	Saturday, Sunday or Public Holidays (1pm – 6pm)	35 dB(A)	40 dB(A)
		Evening (6pm – 10pm)	30 dB(A)	35 dB(A)
		Night (10pm – 7am)	30 dB(A)	35 dB(A)
Passive Recreation	When in use		N/A	60 dB(A)

6.3.1.3 TRAFFIC NOISE CRITERIA

The NIA has considered the 'Construction Noise and Vibration Guideline (Roads)' (TfNSW, 2023), which specifies an initial screening test for where a more detailed assessment would be required. Where noise increases are 2 dB(A) or less then no further assessment is required; however, where noise levels increases are more than 2dBA (2.1dBA) further assessment is required.

The 'Road Noise Policy 2011' (NSW RNP, 2011) (RNP) provides guidance, criteria, and procedures for assessing noise impacts from existing, new, and redeveloped roads and traffic generating developments. The assessment of road traffic noise impacts on residences near public roads is assessed under the RNP.

The RNP criteria applicable to the nearest residences on Cobb Highway affected by additional road traffic due to the Project is presented in **Table 6-14.**

TABLE 6-14 RESIDENTIAL ROAD TRAFFIC NOISE CRITERIA AS PER THE RNP

Road Category	***Type of Project/Land Use***	***Assessment Criteria – dB (A)***	
		Day 7am to 10pm	***Night 10pm to 7am***
Freeway/arterial/ sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments.	$L_{Aeq,15hr}$ 60 (external)	$L_{Aeq,9hr}$ 55 (external)

6.3.1.4 OPERATIONAL NOISE CRITERIA

The Project operations haves been assessed against the Noise Bulletin for the WTGs, and the NPI for the ancillary equipment.

The Noise Bulletin provides limits for noise for at each relevant receiver based upon measured background noise levels. The predicted equivalent noise level ($L_{Aeq, 10\ min}$) for each integer wind speed should not exceed the greater of the following:

- 35 dB(A); or
- The background noise ($L_{A90, 10\ min}$) by more than 5 dB(A).

The NPI determines PNTLs for a development. The PNTLs is a level that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response, such as further investigation of mitigation measures., as shown in **Table 6-15** below.

TABLE 6-15 PROJECT NOISE TRIGGER LEVELS

Receiver	***Time of Day***	***PNTLs $L_{eq\ (15\ min)}$***
Residential – Rural	Day	40 dB(A)
	Evening	35 dB(A)
	Night	35 dB(A)
Area specifically reserved for passive recreation (e.g., national park)	When in use	48 dB(A)

6.3.1.5 EXISTING NOISE SOURCES

Background noise levels in rural areas, such as the area surrounding the Project, are typically low and are dominated by natural noise sources, such as wind in trees, insects or birds. Background noise levels were measured over a six-week period (through August and September 2023) at three dwelling locations (NAD_13, NAD_18 and NAD_23) in the vicinity of the Project.

The background noise levels that were measured for the Project are provided in **Table 6-16**.

TABLE 6-16 BACKGROUND NOISE LEVELS (DB(A))

ID	***Background Noise Level [dB(A)] for Integer Hub Height (180m) Wind Speed***									
	3m/s	***4m/s***	***5m/s***	***6m/s***	***7m/s***	***8m/s***	***9m/s***	***10m/s***	***11m/s***	***12m/s***
NAD_13	28	27	27	28	29	29	29	30	30	31
NAD_18	23	23	24	24	25	27	26	26	27	30
NAD_23	23	23	24	25	26	28	28	28	25	27

The Bulletin provides limits for noise at each relevant receiver based upon measured background noise levels. These specify that the predicted equivalent noise level ($L_{Aeq\ 10\ min}$) for each integer wind speed, which has been adjusted for special noise characteristics (being tonality and low frequency noise), should not exceed the greater of 35 dB(A), or the background noise level plus 5 dB(A).

The Project operational noise criteria at each residence were determined from the results of the background monitoring results and is presented in **Table 6-17**.

TABLE 6-17 BACKGROUND NOISE LEVELS (DB(A))

Logging Location	***Residence ID (based on nearest representative dwelling)***	***Criteria [dB(A)] for Integer Hub Height (180m) Wind Speed (m/s)***									
		3	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
NAD_13	NAD_10, NAD_11, NAD_13, NAD_14, NAD_15, NAD_42	35	35	35	35	35	35	35	35	35	36
NAD_18	NAD_16, NAD_18, NAD_28, NAD_29, NAD_30, NAD_32, NAD_38, NAD_39, NAD_40, NAD_41, NAD_43	35	35	35	35	35	35	35	35	35	35
NAD_23	NAD_12, NAD_19, NAD_19B, NAD_19C, NAD_23, NAD_26, NAD_26A, NAD_33, NAD_34, NAD_35, NAD_36, NAD_37	35	35	35	35	35	35	35	35	35	35

The background noise levels at the nearest noise-sensitive receivers to the Project are expected to be similar to the minimum assumed Rating Background Levels (RBLs) specified in Table 2.1 of the NPI – 35 dB(A) during the day period, 30 dB(A) during the evening period and 30 dB(A) during the night period.

6.3.2 METHODOLOGY

6.3.2.1 NOISE SENSITIVE RECEIVERS

Noise sensitive receivers, also classified as associated or non-associated dwellings, have been identified within the area surrounding the Project as shown in **Figure 6-5**. The closest receptors are the non-associated dwelling NAD_12, located about 2.7 km from the nearest WTG (IE06), and associated dwelling AD_4, at about 3.2 km from the nearest WTG (IE04). The closest national park is about 22 km from the Project Area. Due to the large separation distances between the noise sources of the Project and the sensitive receivers, the noise levels are expected to be low.

6.3.2.2 NOISE MODELLING

WTG Noise

The predictions of environmental noise from the Project have been based on the noise propagation model described by ISO 9613-2:1996 "Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation" (ISO 1996-2) and SoundPLAN noise modelling software. ISO 9613-2 is one of the recommended models under SA 2009 for the prediction of wind turbine noise. The model predicts noise based on the assumption of downwind noise propagation (resulting in higher noise levels) from all WTGs to all noise sensitive receptors simultaneously, therefore representing a conservative approach.

The inputs to the noise prediction are included in **Table 6-18**.

TABLE 6-18 NOISE PREDICITON MODEL INPUTS

Parameter	***Input***
Temperature (°C)	10
Relative Humidity (%)	70
Ground Absorption	Intermediate
Barrier Attenuation (dB(A))	2
Receiver Point (m above ground level)	4
Concave ground profile correction (dB(A))	3

Ancillary and Construction Noise

A worst-case scenario model was created for the Project using SoundPLAN software to predict the resultant noise levels at the sensitive receivers. This model considers:

- Sound power levels and locations of noise sources (including height of sources);
- Separation distances between noise sources and receivers;
- Shielding provided by the ground topography;
- Influence of the ground and air absorption; and
- Meteorological conditions.

The model also incorporates noise predictions for CONCAWE Weather Category 6 (worst-case) conditions, as required by the NPI.

6.3.2.3 NOISE SOURCES

Maximum capacity of Project components has been assumed to allow for general conservative estimates to be made. It is noted that Project elements modelled are subject to further detailed design.

Operational and construction noise sources have been included in **Table 6-19**. A full list of noise sources is included in **Appendix J**.

TABLE 6-19 MODELLED NOISE SOURCES

Stage	***Source (Number)***	***Total Sound Power Level (dBA(A))***
Operational Components		
Operation	WTG (188 x 7.2 MW units)	107
Construction Components		
Site Establishment	Generator (2), road truck (3), excavator (2), wheeled loader (2)	119
Earthworks	Vibratory roller (2), wheeled loader (2), dump truck (2), tracked excavator (2), concrete pump (1), concrete truck (1), tracked mobile crane (1), road truck (3)	121
Construction and Installation	Tracked mobile crane (1), welder (3), generator (2), handheld power tools (3), road truck (3)	115
Commissioning and Testing	Road truck (2), generator (2), handheld power tools (3)	113
Decommissioning (Future) Components		
Decommissioning	Road truck (3), generator (2), handheld power tools (3), excavator (2), dump truck (2), tracked mobile crane (1)	121

Traffic noise impacts have been established (refer **Section 6.5.2**). Construction traffic noise impacts have been modelled using daily and hourly peak and average construction traffic estimates.

6.3.3 NOISE IMPACT ASSESSMENT

6.3.3.1 OPERATIONAL NOISE

Wind Turbine Noise

The noise from the operation of the WTGs has been predicted at the 34 receivers, of which six (6) are associated dwellings, 27 are non-associated dwellings, one (1) is a non-associated dwelling entitlement. The predictions were modelled for the worst case wind speed (12 m/s), and compared against the Noise Bulletin baseline criterion of 35 dB(A), presented in full in Appendix D of the NIA (refer **Appendix J**).

Figure 6-5 shows the noise contour plot of the predicted operational noise from the WTGs relative to the noise sensitive receivers.

The NIA determined that the highest predicted noise level is 28 dB(A) at non-associated dwelling NAD_12 and associated dwelling AD_4. The results show compliance with the criteria at all locations.

No low frequency penalty has been found to be appropriate, given the highest C-weighted prediction at NAD_12 of 48 dB(C) is lower than the level required for a penalty, 60 dB(C). There was no penalty identified for tonality of the WTG modelled.

Given that no noise impacts are predicted, it is unlikely that negative impacts will result from cumulative noise emissions from the surrounding developments identified in **Table** 6-89.

Ancillary Equipment

The predicted noise levels show that the operational noises at the BESS are less than 20 dB(A) at all associated and non-associated recoveries during the day and at night and are therefore compliant with adopted noise criteria (40 dB(A) and 35 dB(A) during the day and evening / night respectively.). Further, based upon the predicted noise levels, the application of the maximum adjustment of 10 dB(A) for annoying characteristics would not result in the PNTLs being exceeded at any noise sensitive receiver.

6.3.3.2 CONSTRUCTION AND DECOMMISSIONING NOISE

Standard Construction Hours

Standard construction hours adopted for the Project would align with the hours specified for ‘day’ or ‘daytime’ in the NPI - 7 a.m. to 6 p.m. (NSW EPA, 2017). According to the NPI, the RBL for standard construction hours to be adopted for the Project is 35 dB(A), and the respective NML Leq (15 min) is 45 dB(A).

Based on modelling of construction noise sources and the distance to noise sensitive receivers, the highest noise predicted is less than 37 dB(A) (L_{eq}) at a non-associated receiver, and 36 dB(A) (L_{eq}) at an associated receiver, as shown in Table 6-20. This noise level is associated with site preparation earth works and is below the relevant NML (45 dB(A)).

Table 6-20 shows the noise level predictions for each stage of construction at both associated and non-associated receivers for Project intrusiveness and sleep disturbance considerations. All predicted noise levels are below the NMLs for standard construction hours.

The highest predicted noise levels at the nearest national park during any of the construction activities is < 20 dB(A), well below the 60 dB(A) NML for passive recreation areas defined in the ICNG.

TABLE 6-20 CONSTRUCTION NOISE PREDICTIONS

Stage	***Highest Associated Dwelling Predictions***		***Highest Non-Associated Dwelling Predictions***	
	$L_{eq\ (15\ min)}$	L_{max}	$L_{eq\ (15\ min)}$	L_{max}
Stage 1 – Site Establishment	34 dB(A)	35 dB(A)	35 dB(A)	36 dB(A)
Stage 2 – Earthworks	36 dB(A)	37 dB(A)	37 dB(A)	39 dB(A)
Stage 3 –Construction and Installation	30 dB(A)	31 dB(A)	31 dB(A)	33 dB(A)
Stage 4 –Commissioning and Testing	28 dB(A)	29 dB(A)	29 dB(A)	30 dB(A)
Future Stage – Decommissioning	36 dB(A)	37 dB(A)	37 dB(A)	38 dB(A)

Annoying Noise Sources

It is likely that one or more of the "particularly annoying" noise sources associated with the activities listed in **Section 6.3.1.2** will be present during construction.

The noise predictions in **Table 6-20** inclusive of the "particularly annoying" noise source factor (addition of 5 dB(A) as required by ICNG) will be below the lowest NML of 45 dB(A), as shown in **Table 6-21**.

TABLE 6-21 CONSTRUCTION NOISE PREDICTIONS INCLUSIVE OF "PARTICULARLY ANNOYING" NOISE SOURCE

Stage	***Highest Associated Dwelling Predictions*** $L_{eq\ (15\ min)}$	***Highest Non-Associated Dwelling Predictions*** $L_{eq\ (15\ min)}$
Stage 1 – Site Establishment	39 dB(A)	40 dB(A)
Stage 2 – Earthworks	41 dB(A)	42 dB(A)
Stage 3 –Construction and Installation	35 dB(A)	36 dB(A)
Stage 4 –Commissioning and Testing	33 dB(A)	34 dB(A)
Future Stage – Decommissioning	41 dB(A)	42 dB(A)

Outside of Standard Construction Hours

Outside of standard construction hours refers to any work undertaken Saturdays between 1 p.m. and 6 p.m. and/or Sundays and public holidays between 7 a.m. and 6 p.m., and/or evenings, as defined in the NPI.

Work undertaken outside of standard construction hours is not expected to occur regularly; however, may be required for deliveries and emergency work (DECC, 2009). Should other construction activities be required during these hours, they will be undertaken in accordance with the 'Interim Construction Noise Guideline' (DECC, 2009) (refer **Section 3.4.2**). The NML would depend on the time of day the works are proposed to be conducted, as shown in **Table 6-13.**

For any works required during the day outside of standard construction hours, modelling predicts that associated or non-associated receivers would not experience noise greater than the NML, as shown in **Table 6-20**. However, the addition of 5 dB from particularly annoying sources would result in non-compliance with noise levels above NML at non-associated dwellings NAD_12 and AD_4, as shown in **Table 6-21**. Therefore, noise sources listed as particularly annoying should not be used outside of standard construction hours without the reduction of other equipment usage. For this reason, work conducted during the day outside of standard construction hours should be conducted with the use of a noise management plan.

Table 6-20 shows that for any works required during the evening and/or night outside of standard construction hours, modelling predicts that associated or non-associated receivers NAD_12 and AD_4 would experience noise greater than the NMLs. In addition to that, if particularly annoying noise sources are being used, exceedance of the NMLs would also occur at NAD_26 and NAD_26A, with no other associated or non-associated receivers predicted to experience noise greater than the NMLs. Based on the predictions for typical work during each phase at the WTGs, it is not recommended that works are conducted during the evening and night. Any work to be completed should be conducted with the use of a noise management plan.

Sleep Disturbance

Consideration has also given to preventing sleep disturbance. Based on the modelled noise level predictions, the Project will not lead to sleep disturbance. No associated or non-associated receivers are predicted to experience noise greater than L_{max} 50 dB(A) external screening noise level for sleep disturbance (the L_{max} screening level assumes that the minimum RBL of 35 dB(A) applies at all locations).

6.3.3.3 TRAFFIC NOISE IMPACT

Traffic Modelling Parameters were obtained from the Transport for NSW Traffic Volume Viewer. The NIA utilised the 2010 Annual Average Daily Traffic (AADT) data for Cobb Highway between Hay and Booroorban. No recent data is available in the vicinity of the Project Area.

Standard construction hours adopted for the Project would align with the hours specified for 'day' or 'daytime' in the NPI - 7 a.m. to 6 p.m. (NSW EPA, 2017). According to the NPI, the RBL for standard construction hours to be adopted for the Project is 35 dB(A), and the respective NML Leq (15 min) is 45 dB(A).

Construction Traffic

The following traffic volumes were used for the NIA (refer **Table 6-22**) and are based on the predicted construction road traffic volumes described in **Appendix N**.

TABLE 6-22 CONSTRUCTION TRAFFIC FREQUENCIES

Vehicle Type		***Average Construction Periods***		***Peak Construction Periods***	
		Vehicles per Day	***Peak Hour Volume***	***Vehicles per Day***	***Peak Hour Volume***
Light Vehicles		200	100	350	175
Heavy Vehicles	Rigid Trucks	36	4	72	7
	Truck and Dog	112	11	224	22
	Semitrailers and B-Doubles	8	1	14	1
	Subtotal	156	16	310	30
Subtotal		356	116	660	205

Considering the projected daily trips during construction (total of 356 vehicles per day (vpd) during average construction periods, and 660 vpd during peak construction) and the existing traffic within the areas, no noise impact is expected within the Hay or Hay South Region.

However, within the Booroorban region, the construction traffic is expected to result in an approximate tripling of the existing Cobb Highway traffic volumes, resulting in an increase of more than 2 dB(A) in road traffic noise levels. An assessment has therefore been completed for the noise at the closest non-associated dwelling to Cobb Highway, NAD_43, located at about 100 m from the road.

Table 6-23 illustrates the predicted road traffic noise levels at receiver NAD_43 in consideration of the total expected road traffic volumes during construction. The predicted road traffic noise levels at receiver NAD_43 comply with the RNP criteria and thus compliance with the RNP criteria at all sensitive receivers is expected.

TABLE 6-23 ROAD NOISE PREDICTIONS AT NAD_43

Time	*RNP Criteria (dB(A))*	*Prediction (dB(A))*
Day (7am – 10pm)	$L_{Aeq\ (15\ hour)}$ ≤ 60 dB(A) externally	Average: 38 Peak: 42
Night (10pm – 7am)	$L_{Aeq\ (9\ hour)}$ ≤ 55 dB(A) externally	Average: 28 Peak: 40

Operation Traffic

Operational traffic volumes are anticipated to be lower than those of the construction volumes. Therefore, compliance from the construction traffic noise has been considered to be sufficient in predicting compliance for operational traffic noise.

Vibration Impacts

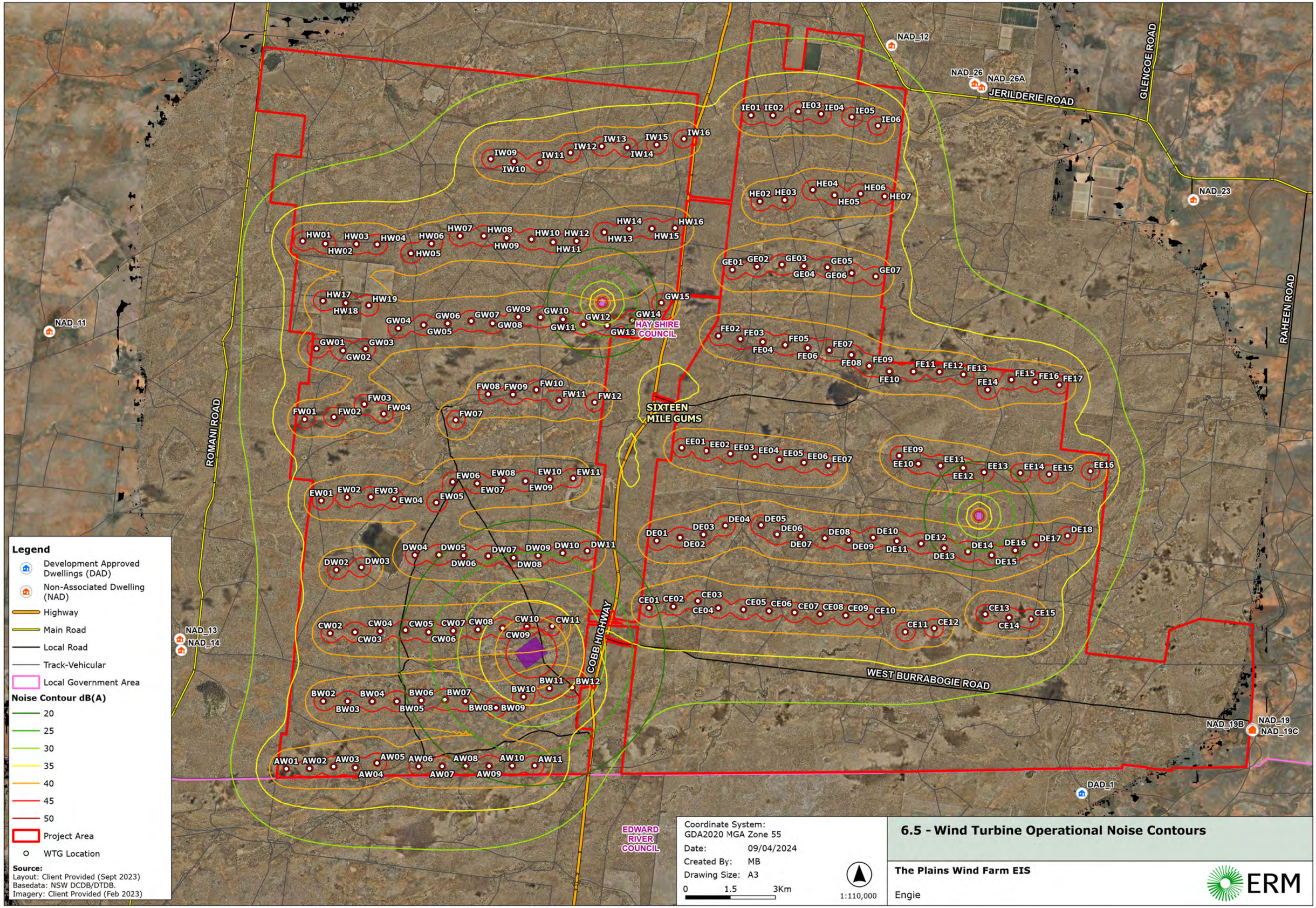
Based on the separation distances between the construction activities and the nearest dwellings being well in excess of 100m, vibration levels are expected to easily achieve the criteria. If construction activities producing high levels of vibration are required to occur within 100m of a dwelling, it is recommended that a monitoring regime is implemented to ensure compliance with Assessing Vibration: A Technical Guideline (AVTG).

6.3.4 MITIGATION AND MANAGEMENT

Based on assessment against the noise criteria provided by the NPI and the ICNG, the Project will not result in noise at nearby receivers. As such, specific noise management measures are not required for the Project. However, general good practice environmental noise management measures will be adopted, summarised in **Table 6-24**.

TABLE 6-24 NOISE MITIGATION AND MANAGEMENT MEASURES

ID	*Mitigation and Management Measures*
N1	• A complaints management system for construction works and site operations will be established.
N2	• Following finalisation of equipment selection, the noise modelling will be revised.
N3	• An operational noise management plan will be implemented. It will include post construction testing at sensitive land uses or at a representative location, to confirm that the noise levels achieve compliance.



Legend

- Development Approved Dwellings (DAD)
- Non-Associated Dwelling (NAD)
- Highway
- Main Road
- Local Road
- Track-Vehicular
- Local Government Area

Noise Contour dB(A)

- 20
- 25
- 30
- 35
- 40
- 45
- 50
- Project Area
- WTG Location

Source:
Layout: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB.
Imagery: Client Provided (Feb 2023)

Coordinate System:
GDA2020 MGA Zone 55
Date: 09/04/2024
Created By: MB
Drawing Size: A3
0 1.5 3Km
1:110,000

6.5 - Wind Turbine Operational Noise Contours

The Plains Wind Farm EIS

Engie

ERM

6.4 LANDSCAPE AND VISUAL

A LVIA was undertaken to assess the potential visual impacts of the Project on the character, values, and amenity of the surrounding landscape (MOIR, 2024), refer **Appendix K**. The LVIA provided recommendations to assist in the mitigation of potential impacts resulting from the Project. It responds to the relevant SEARs (**Appendix A**) and considers all relevant stakeholder engagement described in **Section 5.**

The LVIA was prepared in accordance with the 'Wind Energy: Visual Bulletin' (Visual Bulletin) (DPE, 2016). The following literature also assisted the formulation of the study methodology:

- 'Scottish Natural Heritage, Visual Representation of Wind Farms - Good Practice Guidance' (Scottish Natural Heritage, 2017);
- 'Environment Protection and Heritage Council, Draft National Wind Farm Development Guidelines' (EPHC, 2010);
- 'Landscape Institute and Institute of Environmental Management & Assessment, Guidelines for Landscape and Visual Impact Assessment Third edition' (Landscape Institute and IEMA, 2013); and
- 'Clean Energy Council, Best Practice Guidelines for Wind Energy Development' (CEC, 2018).

In accordance with the Visual Bulletin, the visual assessment includes:

- A baseline study that includes analysis of the landscape character, scenic quality, and visibility from viewpoints of different sensitivity levels;
- Establish visual influences zones from key viewpoints using data collected in the baseline study;
- Assessment of the proposed layout against visual performance objectives;
- A glint and glare assessment to demonstrate whether the Project posed a significant risk to motorists or pilots; and
- Justification for the final proposed layout and identification of mitigation and management measures.

Extensive field work and photographic survey work was undertaken in March 2023 from both public and private properties.

6.4.1 BACKGROUND

6.4.1.1 COMMUNITY ENGAGEMENT

Stakeholder engagement was undertaken for the Project throughout the development of the EIS. The objective of this engagement was to understand how the community perceived the landscape and landscape character, and what elements of this were important to them. This information was used to inform the LVIA.

The outcomes of this engagement identified the landscape features of importance to the community included the:

- "Open native grassland plains";
- "Wide, flat plains";
- "Flat, open spaces";
- "Open plain landscape with world renowned sunsets"; and
- "Murrumbidgee River and the view across the plains and amazing sunsets".

The community also identified key public viewing locations as the "16 Mile Gums on the Cobb Highway from Hay" and "the open plains". Concerns raised by the community relating to the Project and visual amenity mainly related to potential impacts on sense of place, and concerns about the potential cumulative impacts of other proposed renewable energy projects in the area.

6.4.1.2 BASELINE ANALYSIS

For the purposes of the LVIA the Study Area was defined as the area within 8 km of any WTG. Fieldwork was undertaken for the Project in March 2023 to assess and identify the existing landscape character of the Study Area.

Table 6-25 summarises the baseline investigation results. The key landscape features are shown in **Figure 2-3**.

TABLE 6-25 BASELINE INVESTIGATIONS SUMMARY

Visual Baseline	***Investigation Summary***
Bioregion	The Project is located within the Riverina IBRA Bioregion, which is situated in southwest NSW. The landform of the Study Area is characterised by generally flat, with very minor and isolated rises of coarse-textured aeolian material.
Sensitive Land Use	Land use within and around the Project Area predominately comprises of agricultural production activities including grazing over native vegetation pastures and irrigated cropping.
Land Use	The Study Area is predominantly located on land dedicated to agricultural production activities including grazing over native vegetation pastures and irrigated cropping. Land use surrounding the Project is further discussed in **Section 2.4**.
Geology and Landform	Landform is generally flat with seasonal water corridors and floodplains, which is made up of quaternary alluvial sediments with shallow and small depressions that are as deep as 2 m.
Vegetation Character	The Study Area is characterised by large tracts of saltbush and native grasses with scattered stands of trees and mid-storey shrubs near creek corridors and dwellings. The vast, flat plains are covered in saltbush, bluebush and speargrass communities that define the character of this region. The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape.
Creeks, Swamps and Floodplains	Prominent waterways in the Study Area include Abercrombie Creek, Telegraph Creek, Nyangay Creek, Murrumbidgee River, Curtains Creek, Deaf Adder Swamp and Box Swamp.

Visual Baseline	*Investigation Summary*
	Swamps and floodplains are generally shallow and covered with low-storey, scrubby vegetation such as saltbush, dillon bush and canegrass species, which have the capacity to hold water and are generally favoured for livestock grazing. Nyangay Creek and Forest Creek are identified by dense clumps of black box trees, lignum, nitre goosefoot, saltbush, speargrass and forbs. Abercrombie Creek and Telegraph Creek, located within the central and northern portions of the Project Area are characterised by shallow channels of grasses that carry seasonal water.
Nature Reserves	South West Woodland Nature Reserve is located approximately 10 km to the south of the Project. It exhibits characteristics of the Riverina Bioregion's Murrumbidgee subregion. No recreational associations were identified.
Key viewing locations and Points of Interest	Points of interest used by the local community and visitors in the Study Area include: • Murrumbidgee River Rest Area in Hay, which offers picnic areas and walking tracks; • Shear Outback, a visitor centre located south of Hay, which offers opportunities for visitors to experience local history on shearing; • Recreational associations along the Murrumbidgee River within the town of Hay; • 16 Mile Gums Rest Area, a viewpoint, which forms part of the 'Long Paddock' touring route and used by motorists travelling along the Cobb Highway between Hay and Deniliquin; and • Various parts of Murrumbidgee Valley Regional Parks, located approximately 13 km north of the Project Area.
Access Roads	The Cobb Highway runs through the central part of the Project Area and provides connection between Hay and Booroorban, and a range of industrial and commercial operations associated with Hay, located approximately 4.5 km north of the Project Area. The Sturt Highway runs east – west, connecting Hay to other towns such as Balranald, Darlington Point and Narrendera. It is located approximately 14 km north of the Project Area. Low use roads surrounding the Project provide access to rural properties in the region and are predominantly unsealed. These include Jerilderie Road, Booroorban-Tchelery Road, Romani Road and West Burrabogie Road.
Towns and Settlements	Hay is the nearest town located 15 km north of the Project Area, with a population of 2,828 people (ABS, 2021). Booroorban is a small rural locality located 6.6 km south of the Project Area with a population of 36 people (ABS, 2021).

6.4.1.3 LANDSCAPE CHARACTER UNIT ASSESSMENT

Table 6-26 summarises the landscape character assessment for each identified Land Categorisation Unit (LCU) Area. For each LCU a quantitative frame of reference was applied to establish the scenic quality rating, which ranged from low to high. The resulting scenic quality rating is used to assist in defining the Visual Influence Zones (VIZ) in accordance with the Visual Bulletin.

TABLE 6-26 LANDSCAPE CHARACTER ASSESSMENT SUMMARY

LCU	*Scenic Quality Ratings*
LCU01: Farmlands and Plains	**Low**: Landform is typically defined by flat, open and generally treeless land parcels that are used extensively for grazing. Grazing pastures are typically covered with native grass vegetation. Vegetation typically found in this LCU is characteristic of the Murrumbidgee Subregion - Riverina IBRA Bioregion. The LCU comprises of roads and infrastructure elements such as the existing 220kV electrical transmission line.
LCU02: Creek Corridors	**Moderate:** Landform is characteristic of gentle undulations that typically carry seasonal water in the region, with grasses and low story bush species with some areas covered in mid-storey shrubs such as lignum. Creek corridors include Abercrombie Creek and Curtains Creek, which generally remain dry throughout the year. Human intervention in the form of transmission easements is a visible element from some locations within LCU02.
LCU03: Dry Swamps and Floodplains	**Low**: Landform is defined by gentle, shallow depressions that act as a refuge for excess water in the region. Adjacent lands typically include creek corridors and plains. Landscape within this LCU03 comprises of native vegetation and is not extensively modified by human intervention.
LCU04: Hay	**Low:** Landscape comprises of the township of Hay and rural surrounds. Hay lies adjacent to the banks of the Murrumbidgee River and is defined by the historic buildings, low density residential dwellings and agricultural heritage. LCU04 is defined by generally flat land and the landscape is highly modified.
LCU05: Booroorban	**Low:** Landscape comprises of the rural locality of Booroorban and surrounds. Booroorban is located to the south of the Project Area and consists of a small number of rural dwellings, a hotel and public hall. LCU05 is characterised by rural dwellings located along the Cobb Highway.
LCU: Murrumbidgeee River	**Moderate:** The LCU consists of the Murrumbidgee River and its associated floodplains. It is an important water channel in the region. The river and is associated floodplains are prominent landscape features for the town of Hay. Prominent species include River red gums and black box along river channels and belah, lignum, black box in floodplains. The river is an important water source in the region.

6.4.2 VISUAL IMPACT ASSESSMENT

6.4.2.1 PRELIMINARY ASSESSMENT

The analysis of visual catchment included the use of two preliminary assessment tools in accordance with the Visual Bulletin visual magnitude and multiple wind turbine tool. Application of the Preliminary Assessment Tools to the Project WTG layout and turbine specification was used to identify dwellings which required further assessment in accordance with the Visual Bulletin.

Visual Magnitude

Visual magnitude is based on a 2D assessment of the Project, and does not consider topography, vegetation or other screening factors which may reduce the potential for viewing turbines. The Visual Magnitude Threshold is based on the height of the proposed WTGs to the tip of the blade and distance from dwellings or key public viewpoints.

The visual magnitude assessment, based on a maximum tip height of 270 m identified that the 'black line' intersects at 3,500 m and the 'blue line' intersects at 5,300 m. The 'purple line of visual magnitude is in between 5,300 m and 8,000 m to the nearest proposed turbine.

The visual magnitude assessment identified the following non-associated dwellings (refer **Section 2.4.1.2**):

- Three (3) non-associated dwellings, NAD_26, NAD_26A and NAD_12, within 3,500 m of a WTG location (within the black line);
- Two (2) non-associated dwellings, NAD_13 and NAD_14, within 3,500 - 5,300 m of a WTG (within the blue line and outside the black line); and
- Three (3) non-associated dwellings, NAD_15, NAD_16 and NAD_23, and one (1) lot subject to a development application, DAD_1, within 5,300 – 8,000 m of a WTG (within the purple line and outside the black line).

Further discussion on the dwelling assessments is provided in **Section 6.4.2.4**.

Multiple Wind Turbine Tool

The Multiple Wind Turbine Tool provides a preliminary indication of potential cumulative impacts arising from the Project. To establish the degree to which dwellings or key public viewpoints may be impacted by multiple WTG, the Applicant must map into six sectors of 60° any proposed, existing or approved turbines within 8 km of each dwelling or key public viewpoint. The tool considers a bare ground scenario without intervening elements such as s topography, vegetation and structures.

When applied to the non-associated dwellings identified within the visual magnitude of the Project, the Multiple Wind Turbine Tool identified:

- Eight (8) non-associated dwellings with potential views in up to two (2) 60º sectors, which is deemed appropriate in accordance with the Visual Bulletin;
- One (1) public viewpoint, 16 Mile Gums Rest Area, with potential views in up to six (6) 60° sectors. A detailed assessment was undertaken for this viewpoint location (refer Appendix B of the LVIA); and
- Other prominent public viewpoints, including Bushy Bend Reserve Rest Area and the Shear Outback Visitor Centre, located approximately 13 km north of the nearest WTG have no potential views.

6.4.2.2 ZONE OF VISUAL INFLUENCE

Two Zone of Visual Influence (ZVI) diagrams were prepared for the Project, to illustrate the theoretical visibility of the Project from hub and blade tip heights. The ZVI presents a bare-ground scenario. It does not consider the potential effect of structures or vegetation which may screen views to the Project. The ZVI has been assessed to approximately 30 km from the centre of the Project Area.

Figure 6-6 depicts the areas of land from which the Project may be visible and provides an indicative number of WTGs based on the tip height (270 m). **Figure 6-7** illustrates the areas of land from which the Project Area would be visible at hub height (180 m). The ZVI prepared for the Project indicates that:

- The majority of turbines associated with the Project are likely to be visible from most areas around the Project Area, this is due to the relatively flat topography of the landscape;
- Some areas along the Coleambally Outfall Drain to the south of the Project were identified as having limited views of the Project Area;
- Dwellings within 8 km of the WTGs are likely to have views available to the majority of turbines associated with the Project.

The ZVI indicates that localised topographical changes in certain areas along the Murrumbidgee River that are located near Hay, and generally north of the Project Area would provide limit some views toward the Project.

6.4.2.3 PUBLIC VIEWPOINT ANALYSIS

Viewpoints were taken predominantly on accessible public land (typically walking tracks, roads, and lookouts), while some were recorded from private property with consent from landowners. The visual impact of the viewpoint was assessed both on site and through a desktop assessment utilising topographic and aerial information.

A total of 15 public viewpoints were assessed from varying distances and locations surrounding the Project Area. The locations of viewpoints are shown in **Figure 6-8**. In accordance with the objectives of the Visual Bulletin, each viewpoint was assessed against the objectives for the Visual Influence Zone (VIZ). Each viewpoint was assigned a VIZ of High, Medium, or Low based on its view sensitivity level, distance zone and scenic quality class combinations. The following provides a brief overview of the viewpoint analysis:

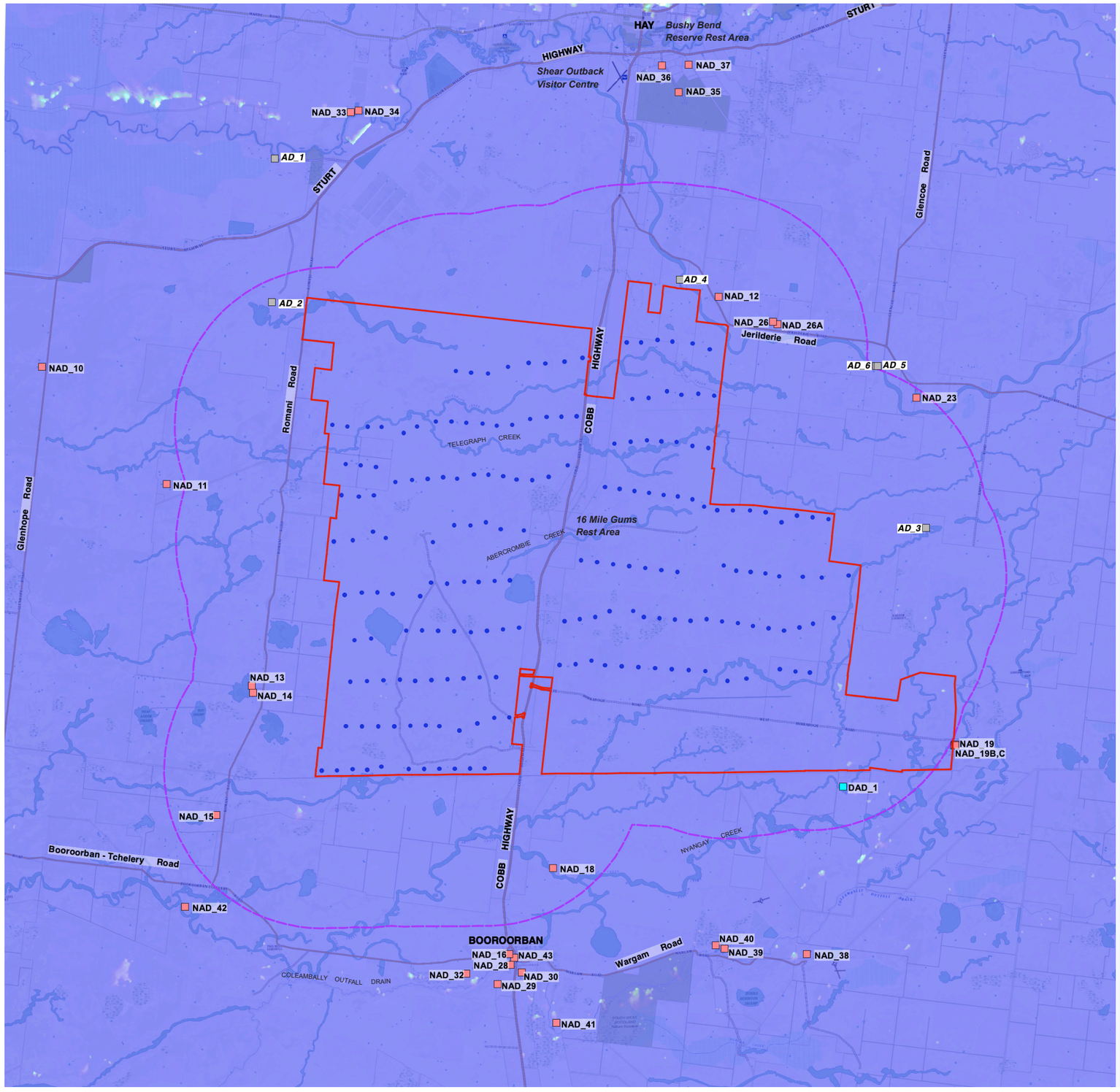
- Visual Influence Zone 1 (High) (VIZ2): None of the public viewpoints have the potential for a high visual impact;
- Visual Influence Zone 2 (Medium) (VIZ2):
    - VP02: Located on the Cobb Highway, it represents views from the southern parts of the Project Area. The Project is likely to be a major element in the landscape due to its proximity to this viewing location. Existing vegetation associated with Nyangay Creek will partially limit views of some turbines (refer photomontage 08 in Appendix D of **Appendix K**);
    - VP03: Located at the 16 Mile Gums Rest Area on the Cobb Highway, the turbines are likely to be a major element in the landscape due to proximity. The Rest Area lacks key landscape features (refer photomontage 02 in Appendix D of **Appendix K**);
    - VP04: Located on Cobb Highway, it represents views from the central parts of the Project Area. The Project is likely to be a major element in the landscape due to its proximity. The landscape does not offer views to any key landscape features (refer VP04a and VP04b in Appendix B of **Appendix K**); and
- Visual Influence Zone 3 (Low) (VIZ3): A total of 12 public viewpoints were rated as VIZ3. In accordance with the methodology in the Visual Bulletin no performance objectives have been noted for VIZ3.

6.4.2.4 DWELLING ASSESSMENTS

The Preliminary Assessment Tools, as discussed in above sections, defined the visual catchment and identified eight (8) non-associated residences and one (1) lot subject to a development application (DAD_1) which requires further assessment. The following provides a brief overview of the viewpoint analysis (refer Appendix C of **Appendix K**):

- Visual Influence Zone 1 (High) (VIZ2): None of the existing non-associated dwellings have the potential for a high visual impact;
- Visual Influence Zone 2 (Medium) (VIZ2): All three (3) of the non-associated dwellings (NAD_26, NAD_26A and NAD_12) identified within 3,500 m of a WTG were assessed as having moderate visual impact rating. The provision of screen planting for these dwellings would reduce the level of visual impact from moderate to low once established. It is anticipated the residual impacts would therefore be acceptable (refer Appendix E of **Appendix K**);
- Visual Influence Zone 3 (Low) (VIZ3):
    - Two (2) non-associated dwellings, NAD_13 and NAD_14, between 3,500 m and 5,300 m of a WTG were assessed as having low visual impact rating. Although visual performance objectives are not required for dwellings rated as VIZ3, screen planting has been proposed to reduce potential visual impacts from these dwelling; and
    - Three (3) non-associated dwellings, NAD_15, NAD_16 and NAD_23, and one (1) lot subject to a development application, DAD_1, within 5,300 – 8,000 m of a WTG were assessed as having low visual impact rating. In accordance with the Visual Bulletin, no visual performance objectives have been noted for dwellings rated as VIZ3.

A total of 28 lots with dwelling entitlements were identified within 5 km of the nearest Project WTG (refer **Section 2.4.1.2**). A ZVI assessment based on the topography alone suggests that all lots have the potential for views to the majority of the Project. The LVIA recommends that dwellings are sited and orientated away from the Project. The introduction of screen planting around any future dwellings will also help limit visual impacts of the Project.



Zone of Visual Influence Blade Tip Height 270 m

The Plains Wind Farm

LEGEND

- Project Area Boundary
- Proposed Turbine Location
- Non-associated dwellings
- Associated dwellings
- DA locations
- 8,000 m from turbine (extent of Study Area)
- Road

Number of visible turbines (at tip height)
(Based on topography alone):

- 0
- 1 - < 63
- 63 - < 126
- 126 - <= 188

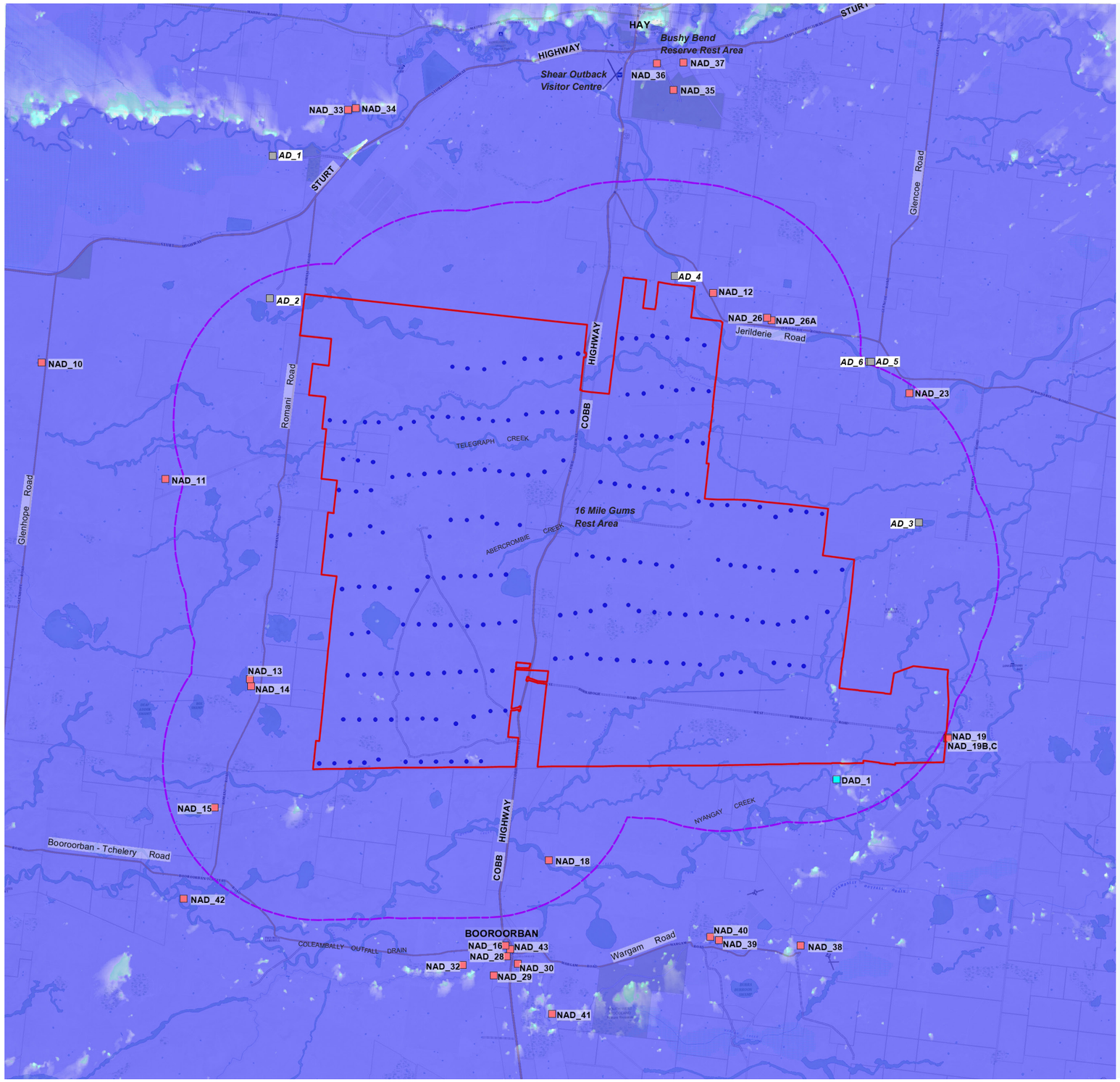
Note:

The ZVI is a preliminary assessment tool that represents a bare ground scenario - ie. a landscape without screening, structures or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. Therefore this form of mapping should be acknowledged as representing the worst case scenario.

N

0 4 8 12 16km

Figure 18: Zone of Visual Influence (Blade Tip Height 270 m) (Map Source: Six Maps 2011)



Zone of Visual Influence Hub Height 180 m

The Plains Wind Farm

LEGEND

- Project Area Boundary
- Proposed Turbine Location
- Non-associated dwellings
- Associated dwellings
- DA locations
- 8,000 m from turbine (extent of Study Area)
- Road

Number of visible turbines (at tip height)
(Based on topography alone):

- 0
- 1 - < 63
- 63 - < 126
- 126 - <= 188

Note:

The ZVI is a preliminary assessment tool that represents a bare ground scenario - ie. a landscape without screening, structures or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. Therefore this form of mapping should be acknowledged as representing the worst case scenario.

N

0 4 8 12 16km

Figure 19: Zone of Visual Influence (Hub Height 180 m) (Map Source: Six Maps 2011)

Public Viewpoint Analysis Locations

The Plains Wind Farm

LEGEND

- Project Area Boundary
- Proposed Turbine Location
- Associated Dwellings
- Non-associated Dwellings
- DA Locations
- 3,500 m from turbine (black line of visual magnitude)
- 5,300 m from turbine (blue line of visual magnitude)
- 8,000 m from turbine (extent of Study Area)
- Main Road
- Minor Road
- LGA Boundary
- Public Viewpoint Analysis Location

N

0 4 8 12 16km

Figure 21: Public Viewpoint Analysis Locations (Map Source: Six Maps 2011)

6.4.2.5 PHOTOMONTAGES AND WIREFRAMES

Photomontages are used to illustrate the likely view of a proposed development as it would be seen in a photograph. The photomontages are based on a worst-case scenario of a maximum turbine height dimension of 270 m with a hub height of 180 m and blade length of 90 m, without the inclusion of the proposed mitigation methods.

Wire frame diagrams indicate the 3D shape of the landscape in combination with additional elements. They can be used as a substitute for photomontages in areas where dense vegetation limits the capacity to align photographs accurately (i.e. due to dense vegetation). Wire frame images can be seen as a worst-case scenario as they do not consider factors such as vegetation, building structures. Wire frame diagrams were utilised in the LVIA to assist in the assessment of the Project from inaccessible locations. In instances where access to a private property was not granted, wire frame diagrams have been utilised as an assessment tool to provide a worst-case scenario view of the proposal.

Photomontages and wireframes were prepared for eight (8) public and nine (9) private viewpoints to best illustrate the potential appearance of the Project from varying distances and locations with differing views. These locations were selected based on feedback received from the community. Exact photomontage locations were selected on site to represent a worst-case scenario for the viewpoint location. Localised screening factors such as vegetation were avoided (where possible) to ensure maximum exposure to the Project.

Photomontage and wire frame diagram locations for the Project are shown in **Figure 6-8**. Photomontages and wire frame diagrams for public viewpoints and selected non-associated residences are shown below in Table 6-27 and included in Appendix D of the LVIA (refer **Appendix K**).

TABLE 6-27 OVERVIEW OF PHOTOMONTAGES AND WIREFRAME DIAGRAMS

Representative Public Receptor	***Corresponding Photomontage/ Wireframe***	***Representative Private Receptor/ Dwelling ID***	***Corresponding Photomontage/ Wireframe***
PM01	Photomontage 01	*PD01 (*NAD_12)	Photomontage 09
PM02	Photomontage 02	*PD02 (*NAD_26)	Photomontage 10
PM03	Photomontage 03	*PD03 (*NAD_13)	Photomontage 11
PM04	Photomontage 04	*PD04 (*NAD_14)	Photomontage 12
PM05	Photomontage 05	*PD05 (*NAD_15)	Photomontage 13
PM06	Photomontage 06	*PD06 (*NAD_18)	Photomontage 14
PM07	Photomontage 07	*PD07 (*AD_3)	Photomontage 15
PM08	Photomontage 08	*PD08 (*NAD_23)	Photomontage 16
		*PD09 (*DAD_1)	Photomontage 17

6.4.2.6 NIGHT LIGHTING

Existing sources of light in the Study Area include homesteads and motor vehicles; however, these sources are limited due to the isolated location of the Project. Isolated receptors within the Study Area would experience a dark night sky with minimal light sources.

Night lighting requirements for the Project include ancillary infrastructure; however, this is generally limited to security lighting to the substation, within the O&M facility, and flood lights at the workers accommodation which will be installed to comply with relevant standard and guidelines. The light sources will be limited to low-level lighting for security, night time maintenance and emergency purposes. There will be no permanently illuminated lighting installed. The proposed ancillary infrastructure has been carefully sited to minimise visibility from existing residences and publicly accessible viewpoints. Further, the Project will consider principles outlined in relevant best practice guidelines for lighting design that support the maintenance of a dark sky and improve lighting practice.

Assessment of potential impacts relating to lighting that may be installed for the Project identified that it is likely there will be limited or no visual impacts resulting from night lighting of ancillary Project structures. Lighting is unlikely to be experienced from the inside of non-associated-dwelling. This is based on the distance of non-associated dwellings to the Project and the fact that internal lights reflect on windows and limit views to the exterior at night (refer Section 11 of **Appendix K**).

6.4.2.7 SHADOW FLICKER AND BLADE GLINT

Shadow flicker refers to the visual effect that occurs when rotating turbines cause moving shadows as the blades pass in front of the sun. The shadow flicker assessment for the Project is based on a worst-case scenario considering topography alone., which identified:

- No non-associated dwellings were identified with the potential to experience shadow flicker;
- 16 Mile Gums Rest Area may experience approximately 14:04 hours;
- Extents of the Cobb Highway and small sections of West Burrabogie Road and Jerilderie Road have the potential to experience temporary shadow flicker.

The Bulletin does not establish limitations for shadow flicker for public areas; however, the potential 14:04 hr/year is below the limit established for dwellings (30 hrs/year) and is therefore considered acceptable.

Further analysis of shadow flicker is detailed in Section 12 of **Appendix K**.

Blade glint (also referred to as blade reflectivity) refers to the regular reflection off one or more rotating blades. All major WTG blade manufacturers currently finish their blades with a low reflectivity treatment, which prevents reflective glint from the surface of the blades and the possibility of a strobing reflection when the turbine blades are spinning. The WTGs selected for the Project will be finished with a low reflectivity surface treatment in accordance with the requirements of the Visual Bulletin. Therefore, the risk of blade glint from the Project is very low.

6.4.2.8 ASSOCIATED INFRASTRUCTURE

In addition to the proposed WTGs, the ancillary infrastructure is likely to contrast with the existing visual landscape. Due to the large scale and elevated siting of the Project, access roads, transmission lines and other ancillary structures have been assessed for a potential to alter the existing visual landscape.

Transmission lines

As overhead transmission lines are an existing infrastructure element in the landscape, the introduction of new transmission line would not be a significant or contrasting element in the landscape. The visual impact of the transmission lines is expected to be low.

The internal 33 kV cables will generally be located within underground trenches and therefore will have a low impact on the existing landscape and visual character.

Internal Access Tracks

Generally, the internal access tracks will be sited to reduce potential vegetation loss and limit earth work requirements. Due to the existing agricultural land use of the Project Area, farm roads traversing the landscape form a significant part of the existing landscape character. The proposed access tracks are likely to be viewed as part of the existing character of the landscape and therefore the visual impact would be low.

Substations and Switchyard

One (1) 330 kV main substation and the switchyard are proposed, along with two (2) collector substations proposed in the northern and eastern parts of the Project Area. The main substation and northern substation and the switchyard are likely to be visible for a short period when travelling along the Cobb Highway. However, given the flat landscape, treeless and lack of key features, visual impact is expected to be low.

Operations and Maintenance Facility

The O&M facility with carparks will be constructed in proximity of the proposed main substation location within the central part of the Project Area. Maintenance lighting will be installed at the O&M facility for night work including emergency operations, which will adopt recommendations for the night lighting fixtures as discussed in **Section 6.4.3**.

Meteorological Monitoring Masts

The proposed meteorological masts have been set back from nearby residences and public viewing locations. Met masts are generally difficult to discern due to their form, as such the scale and appearance of temporary and permanent met masts will not be as dominant as the proposed WTGs and are therefore likely to have a low visual impact.

Workers Accommodation Facility

Worker's accommodation is proposed in the northern and southern part of the Project Area near Cobb Highway. The temporary facility is expected to be designed in similar form to farm infrastructure prevalent in the area. The facility will be viewed temporarily from the Cobb Highway.

Other Temporary Infrastructure

Up to six (6) onsite batching plant laydown areas and up to one (1) construction compound will be established for the duration of construction. The visual impacts

associated with these facilities will be temporary and will occur during the construction phase. No scenic views will be impacted by construction activity.

Smaller scale ancillary structures will be screened by existing or proposed screening vegetation. The implementation of mitigation measures discussed in **Section 6.4.3** would assist in reducing any residual visual impacts.

6.4.3 MITIGATION AND MANAGEMENT

Good design principles employed through the Project design phase can significantly reduce the visual impacts of the Project and associated infrastructure. These include the siting principles, access, layout and other aspects of the design which directly influence the appearance of the proposed development.

Table 6-28 outlines the design considerations that have been developed in response to the associated infrastructure.

TABLE 6-28 LANDSCAPE AND VISUAL MITIGATION AND MANAGEMENT MEASURES

ID	*Mitigation and Management Measures*
LV1	The following principles have been and will continue to be considered in the design process of the Project (as applicable): • The lines of WTGs will reflect the contours of the natural landscape as best as possible; and • Where possible, turbines will be evenly spaced to give a regular pattern creating a better balance within the landscape.
LV2	The turbines will have a matte white finish and consist of three blades. The following factors will also be considered in the Project design to achieve a visual consistency through the landscape: • Uniformity in the colour, design, height, and rotor diameter; • The use of simple muted colours and non-reflective materials to reduce distant visibility and avoid drawing the eye; • Blades, nacelle, and tower to appear as the same colour; and • Avoidance of unnecessary lighting, signage, logos.
LV3	Tree planting will be undertaken in consultation with the relevant landowners to ensure that desirable views are not inadvertently eroded or lost in the effort to mitigate views of the turbines (refer Appendix E of **Appendix K**). These include: • Provision of screen planting at non-associated dwellings NAD_26 and NAD_26A; and • Provision of supplementary planting at non-associated dwellings NAD_12, NAD_13 and NAD_14.
LV4	When planning for landscaping and visual screening the following will be adhered by the Project: • In consultation with the landowner, planting will occur post construction, where possible; • Planting will remain in keeping with existing landscape character; • Species selection will be typical of the area; • Planting layout will avoid screening views of the broader landscape, where possible; • Clearing of existing vegetation will be avoided; • Where appropriate, any lost vegetation will be reinstated; and • Where possible, over any areas of disturbance, natural vegetation will be allowed to regrow.

6.5 TRAFFIC

A Traffic Impact Assessment (TIA) was undertaken to evaluate the potential construction, operational, and decommissioning traffic impacts, and the access arrangements for the Project (Amber, 2024; **Appendix N**). The TIA also provides appropriate management measures to ensure that any potential impacts can be avoided or minimised.

The TIA addresses the requirements of the SEARs (refer **Appendix A**), has been undertaken in consultation with Transport for NSW (TfNSW) and Hay Shire Council and has considered relevant outcomes of stakeholder engagement as described in **Section 5**.

The TIA was prepared in accordance with the following guidelines:

- 'Guide to Traffic Generating Developments' (RTA, 2002);
- 'Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections' (Austroads, 2021);
- 'Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings' (Austroads, 2019); and
- 'Australian Road Research Board Best Practice Guide for Unsealed Roads 2' (ARRB Guide) (ARRB, 2020).

6.5.1 BACKGROUND

6.5.1.1 EXISTING ROAD NETWORK

The existing road network serving the Project comprises of state and municipal roads. **Figure 6-9** shows the state road network of relevance to the Project, which includes:

- The Cobb Highway which provides access to the townships of Hay to the north and Deniliquin to the southeast. The Cobb Highway is a state road that has a carriageway width of approximately 7.0 m accommodating one lane of traffic in each direction, and has a speed limit of 110 km/hr; and
- West Burrabogie Road which extends east from the Cobb Highway to its termination near Nyangay Creek. West Burrabogie Road has an unsealed carriageway with a typical useable width ranging between 4.0 m and 9.0 m. It operates as a two-way road and as a municipal local road is subject to the default rural speed limit of 100 km/hr.

The intersection of Cobb Highway and West Burrabogie Road is priority controlled with vehicles existing West Burrabogie Road required to give way. No turn treatments are currently provided at the intersection.

No incidents were recorded within 2 km of the Project Area on either the Cobb Highway or West Burrabogie Road between 2018 and 2022.

6.5.1.2 TRAFFIC VOLUMES

A turning movement survey was untaken at the intersection of Cobb Highway and West Burrabogie Road on 14 November 2023, from 6:00 am– 9:00 am and from 4:30 pm – 6:30 pm to determine the existing traffic conditions at the intersection. Amber also commissioned tube counts from Monday 13 November to Sunday 19 November 2023 on the Cobb Highway (north of West Burrabogie Road) and on West Burrabogie Road (near Cobb Highway). The results of the survey and the tube counts (both directions) are presented in **Table 6-29**.

TABLE 6-29 TRAFFIC VOLUMES ON PROJECT TRANSPORT ROUTES

Survey Location	***Survey Type***	***Weekday Traffic Volume (vpd)***	***85th Percentile Speed (km/hr)***	***Heavy Vehicle Percentage***
Intersection of Cobb Highway and West Burrabogie Road	Turning movement count	AM Peak – 27 PM Peak - 22	-	-
Cobb Highway (north of West Burrabogie Road	Tube count	Daily – 392 AM Peak – 30 PM Peak - 34	107.5	36%
West Burrabogie Road (near Cobb Highway)	Tube count	Daily – 12 AM Peak – 3 PM Peak - 2	47.8	16%

The TfNSW survey data indicates that the Cobb Highway currently experiences most traffic movements between the hours of 6:00 am and 6:00 pm with a relatively flat distribution between the peak hours. The reported traffic volumes along Burrabogie Road are well within the operating capacity of the local road network.

Overall, the survey results indicate the Cobb Highway and West Burrabogie Road currently accommodate a low level of traffic for the respective road classifications and are able to accommodate an increase in vehicle movement.

6.5.1.3 ACCESS AND TRANSPORT SERVICES

The available restricted vehicle access and transport services within the vicinity of the Project Area include:

- Restricted Vehicle Access: The Project Area has access to the B-Double approved road network via Cobb Highway with West Burrabogie Road being unrated;
- Class 1 OSOM vehicles: The Project Area has access to the Class 1 OSOM approved road network via the Cobb Highway, West Burrabogie Road and the surrounding State Road network. Vehicles operating within daytime hours and not exceeding 3.5 m wide or 26 m long generally do not need a pilot vehicle;
- Special Purpose Vehicles (SPVs): The Project Area has access to SPV Level 3 vehicle routes via the Cobb Highway. West Burrabogie Road is unrated;
- Bus services: No public transport is provided within the vicinity of the Project Area; and

- School buses: No school bus stops are provided within the vicinity of the Project. However, the school bus travels along West Burrabogie Road to Booroorban at 7:35 am and 3:45 pm, and to Hay at 8:35 am and 4:20 pm.

6.5.2 TRAFFIC GENERATION AND DISTRIBUTION

6.5.2.1 CONSTRUCTION

Traffic accessing the wind farm will use the four Project access points from along the Cobb Highway, with some vehicles also utilising a short section of West Burrabogie Road. The Project components are expected to be delivered from the Port of Geelong, excluding the wind turbine components which will be delivered from the Port of Adelaide.

Table 6-30 summarises the predicted distribution of vehicles accessing the Project Area during Project construction.

TABLE 6-30 VEHICLE TYPE DISTRIBUTION

Vehicle type		***Traffic Distribution***
Light Vehicles		
Cars and shuttle buses	Transport construction workforce to and from the Project Area	70% are expected to travel to/from the Project Area from the north, with 30% expected to travel to/from the south
Heavy Vehicles		
Medium Rigid Trucks (MRV) and Heavy Rigid Trucks (HRV)	Deliver raw materials and smaller Project elements, such as concrete and fencing supplies	70% expected to travel to/from the north and 30% to/from the south.
Truck and Dog vehicles	Transport earthwork material to and from the Project Area	50% expected to travel to/from the north and 50% to/ from the south.
Articulated Vehicles (AV) and B-Doubles	Transport most of the Projects large components	Project elements will travel from Port of Geelong via the Cobb Highway from the south.
OSOM Vehicles		
Restricted Access Vehicles/ OSOM vehicles	Transport the largest Project elements, including substation transformer	

It is anticipated that during peak construction, the Project could generate up to 310 heavy and 350 light vehicle movements per day. It is noted that a vehicle movement is classified as a vehicle travelling in one direction (e.g., a vehicle would generate one movement towards the Project Area and one movement away from the Project Area when it departs).

Overall, the Project is anticipated to generate approximately 206 vehicles per hour (vph) in the morning and evening hours during the peak hours, but the peak construction period, which would reduce to 116 vph during the average construction periods.

Peak traffic movements over the construction period will occur in the morning (between 6:00 am and 7:00 am) and evening (staggered finish times will result in peak distribution between 5:00 pm and 7:00 pm), when light vehicles will be transporting workers to the and from the Project Area.

Table 6-31 provides the estimated vph which will be typically generated during construction in addition to the peak vehicle movements.

TABLE 6-31 TRAFFIC GENERATION DURING CONSTRUCTION

Vehicle Type	***Vehicle Size***	***Average Vehicle Movements***		***Peak Vehicle Movements***	
		Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	Light Vehicle (car / 4WD)	200	100	350	175
Heavy Vehicle	MRV/HRV	36	4	72	7
	Truck and Dog	112	11	224	22
	Semitrailers and B-Doubles	8	1	14	1
	Total	**356**	**116**	**660**	**206**

6.5.2.2 OPERATION

Vehicle movements during operation of the Project would primarily be associated with maintenance and operational services. The Project operational workforce will be up to 40 FTE resulting in a traffic generation of up to 80 vpd. The additional traffic will be distributed across four access points, which can be accommodated within the existing road network and traffic volumes.

6.5.2.3 DECOMMISSIONING

Traffic generation during decommissioning is anticipated to generate less traffic than during the construction period and have a shorter duration. A comprehensive Traffic Management Plan (TMP) will be prepared prior to the decommissioning phase in consultation with relevant road authorities.

6.5.3 TRAFFIC IMPACT ASSESSMENT

6.5.3.1 TRAFFIC ASSESSMENT

The Project is expected to generate the highest level of traffic during the peak construction period. An assessment was carried out for:

- Intersection performance at the Cobb Highway and West Burrabogie Road intersection; and
- A mid-block level of service assessment for each road.

The assessment indicates that the road network is able to accommodate the Project traffic during the peak construction period.

Intersection Performance

Traffic modelling was undertaken in accordance with the TfNSW Traffic Modelling Guidelines for the intersection of Cobb Highway and West Burrabogie Road using the SIDRA intersection modelling software to assess the ability of the road to accommodate the traffic generated from the Project.

The impact the Project may have on the existing Level of Service (LoS) of the surrounding road network has been considered in accordance with the 'Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis'.

LoS ranges from 'A' to 'F', being 'A' free flow conditions, and 'F' forced flow with stop start operation, long queues and delays. The increase in traffic was modelled using the existing surveyed traffic volumes at the Cobb Highway and West Buggarobie Road intersection, with volumes adjusted by 1.5% compound annual growth rate over 7 years to reflect the end of the construction period in 2030. The analysis that was conducted indicated that:

- The intersection is expected to operate with minimal queue lengths on all lengths of the intersection;
- The overall average delay at the intersection is 3.4 seconds and 3.0 seconds in the morning and evening peaks respectively; and
- The intersection will continue to operate with good LoS (LoS A).

Therefore, the intersection is considered to have sufficient capacity to accommodate a substantial increase in traffic volumes if additional traffic utilises West Burrabogie Road.

Mid-block Assessment

An assessment has been carried out on the mid-block road sections for the morning and evening peak hours of construction traffic volumes in accordance with the *RTA Guide to Traffic Generating Development*. The mid-block assessment assesses two-way road hourly road capacities for two-lane roads for different levels of service, with the maximum volume to achieve LoS (A) for a level terrain rural road with approximately 15% heavy vehicle traffic is 530 vehicles per hour. It is expected that Cobb Highway and West Burrabogie Road will continue to operate with a good LoS (A). The proposed traffic volumes represent the highest volumes that would occur on the section of Cobb Highway to the north of the Project Area and are presented as the worst-case scenario, with hourly average expected to be lower along the remainder of the road.

The traffic assessment concluded that the road network can readily accommodate the traffic generated by the development during both construction and operation periods.

6.5.3.2 HEAVY VEHICLE ROUTE ASSESSMENT

Access Route

All equipment that can be transported in B-Doubles or shorter configurations is planned to be delivered through the Port of Geelong. The access route within NSW utilises roads

that are designated for 25/26 m B-doubles vehicles, with the access route through Victoria using roads that are approved for B-doubles within Victoria's Gazetted B-Double Network map.

Some vehicles may access the Project via West Burrabogie Road, which is currently unrated for 26 m B-doubles and will require approvals form Hay Shire Council.

Unsealed Road Network

West Burrabogie Road is anticipated to accommodate up to 178 and 102 vehicles per day during peak and average construction periods respectively and was assessed in accordance with the *Australian Road Research Board Best Practice Guide for Unsealed Roads 2 (ARRB Guide)*. Under the ARRB Guide, unsealed roads would typically be considered for sealing if daily vehicle movements are between 200-500 vpd. As such, it is considered acceptable for West Burrabogie Road to remain unsealed. However, to comply with the guide, it is recommended that the carriageway be widened to a minimum of 7 m (current carriageway ranges from 4 – 9 m) to allow two trucks to pass and reflect the higher default rural operating speed standard of the road (100 km/hr).

6.5.3.3 OSOM VEHICLE ROUTE ASSESSMENT

Large plant and wind turbine components are expected to be transported to the site from the Port of Adelaide. The anticipated loads for the Project are presented in **Table 6-32**.

TABLE 6-32 WIND TURBINE COMPONENTS - LOAD DIMENSIONS AND MASSES

Component	***Height (m)***	***Width (m)***	***Length (m)***	***Weight (t)***
Blades	3.7	4.8	86.0	32
Hub	4.2	4.5	5.1	52
Nacelle	4.2	5.0	9.9	41.6
Drivetrain	4.2	4.1	8.2	106.0
*Tower Base**	6.3	6.3	10.0	110.0
*Tower Top**	4.3	4.3	36.0	80.0

**Note that each tower is comprised of seven sections with varying dimensions and weights.*

A small number of OSOM deliveries are also expected to come from the Port of Geelong, and are associated with the following Project components:

- Large substation equipment, including battery storage, transformers and switching equipment;
- Substation, switching station, warehouse and office buildings; and
- Water tanks.

Cranes will also be required to erect the wind turbines and would be classified as SPVs.

Typical Delivery Vehicles

OSOM vehicles will be used to deliver the wind turbine components and large plant. The typical vehicles that will be used to transport the various wind farm components to the Project include:

- Wind turbine blades being transported using extendable trailers, jinker trailers or fixed length blade trailers with extendable beams; and
- Wind turbine sections would generally be transported on bookend trailers low loaders or platform trailers.

The final selection of transport vehicles to be used across the route would be considered in consultation with authorities as part of the development of the Traffic Management Plan and route approvals.

A breakdown of the anticipated vehicle volumes is provided in **Table 6-33**. Where required, pilot vehicles or police escorts will guide the vehicles to provide traffic management "pinch-points".

TABLE 6-33 PREDICTED OSOM TRAFFIC VOLUMES

Component	***Vehicle Configuration***	***One-Way OSOM Vehicles***	***Approx. Duration***	***Frequency***
Blades	Prime mover with 4x8 + 4x8 fixed length blade jinker trailers	564	100 weeks	6 per week
Hub	Prime mover with 2x8 dolly and 4x8 low loader	188	100 weeks	2 per week
Nacelle	Prime mover with 2x8 dolly and 4x8 low loader	188	100 weeks	2 per week
Drivetrain	Prime mover with 12x8 platform trailer	188	100 weeks	2 per week
Tower Top	Prime mover with 8x8 extendable trailers	188	100 weeks	2 per week
Tower Base	Prime mover with 5x8 bookend trailers	188	100 weeks	2 per week

Component	***Vehicle Configuration***	***One-Way OSOM Vehicles***	***Approx. Duration***	***Frequency***
Tower Mid Sections	Prime mover - trailer varies according to tower size/weight	940-1,128	100 weeks	10 per week
Substation Transformers	Beam set or prime mover with platform trailer	6	50 weeks	Varies
Substation Transportable Buildings	Prime mover with platform trailer	8	50 weeks	Varies
WTG Erection Cranes	Varies	25	50 weeks	Varies
On-site Buildings	Varies	470	20 weeks	Varies
Machinery and Civil Equipment	Varies	100	100 weeks	Varies

The preferred access route for OSOM deliveries is from the Port of Adelaide, with the turbine blades taking a slightly different route to Project than the other wind turbine components (refer Section 6.4.1 of **Appendix N**).

Traffic Management Measures

The suitability of the proposed routes, including a swept path analysis (**Appendix N**) was assessed to determine where road upgrades may be required. Key considerations are included in **Table 6-34**.

TABLE 6-34 ROUTE ELEMENTS AND RELEVANT TRAFFIC MANAGEMENT MEASURES

Route Element	***Traffic Management Measures***
Rest Stops	The access routes are predominately via State Highways which provide regular truck parking areas and services for rest breaks. There are 21 rest stops that have been identified for driver breaks and passing opportunities for regular traffic, with the use of these rest stops to be included within the Construction Traffic Management Plan (CTMP) for OSOM vehicles. A full list of rest stops is included within Section 6.4.2 of **Appendix N**.

Route Element	***Traffic Management Measures***
Railway Level Crossings	Railway level crossings were also assessed, with 14 rail crossings identified. Written approval will be sought for all level crossing identified as part of the TMP, with a track protection officer likely to be required to supervise each crossing for loads exceeding 40 m long or 6.45 m wide due to the length and nature of the road.
Bridges and Culverts	Axel loads on all bridges will be limited to 14 tonnes per axle due to South Australian regulations. A detailed review of the load limits on all bridges and structures along the route will be undertaken as part of the permit process for the OSOM vehicles, although it is expecting that the loading will be within the allowable limit. Key overhead structures that will need to be considered along the OSOM route include: • Hanson Road overpass of Port River Expressway (6 m clearance): able to be by-passed via off-ramps and on-ramps; • North-South Motorway overpass of Port River Expressway (7.2 m height clearance: available height clearance exceeds the maximum height of the load using bookend trailers which can be hydraulically lowered; • Gantries for highway VMS signboards at various locations in Adelaide metro area: all gantries are able to be bypassed; and • Copper Coast Highway overpass of Augusta Hwy at Port Wakefield (7.6 m clearance): available height clearance exceeds the maximum height of the load using bookend trailers which can be hydraulically lowered.
Vulnerable Road Users	A review of the OSOM access routes has been undertaken to identify locations where vulnerable road users may be present on the road network. The assessment identified 30 potential locations, with 10 identified as possible of interacting with vulnerable road users. The peak operating times at these locations should be identified, and where possible, the OSOM transport avoided near these facilities during peak times (to be included within the TMP).
Public Transport and School Bus Routes	There is no public transport in vicinity of the Project Area. There are a number of school bus routes along Cobb Highway, with other routes along the OSOM routes likely due to its length. While not anticipated to cause any notable impacts, the following mitigation measures will be incorporated into the Project: • Drivers must reduce their speed and or stop in accordance with the law when passing a school bus which is slowing down, stopped, or accelerating in relation to picking up and setting down children; • Drivers must reduce their speed in accordance with the law when passing children walking, cycling or waiting on the side of the road and when passing an oncoming school bus; and • Truck rivers travelling on school bus routes at the same time as an oncoming school bus to use their CB radio identify the location of the bus and pull over in a safe location before the school bus reaches and passes them.

Required road upgrades are presented in **Section 3.4.7** and **Table 6-36**.

6.5.3.4 INTERSECTION ASSESSMENT

Turn Treatments

The *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings* specifies the turning treatments required at intersections. An assessment of turn treatments at West Burrabogie Road and Cobb Highway determined that Basic Right Turn (BAR) and Basic Left Turn (BAL) would be required based on the morning peak hour traffic. A swept path assessment of the intersection was also conducted for the intersection to confirm if the intersection could accommodate B-doubles. The assessment demonstrates that the vehicle can suitably turn to/from Cobb Highway with the inclusion of the proposed road upgrades. Accordingly, it is concluded that the intersection has been suitably designed and is able to accommodate the vehicles expected to access the Project Area.

Sight Distance

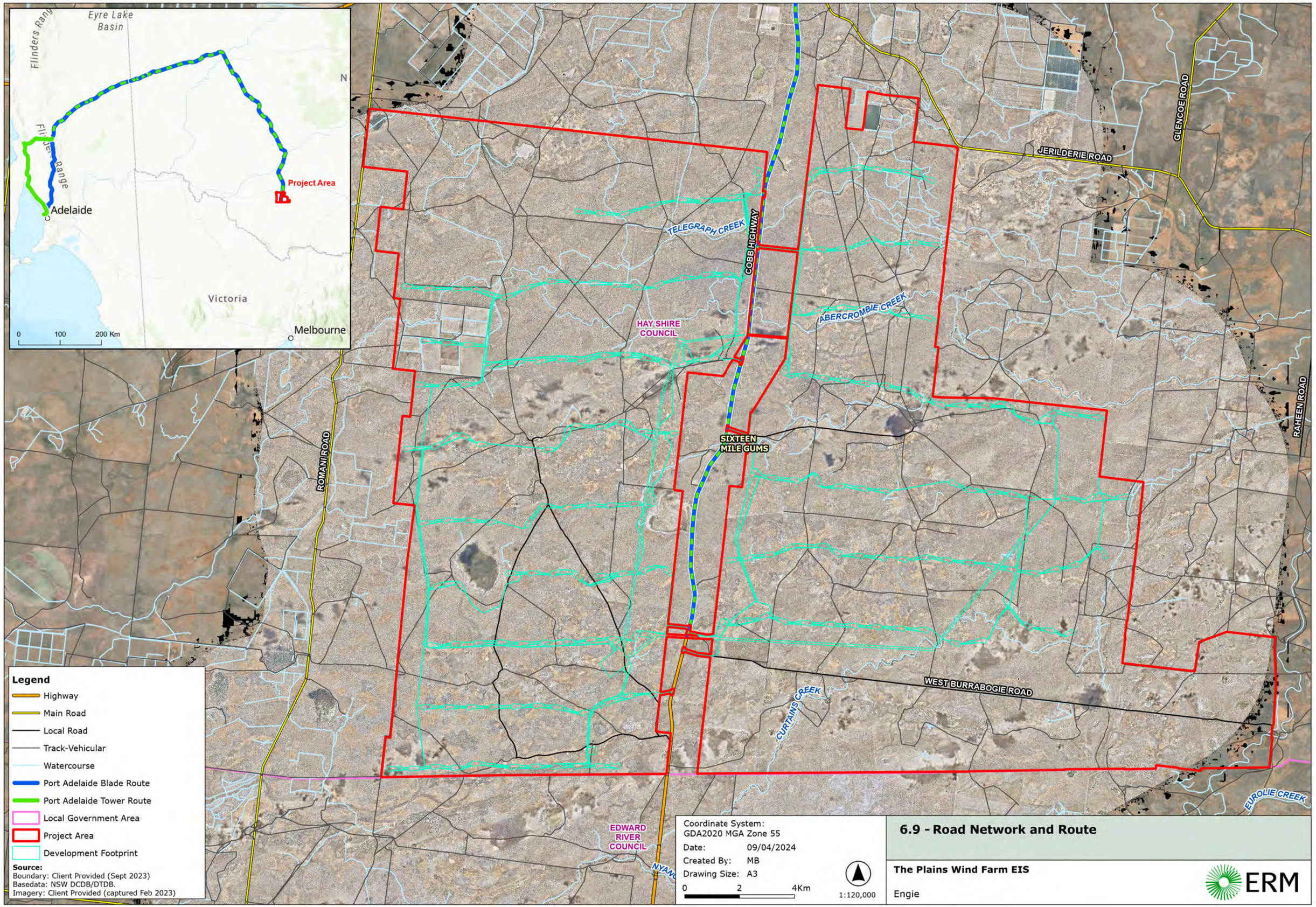
Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. The available site distance at the intersection exceeds the requirements of the Austroads Guide, with all vehicles expected to safely enter Cobb Highway from West Burrabogie Road.

6.5.3.5 SITE ACCESS

A site access assessment was undertaken that considered both turn treatments and site distances for all entrances (A-D) (refer **Table 6-35**). The results of the assessments, including a swept path analysis, are presented in full in **Appendix N**, with required treatments summarised in Table 6-35. Note that access point A. B and D are along the Cobb Highway, and access point C from West Burrabogie Road.

TABLE 6-35 SITE ACCESS ASSESSMENT RESULTS

Element	***Assessment Results***			
	Site Access A	***Site Access B***	***Site Access C***	***Site Access D***
Turn Treatments	BAL and BAR required	BAL and BAR required	Site access suitably designed to accommodate traffic	BAL and BAR required
Sight Distance	Exceeds Austroads requirements – no further upgrades required			



6.9 - Road Network and Route

The Plains Wind Farm EIS

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6.5.4 MITIGATION AND MANAGEMENT

Management measures that will be implement for the Project to minimise traffic impacts are included in **Table 6-36**.

TABLE 6-36 TRAFFIC AND TRANSPORT MANAGEMENT AND MITIGATION

ID	*Mitigation Measures*
TT1	Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) will be prepared in consultation with TfNSW and Hay Shire Council. The CTMP would provide additional information regarding the traffic volumes and distribution as described in Section 9 of the TIA. At a minimum, the CTMP will include the following commitments and traffic management measures which are to be implemented during the construction of the Project: • A pre-condition survey of the relevant sections of the existing road network will be undertaken in consultation with Council prior to construction; • During construction the sections of the road network used by the Project will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm would be rectified; • At the end of construction, a post-condition survey will be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction; • Neighbours of the Project will be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access; • Movements of the OSOM vehicles will be timed to not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application; • Heavy vehicles are to avoid peak school bus times to limit the interaction of large vehicles and vulnerable road users; • Development of OSOM protocols to be implemented during operation and in the event of a breakdown; • Development and implementation of a carpooling program to support sharing of vehicles travelling to and from site; • Development of four emergency access points for emergency services; • Implementation of a community information and awareness program to assist in managing traffic impacts. This will be initiated to ensure that local residents are aware of construction traffic accessing the Project; • Specific warning signs will be placed on approaches to and from the transport routes on Council roads, as required, which will advise of the changed traffic operations and heavy vehicle movements; • Onsite mitigation measures will be implemented, which may include speed restrictions, dust suppression measures, internal access tracks maintenance program, loading, unloading and storage will occur within the Project Area only, and the provision of car parking; and • Establishment of a Drivers Code of Conduct.
TT2	Road upgrades will be provided as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades includes: • Widen port access (gate) in southwestern corner of intersection at Port of Adeliade; • Relocate light pole and traffic signals at intersection (if required) on southern side of Eastern Parade and Port River Expressway; • Temporary removal of W-beam barriers along Port Wakefield Highway median, or replacement with removable bollards, and installation of approximately 900 m2 hard stand to be installed on median strips; • Relocation or removal of one (1) traffic sign, and two (2) signs checked for tip clearance on Angle Vale Road southwestern corner (at Angle Vale Road and North-South Motorway); • Relocation of two (2) traffic signs and a light pole and installation of approximately 420 m2 total hardstand near the intersection at Sturt Highway and Horrocks Highway;

ID	Mitigation Measures
	• Minor tree trimming of overhanging branches along Horrocks Highway; • Relocation of two (2) traffic signs (or signs made removable) and installation of approximately 550 m2 of hardstand near the intersection of Barrier Highway and Copperhouse Road; and • Tree trimming and removal on Copperhouse Street and approximately 150 m2 hardstand to be laid down; • Construction of new temporary gravel bypass track to Gaffney St (approx. 5.5km) (to be wind farm specification of minimum 5.5m width, suitable for min 14 tons per axle loading) on Barrier Highway at Barrier Highway (2.4 km form Broken Hill); • Construction of new temporary gravel bypass track to Gaffney St (approx. 3.7km). A new intersection off Barrier Highway (2.4 km from Broken Hill) will be required and one (1) sign will need to be made removable; • Construction of temporary gravel track through private land (to wind farm specification) and one (1) sign to be made removable at the intersection of Crystal Street and Barrier Highway; • Construction of temporary gravel track private land (to wind farm specification) and an egress gate installed in Barrier Highway; • Construction of temporary gravel track through private land (to wind farm specification). Remove trees, relocate one (1) power pole and installation pf approximately 550 m2 of temporary hardstand and fence realignment at the intersection of Sturt/Chettle Street and Barrier Highway; • Relocation of three (3) traffic signs and three (3) light poles on Cobb Highway and Sturt Highway in Hay, NSW. Installation of approximately 300 m2 total hardstand in southern corner; • Basic Right Turn (BAR) and Basic Left Turn (BAL) treatments at the intersection of Cobb Highway and West Burrabogie Road as shown in Appendix F of the TIA (refer **Appendix N**); and • BAR and BAL treatments at Site Access A, Site Access B and Site Access D along Cobb Highway as shown in Appendix G, Appendix H and Appendix I, respectfully of the TIA (refer **Appendix N**).

6.6 HAZARDS AND RISKS

6.6.1 AVIATION

An Aviation Impact Assessment (AVIA) has been prepared to identify and assess aviation constraints relevant to the Project in accordance with the SEARs, and relevant NSW legislation and guidelines (Aviation Projects, 2023; **Appendix Q**).

The Assessment responds to the SEARs (**Appendix A**) and considers all relevant stakeholder engagement outcomes discussed in **Section 5**.

The AVIA has considered the following guidelines and regulation:

- *Civil Aviation Safety Regulations 1998*;
- National Airports Safeguarding Framework (NASF) Guideline D Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation (Australian Government, 2012); and
- ISO 31000:2018 Risk Management –Guidelines (ISO, 2018) (for the risk assessment).

The AVIA was prepared based on:

- Review of relevant information provided by the Applicant and available within the public domain;
- Site visit to investigate aviation safety aspects of the Project;
- Review of relevant regulatory requirements and information sources;
- An assessment of the Project in relation air and aviation safety and the identification of appropriate risk mitigation strategies, particularly an acceptable alternative to night lighting;
- Consultation with Hay Council, Edward River Council, Part 173 procedure designers (Airservices Australia), and other stakeholders including Commonwealth Department of Defence and representatives of nearby aerodromes and aircraft operator; and
- Engagement with other stakeholders, including owners/operators of airstrips within and in proximity to the Project.

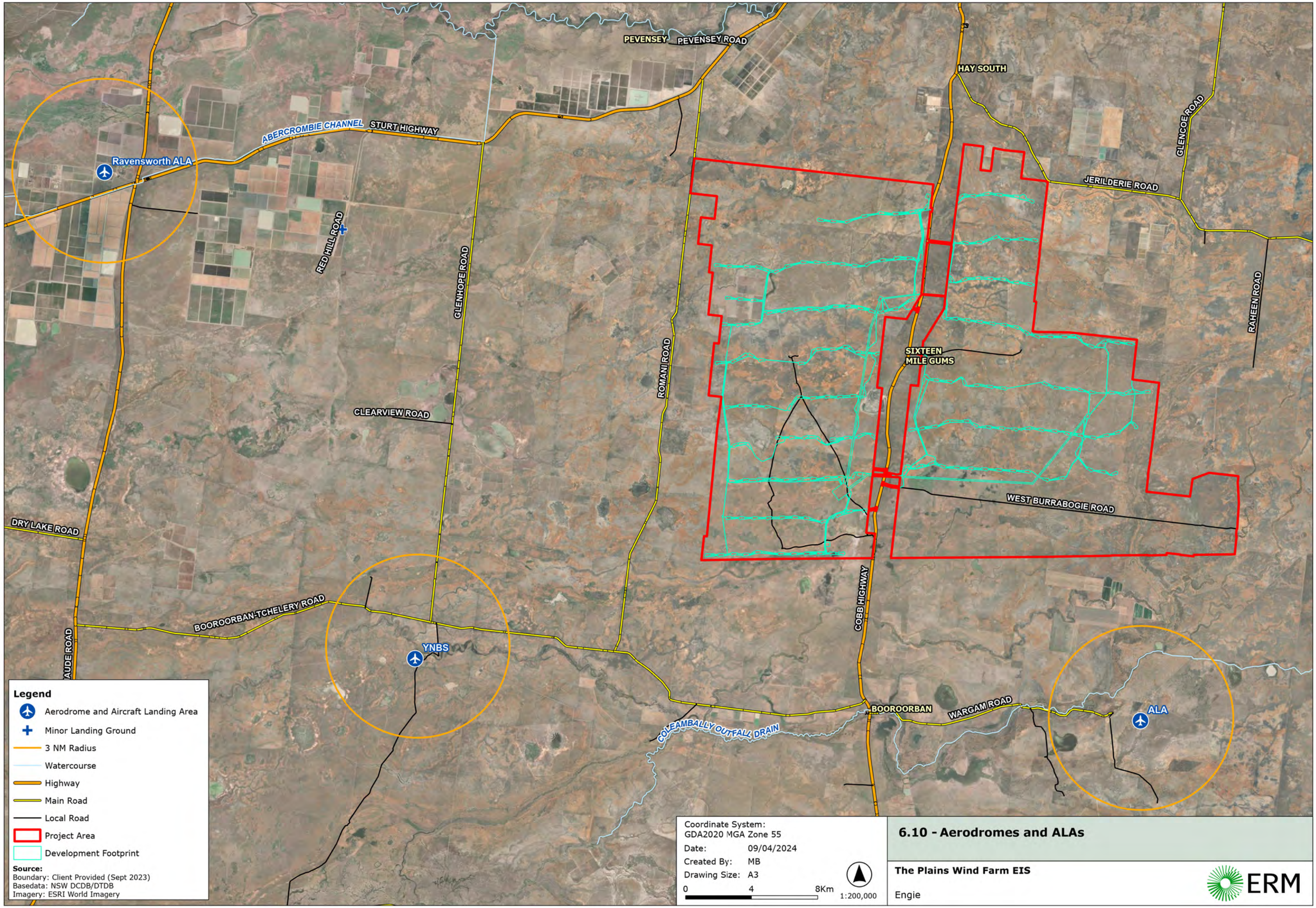
6.6.1.1 BACKGROUND

Table 6-37 summarises the aviation facilities identified in the AVIA in proximity to the Project Area.

TABLE 6-37 AVIATION FACILITIES

Facilities	*Description*
Nearby certified aerodromes	• Hay Airport (YHAY) is a certified aerodrome, operated by Hay Shire Council, with a published aerodrome elevation of 93 m AHD (305 ft above mean sea level (AMSL)). The Project Area is located within 30 nautical miles (nm; or 55.56 km) of Hay Airport; and • Griffith Airport (YGTH) and Deniliquin Airport (YDLQ) are located outside of the 30 nm (55.56 km) radius of the Project Area. Obstacles within 15 nm (10 nm MSA + 5 nm buffer) and within 30 nm (25 nm MSA + 5 nm buffer) of the Hay Airport's ARP define the height at which an IFR aircraft can fly when within 10 nm and 25 nm and when weather conditions do not allow the pilot to see the ground.
Aircraft Landing Areas (ALAs)	Published aeronautical navigation charts obtained via OzRunways (https://www.ozrunways.com) identified three (3) ALAs in proximity to the Project Area. No WTGs are located within a radius of 3 nm of closest runway: • Ravensworth aerodrome (YRWH); • North Bundy Station (YNBS);and • Unnamed ALA 1.
Air routes and Lowest Safe Altitude (LSALT)	A protection area 7 nm (13 km) laterally either side of an air route is used to assess the LSALT for the air route. Six air routes are within 7 nm vicinity of the Project Area. The Project is solely located in the area with a grid LSALT of 1,700 ft AMSL with a protection surface of 700 ft AMSL.
Airspace Protection	The Project Area is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited, Restricted and Danger areas.
Aviation Navigation Facilities	The nearest aviation navigation aid is located at Griffith Airport, approximately 64 nm northeast of the Project Area.
Radar	The closest aviation radar facility is the Mount Bobbara Route Surveillance Radar which is located approximately 334 km (180 nm) southeast of the Project Area.

Figure 6-10 shows the location of the Project Area relative to nearby certified aerodromes and ALAs.



6.10 - Aerodromes and ALAs

The Plains Wind Farm EIS

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6.6.1.2 AVIATION IMPACT ASSESSMENT

Certified Airports

The Project Area is completely within the 25 nm minimum sector altitude (MSA) of Hay Airport.

Obstacles within 15 nm (10 nm MSA + 5nm buffer) and 30 nm (25 nm MSA + 5 nm buffer) of Hay Airport define the height at which an aircraft can fly when within 10 nm and 25 nm:

- The 10 nm MSA is 488 m AHD (1,600 ft AMSL); protection surface elevations are 183 m AHD (600 ft AMSL); and
- The 25 nm MSA is 518 m AHD (1,700 ft AMSL); protection surface elevations are 213 m AHD (700 ft AMSL).

The highest WTG located within 15 nm of Hay Airport (including 5 nm buffer area) is EE15. The maximum overall height for WTG EE15 (maximum WTG elevation) is approximately 364.5 m AHD (1,196 ft AMSL). As a result, WTG EE15 will infringe the 10 nm MSA by 176.8 m (579.8 ft).

All WTGs located within 30 nm of Hay Airport (including 5 nm buffer area) are higher than 25 nm MSA. WTG EE15 is higher than 25 nm MSA by 146.4 m (479.8 ft).

The Project will impact both the 10 nm and 25 nm Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) of Hay Airport. As a result, the 10 nm MSA and the 25 nm MSA for Hay Airport will both be increased to 2,200 ft (670.6 m) (respective increase of 600 and 500 ft).

The Project will not impact instrument procedures of Griffith Airport and Deniliquin Airport, and the Project is located outside the horizontal extent of circling areas of these Airports and will have no impact on its aviation activities.

Obstacle Limitation Surfaces

Obstacle Limitation Surface (OLS) are established for each certified aerodrome runway. For the Code 3 non-precision runway at Hay Airport, the maximum lateral extent of the OLS is up to 5.5 km for the conical surface and 15km for the take-off and approach surfaces. Based on Hay Aerodrome Master Plan 2022, the runway will be extended to 2,300 m and upgraded to Code 4, with the maximum lateral extent of the OLS of up to 6 km for the conical surface and 15km for the take-off and approach surfaces (refer to Section 6.2.5 of **Appendix Q**).

The closest proposed WTGs in the Project Area to Hay Airport are located beyond the horizontal extent of the OLS of the existing and future proposed extended runway of Hay aerodrome, and will not impact the OLS of Hay Airport.

Aircraft Landing Areas (ALAs)

As a guide, an area of interest within a 3 nm radius of an ALA is used to assess potential impacts of proposed developments on aircraft operations at or within the vicinity of the ALA. The AVIA considered the potential impacts to operations out of the uncertified ALAs in proximity to the Project Area. The AVIA found three (3) ALA's in closest relation to the

Project. No WTGs are located within a radius of 3 nm of each ALA, therefore aircraft operations will not be impacted by WTGs.

Potential Wake Turbulence

Adverse turbulence on aircraft is most critical during take-off and landing. The AVIA found that there will be no impact of wake turbulence on the ALAs given distance from the Project.

Grid and Air Route Lowest Safe Altitudes (LSALT)

The Manual Standards 173 *Standards Applicable to Instrument Flight Procedure Design* (MOS 173) requires that a minimum obstacle clearance (MOC) of 1,000 ft below the published LSALT is maintained along each air route. Hence, MOC is the height above which obstacles would impact LSALTs or air routes.

The Project WTGs maximum tip height is of 270 m AGL and the highest WTG is EE15 with a maximum overall height of 364.5 m AHD (1,196 ft AMSL). The WTG EE15 is higher than the LSALT MOCs of 700 ft AMSL, therefore, the Grid LSALT will need to be raised by 500 ft to 2,200 ft (670.6 m).

Table 8 of **Appendix Q** provides an impact analysis of the six (6) air routes within 7 nm surrounding the Project Area. The Project will have an impact on three (3) air routes, and the MOCs would need to be increased as follows:

- Air route Q60 – MOC increased by 500 ft to 2,200 ft;
- Air route H247 – MOC increased by 200 ft to 2,200 ft;
- Air route W762 – no identified impacts;
- Air route W639 – no identified impacts;
- Air route W466 – MOC increased by 100 ft to 2,200 ft; and
- Air route W675 – no identified impacts.

Airspace Protection

The Project is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited, Restricted or Danger areas. The Project therefore will not impact controlled airspace.

Aviation Facilities

The Project is located sufficient distance from nearby certified airports and aviation facilities and will not have an impact.

Radar

The closest aviation radar facility is the Mount Bobbara Route Surveillance Radar which is located approximately 334 km south east of the Project Area. As the Project is located outside the range of Mount Bobbara Route Surveillance Radar, the Project will not impact the serviceability of this facility.

Aerial Firefighting

Aerial firefighting operations (firebombing in particular) are conducted in Day Visual Flight Rules (VFR), sometimes below 500 ft above ground level (AGL).

The Australasian Fire Authorities Council (AFAC) has developed a national position on wind farms, including their development and operations in relation to bushfire prevention, preparedness, response and recovery, set out in the 'Wind Farms and Bushfire Operations Guideline' (AFAC, 2018). This guideline advises that wind farm operators should be responsible for ensuring that the relevant emergency protocols and plans are properly executed in an emergency event. During an emergency, operators need to react quickly to ensure they can assist and intervene in accordance with their planned procedures.

Aerial Application Operations

Aerial application operations including such activities as fertiliser, pest and crop spraying are generally conducted under day VFR below 500 ft (152.4 m) AGL, usually between 60 ft (18.3 m) and 100 ft (30.5 m) AGL.

Safe aerial application operations would be possible on properties within the Project Area and neighbouring areas, subject to final turbine locations and by implementing recommendations provided in the AVIA (refer **Appendix Q**). This is based on previous studies undertaken by Aviation Projects and is subject to further consultation with the Aerial Application Association of Australia (AAAA) and with local aerial application operators.

Other Operations

Other operations may include:

- Passenger transport operations: scheduled and non-scheduled passenger transport operations are generally operated under the Instrument Flight Rules (IFR);
- Private operations: Private operations are generally conducted under day or night VFR, with some IFR. Flight under day VFR is conducted above 500 ft AGL;
- Military operations: There may be some high-speed low-level military jet aircraft and helicopter operations conducted in the area; and
- Emergency services: Royal Flying Doctor Service and other emergency services operations are generally conducted under the IFR, except when arriving / departing a destination that is not serviced by instrument approach aids or procedures.

Risk Assessment

Five potential risk events associated with WTGs and meteorological masts were identified in relation to aviation safety:

- For an aircraft to collide with a WTG (controlled flight into terrain);
- For an aircraft to collide with a met mast (controlled flight into terrain);
- A pilot to initiate manoeuvring in order to avoid colliding with a WTG or met mast resulting in collision with terrain;

- Hazards associated with the Project to invoke operational limitations or procedures on operating crew; and
- Obstacle lighting on neighbours.

The concept of worst credible effect has been used for the assessment for the purpose of considering applicable consequences. A summary of the level of residual risk associated with the Project with the recommended treatments implemented, is provided in **Table 6-38**. The risk assessment is provided in full in Section 9 of the AVIA (refer **Appendix Q**).

TABLE 6-38 SUMMARY OF RISKS

Risk Element	***Consequence***	***Likelihood***	***Risk***	***Actions Required***
Aircraft collision with WTG	Catastrophic	Unlikely	7	**Acceptable without obstacle lighting, as low as reasonably practicable (ALARP)** Communicate details of the Proposal to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes before, during and following construction.
Aircraft collision with wind monitoring tower	Catastrophic	Unlikely	7	**Acceptable without obstacle lighting (ALARP)** Although there is no obligation to do so, consideration has been made for marking the wind monitoring towers according to the requirements set out in MOS 139 Chapter 8 Division 10 Obstacle Markings, specifically 8.110 (5), (7) and (8). Details of wind monitoring towers will be communicated to local and regional operators and to CASA and Airservices Australia following construction.
Avoidance manoeuvring leads to ground collision	Catastrophic	Unlikely	7	**Acceptable without obstacle lighting (ALARP)** Communicate details of the Proposal to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes before, during and following construction.
Effect on crew	Minor	Possible	5	**Acceptable without obstacle lighting (ALARP)** Communicate details of the Proposal to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes before, during and following construction
Visual impact from obstacle lights	Moderate	Likely	7	**Acceptable without obstacle lighting** (zero risk of visual impact from obstacle lighting). If lights are installed, design to minimise impact

Hazard Lighting and Marking

Based on the risk assessment in **Appendix Q**, it was concluded that aviation lighting is not required for WTGs to maintain an acceptable level of safety to aircraft. Met masts that are not in close proximity to a WTG, or are installed prior to ant WTGs, will require obstacle lighting to maintain an acceptable level of safety. Relevant lighting standards and guidelines should be followed.

The following conclusions apply to hazard lighting and marking:

- The proposed WTGs and met masts must be reported to CASA if they are considered a hazardous obstacle. WTGs and met masts must be marked in accordance with MOS 139 Chapter 8 Division 10.8.110;
- WTGs should be marked a white colour to provide sufficient contrast with the surrounding environment to maintain an acceptable level of safety while lowering visual impact to the neighbouring resident;
- Temporary and permanent WMTs should be marked according to the requirements set out in Manual of Standards (MOS) 139 Section 8.10 (as modified by the guidance in NASF Guideline D). Aviation marker balls and painting the top 1/3 of WMTs structures in red and white bands is considered to be an acceptable mitigation strategy; and
- WMTs that are installed prior to WTG installation, and WMTs that are not in close proximity to a WTG, will require obstacle lighting to maintain an acceptable level of safety. These WMTs should be lit with medium intensity steady red obstacle lighting at the top of the WMT mast. Characteristics of medium intensity obstacle lighting in MOS 139, Section 9.33.

6.6.1.3 AVIATION MITIGATION AND MANAGEMENT

Impacts to aviation and airspace (as described above) will be mitigated through the implementation of specific mitigation and management measures as described in **Table 6-39.** As part of the detailed design, the Applicant will continue to investigate options to further avoid and minimise impacts to aviation and airspace.

TABLE 6-39 AVIATION MITIGATION AND MANAGEMENT MEASURES

ID	***Mitigation and Management Measures***
AS1	Designed air routes (to accommodate the WTGs at 270 m AGL): • Air route Q60 LSALT will be increased by 500 ft, from 1,700 ft to 2,200 ft AMSL. • Air route H247 LSALT will be increased by 200 ft, from 2,000 ft to 2,200 ft AMSL. • Air route H466 LSALT will be increased by 100 ft, from 2,100 ft to 2,200 ft AMSL.
AS2	• Notification and reporting: • Details of 'constructed' WTGs including coordinates and elevations will be provided to Airservices Australia; • Details of 'constructed' WTGs and WMT exceeding 100 m AGL will be reported to CASA as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with CASR Part 139.165(1)(2);

ID	Mitigation and Management Measures
	• Any obstacles above 100 m AGL (including temporary construction equipment) will be reported to Airservices Australia NOTAM office until they are incorporated in published operational documents; • Details of the Project will be provided to local and regional aircraft operators prior to construction in order for them to consider the potential impact of the wind farm on their operations. Specifically, details will be provided to the NSW Regional Airspace and Procedures Advisory Committee for consideration by its members in relation to VFR transit routes in the vicinity of the Project; and • Details of the Project (including location and height information of WTGs, met masts and overhead transmission lines) will be provided to landowners within Project Area to facilitate the flight planning of aerial application operators.
AS3	Marking of turbines: • The rotor blades, nacelle and the supporting tower of the WTGs will be painted white, typical of most WTGs operational in Australia. No additional marking measures are required for WTGs.
AS4	Marking of wind monitoring towers: • Marking of the temporary and permanent wind monitoring towers according to the requirements set out in MOS 139 Section 8.10 will be considered by the Applicant
AS5	Lighting of wind monitoring towers: • The Applicant will consider the characteristics for medium-intensity obstacle lighting contained in MOS 139, Section 9.33 for the lighting of temporary wind monitoring towers installed prior to WTG installation and permanent wind monitoring towers that are not in close proximity to a WTG with medium intensity steady red obstacle lighting at the top of the WMT mast.
AS6	Micro-siting: • Micro-siting of the WTGs and met masts within 100 m of assessed location, if required
AS7	Overhead transmission line: • Overhead transmission lines and/or supporting poles that are located where they could adversely affect aerial application operations will be identified in consultation with local aerial application operators and marked in accordance with Part 139 MOS 2019 Chapter 8 Division 10 section 8.110 (7) and section 8.110 (8).
AS8	Review of risk assessment undertaken in the AVIA as follows: • Prior to construction to ensure the regulatory framework has not changed; • Following any significant changes to the context in which the assessment was prepared, including the regulatory framework; and • Following any near miss, incident or accident associated with operations considered in the AVIA risk assessment.

6.6.2 BUSHFIRE

A Bushfire Risk Assessment has been prepared to identify potential hazards and risks associated with the Project and its proximity to bushfire prone land. The need for a Bushfire Risk Assessment was identified within the SEARs, and the *Rural Fires Act 1997* imposes obligations on land occupiers to take all practicable steps to prevent the occurrence and spread of wildfire to adjoining lands from lands under their care and management.

The assessment contains management and mitigation measures designed to address these obligations consistent with similar projects of this nature in other parts of NSW / Australia and in accordance with NSW RFS guidelines including Planning for Bush Fire Protection (PBP) (2019) inclusive of the PBP Addendum (2022).

The Bushfire Risk Assessment is provided in **Appendix R**.

6.6.2.1 BACKGROUND

Despite the mitigation measures and treatments that are put in place, it is noted that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact. The absence of any identified hazard or asset in the Project Area should not be interpreted as a guarantee that such hazards or impacts do not exist.

Bushfire Prone Land

A review of the NSW RFS Bushfire Prone Land mapping confirms that the Project Area is not currently recognised as being bushfire prone land (refer **Figure 6-11**). NSW RFS has advised that this grassland vegetation is considered a hazard, and the land may be added to the bushfire prone land mapping in the future.

Vegetation Category 3 bushfire prone land is located immediately south of the Project Area boundary and presents a medium bushfire risk.

The relevant Bush Fire Risk Management Plan (BFRMP) for the Project is the Mid Murray Zone BFRMP (2009). The Project Area is not mapped as a bushfire management zone under this plan. The closet asset to the Project Area identified in the BFRMP is the township of Booroorban which is 10 km south of the wind farm Development Footprint. Booroorban is identified as having an unlikely likelihood of a bushfire event; however, a bushfire event would have a moderate consequence.

Prevailing weather conditions associated with the bushfire season as reported by the Mid Murray Zone Bush Fire Management Committee (BFMC) (2009) are winds from the west around to the north accompanied by high daytime temperatures and low relative humidity. Dry lightning storms occur frequently during the bushfire season often starting forest and grass fires.

Fire History

The NSW Government Central Resources for Sharing and Enabling Environmental Data (SEED) provides information on wildfires that have occurred in the vicinity of the Project Area. No fires have been reported within the Project Area. The closest reported fire (15 km to the east of the Project Area) is the Glencoa wildfire which occurred in November

1990 and consumed 181,148 ha of prime grazing land, destroyed 100,000 sheep and hundreds of kilometres of fencing. No other fires have been reported within 20 km of the Project Area.

6.6.2.2 IMPACT ASSESSMENT

Fire Ignition

Natural ignitions such as lightning strikes are likely and historically common across the region. Human induced ignitions (both accidental and arson) are also known to occur across the region. Other factors such as damaged equipment and poor installation can also contribute to the ignition of a fire.

The risk of fire starting because of a lightning strike may be reduced by the presence of wind turbines (AFAC, 2018). Wind turbines include an in-built lightning protection system which safely dissipates the electricity from the blades or the nacelle to the ground, although there are no ignition occurrence records for the Project Area that provide statistical validity or a guide to likelihood of ignition.

Wind turbines also have a variety of on-board control systems specifically designed to mitigate the risk of fire. Each wind turbine is connected to a control centre which constantly monitors the wind turbine and shuts down the turbines if there is a risk of overheating. Turbines also automatically shut down if they are close to functioning outside their design conditions such as wind speeds greater than 25 metres per second (m/s). The risk that a wind farm itself will cause a fire is considered low given appropriate protection measures (AFAC, 2018) (refer **Section 6.6.2.3**) The WTG towers are also made from non-combustible material.

Earth moving equipment, power tools (e.g., welders, grinders), mowers and slashers are well known for starting bushfires under conditions of high temperature, low humidity and high wind. Therefore, construction and ongoing maintenance of the wind farm will be a potential source of ignitions. However, the level of risk from faults cannot be assessed at this stage because there is no case history available, and it is not possible to compare the existing ignition risk from farm operations relative to wind farm operation.

Bird flashover faults on high voltage power lines can also cause bushfires when fuel conditions beneath the fault location are conducive to fire ignition and spread. This risk can be reduced by maintaining reduced fuel loads beneath transmission lines and will be the responsibility of the asset owner.

STURT HIGHWAY
TELEGRAPH CREEK
HAY SHIRE COUNCIL
JERILDERIE ROAD
GLENCOE ROAD
RAHEEN ROAD
ABERCROMBIE CREEK
SIXTEEN MILE GUMS
ROMANI ROAD
COBB HIGHWAY
WEST BURRABOGIE ROAD
CURTAINS CREEK
EUROLIE CREEK
EDWARD RIVER COUNCIL

Legend

- Highway
- Main Road
- Local Road
- Track-Vehicular
- Watercourse
- 220kV Transmission Line
- Local Government Area
- Vegetation Category 1
- Vegetation Category 3
- Vegetation Buffer
- Glencoa Wildfire 1990
- Project Area

Source:
Boundary: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB. NSW RFS
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 55
Date: 09/04/2024
Created By: MB
Drawing Size: A3
0 2 4Km
1:120,000

6.11 - Bushfire Prone Land and History

The Plains Wind Farm EIS

Engie

ERM

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Firefighter and Public Safety

The firefighters likely to respond to a bushfire in this area would be volunteers from the NSW RFS and / or individual property owners. The remoteness and expanse of the wind farm also makes it hard for firefighting brigades to access the area. Any volunteer firefighters from the NSW RFS, NPWS or property owners from neighbouring farms attending bushfires in this area may not be trained in structural and electrical firefighting. The Bushfire Emergency Management and Operations Plan will detail appropriate risk control measures that would need to be implemented to safely mitigate potential risks to the health and safety of the firefighters and first responders.

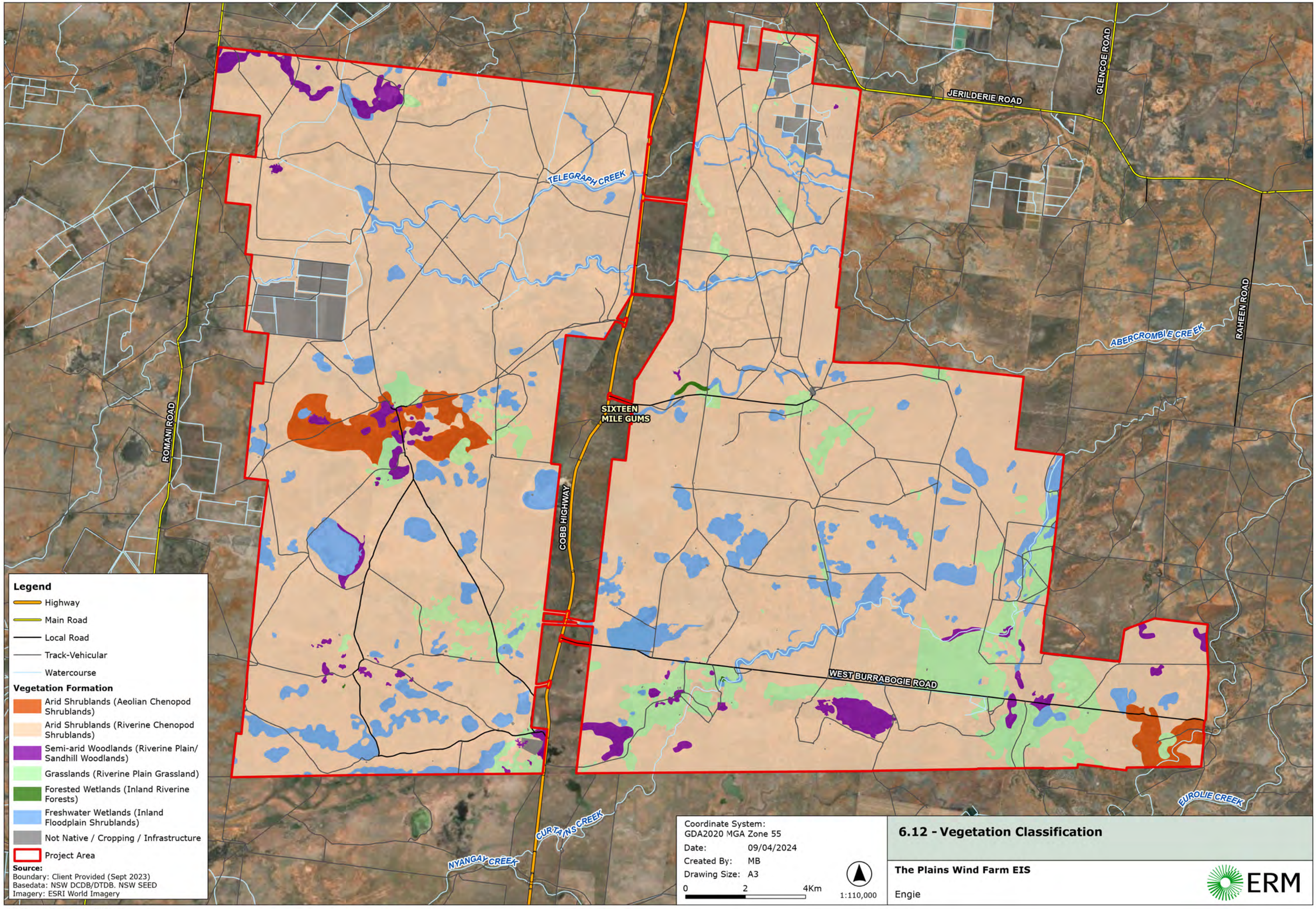
If a fire does breach any containment lines and threatens the wind farm assets, it is possible that the windfarm infrastructure will sustain direct flame contact and that firefighting will require aerial support. Aerial support was used during the catastrophic 2019/2020 fires across NSW and Aviation Projects (2024) recommends that the Proponent consider engaging with local aerial agricultural and aerial firefighting operators to develop procedures for their safe operation within the Project Area.

Impact Statement

The risk that the wind farm itself will cause a fire is minimal and the proposed development is not located within a bushfire prone landscape (based on the current bushfire prone land mapping). While not identified as a bushfire prone vegetation community within the current bushfire prone land mapping, fires within grasslands and arid shrublands should not be underestimated and can start and spread quickly. For this reason, we have considered these as a bushfire hazard. Mitigation measures and treatments will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the wind farm and the community (refer **Section 6.6.2.3**).

In the event that a fire does breach any containment lines and threatens the wind farm assets, it is possible that the wind farm infrastructure will sustain direct flame contact. This requirement would not be the result of the wind farm itself although it is recognised that the wind farm would result in additional assets that would need to be protected.

Despite any mitigation measures applied, bushfire risk will always remain. This requirement would not be the result of the solar farm itself although it is recognised that the wind farm would result in additional assets that would need to be protected.



6.12 - Vegetation Classification

The Plains Wind Farm EIS

Engie

ERM

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6.6.2.3 MITIGATION AND MANAGEMENT

Mitigation measures and treatments will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the wind farm and the community. A Bushfire Emergency Management and Operations Plan is prepared in conjunction with relevant stakeholders, including NSW RFS, NSW Fire and Rescue, landowners and adjoining property owners.

The detailed mitigation measures outlined in the Bushfire Risk Assessment (**Appendix R**) have been developed to meet the relevant provisions outlined in Section 8.3.5 of *Planning for Bush Fire Protection 2019* and to ensure that the wind farm development does not present any increased risk of widespread fire across the landscape.

These mitigation measures will be applied for the life of the Project and have been summarised in **Table 6-40**.

TABLE 6-40 SUMMARY OF RECOMMENDED BUSHFIRE MITIGATION STRATEGIES AND ACTIONS

Mitigation Strategy	***Section of Bushfire Risk Assessment***	***ID***	***Action***
Asset Protection Zone (APZ)	6.1	BR1	A *minimum* 10 m APZ is to be established on all sides of the WTG, substations, switching station and O&M Buildings. A *minimum* 24 m APZ is to be established on all sides of the accommodation compounds. All APZ are to be managed as an inner protection zone (IPA) as outlined within Appendix 4 of PBP 2019, and NSW RFS 'Standards for Asset Protection Zones'. APZ will not extend beyond the property boundary or rely on actions being undertaken by adjacent landowners.
Wind farm construction	6.2	BR2	The following measures are recommended to be implemented during the entire period of construction: • The access road will be constructed prior to the installation of any WTG or related infrastructure (in advance of each development stage); • Ensure appropriate bunding in areas where there is potential for flammable fuels and oils to leak and create bushfires or other environmental risks; • Install appropriate signs to assist emergency response crews determine track names, and location of infrastructure; • Ensure that appropriate permits have been issued for work during the Fire Danger Period, and that any conditions on permits are adhered to; • Adhere to restrictions on Total Fire Ban or days of high fire danger; • Suitable firefighting equipment (specific requirements to be confirmed in consultation with NSW RFS) is present onsite; • Carry fire extinguishers or firefighting equipment in vehicles;

Mitigation Strategy	***Section of Bushfire Risk Assessment***	***ID***	***Action***
			• Carry emergency communications equipment; • Where practicable, site vehicles during the construction phase will have diesel engines and/or will use the site access roads (if available) to minimise the likelihood of igniting dry grass; • Restrict smoking to prescribed areas, and provide suitable ash and butt disposal facilities; • All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g., vegetation); and • On days when Very High fire danger or worse is forecast, the "fires near me' app is to be checked hourly for the occurrence of any fires likely to threaten the Project Area.
Wind farm ongoing operations	6.3	BR3	• The Project will be controlled by a remote supervisory control and data acquisition from a control room located within the permanent site operations and maintenance facility. The Supervisory Control and Data Acquisition (SCADA) system will allow remote operation of all WTGs with the ability to shut-down individual or all WTGs if required. • NSW RFS and CASA will be provided with maps and GPS coordinates of the final wind turbine layout and identification information for individual wind turbine sites for their internal response planning. • Liaise with local aerial agricultural and aerial firefighting operators to develop procedures for their safe operation within the Project site. • Safe working and emergency response procedures for all work tasks will be developed and implemented. • The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels. • Vegetation fuels throughout the wind farm are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required.
Fire preparedness and response	6.3	BR4	Prior to construction, an Emergency Management and Operations Plan (EMOP) will be prepared for the wind farm that provides the following: • A site plan showing infrastructure, site access and the internal road layout; • Blades should be stopped in the 'Y' or 'rabbit ear' position; • Control and coordination arrangements for emergency response and who has the authority to direct turbine shut-down procedures; • Hazard reduction strategies; • Fire suppression equipment details; • Location of all fire control advantages and APZ; • Flammable materials storage requirements;

Mitigation Strategy	*Section of Bushfire Risk Assessment*	*ID*	*Action*
			• Minimum evacuation zone distances • Fire reporting and response to formal Emergency alerts; and • Any other risk control measures required to be followed by firefighters.
Maintain emergency access/egress for fire fighters and site personnel	6.4	BR5	Access to the Project Area is proposed via Cobb Highway. The ongoing maintenance of the Project will be accessed through internal access roads within the Project Area. All access roads will be upgraded to provide sufficient width and other dimensions to ensure safe unobstructed access and allow firefighting crews to operate equipment around the vehicle and will be maintained to the minimum standards as outlined within the NSW RFS Fire Trail Standards and the NSW RFS Fire Trail Design, Construction and Maintenance Manual. Site access points will be constructed as the first stage of development and the final design of access roads will enable safe access and egress for residents attempting to leave the area at the same time that emergency service personnel are arriving to undertake firefighting operations.
Water storage	6.5	BR6	Reticulated water supply is not provided to the site. The volume and location of static water tanks will be confirmed in consultation with the NSW RFS, although it is likely to require minimum 50,000 litre tanks, based on refilling six tanker units (4,000 litres) twice each. The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels.

6.6.3 BLADE THROW

This section assesses the risks of blade throw to human life associated with a blade failure event of the Project as a result of the proposed WTG locations and specification in accordance with the SEARs (**Appendix A**) and the Wind Energy Guideline (DPE, 2016). All relevant stakeholder engagement outcomes discussed in **Section 5** have been considered in the preparation of this section.

This assessment incorporated the following scope of work:

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

6.6.3.1 BACKGROUND

Source of Blade Throw

A WTG is constructed of around 25,000 components, which are grouped into several main systems, such as the foundation, tower, nacelle, hub and blades, as discussed in **Section 3.3.1**.

A blade throw incident can occur when an entire WTG blade becomes separated from its hub at the metal-to-metal root joint. Instantaneous failure of the bearing or hub flange fastening system can cause this (MMI Engineering Ltd, 2013). If this occurs and the WTG in-built control systems fail to detect an abnormality (e.g., vibration, imbalance, under power), a blade could be thrown from the hub. However, the progression of this type of failure is generally slow enough that the control system will detect an abnormality and the machine will fault and shut down, preventing a blade throw event (MMI Engineering Ltd, 2013).

Preventing structural failures such as fatigue resistance of WTG subassemblies can prevent the possibility of a blade throw event (MMI Engineering Ltd, 2013). Data has indicated that subassembly failure frequencies are reducing. This has been correlated to improvements in design and maintenance (Ribrant & Bertling, 2007).

Other causes of WTG blade failures include extreme environmental conditions, incorrect design for ultimate or fatigue loads, extremely low strength of the materials, failure of turbine control system, and human error (Carbone & Afferrante, 2013; Rastayesh, Long, Dalsgaard Sorensen, & Thons, 2019).

Likelihood of Blade Throw

In order to quantify the likelihood of a blade throw event, researchers have examined historical data sets of incidents on wind farms. Comprehensive and detailed blade throw data sets are not typically available to the public. Where databases have been compiled, the data is typically held in confidence by manufacturers or industrial bodies (Larwood & Simms, Analysis of blade fragment risk at a wind energy facility, 2018; MMI Engineering Ltd, 2013). The limited data available includes a database of over 200 severe WTG incidents which occurred in Germany and Denmark from 1980 until 2001. Using this database, researchers (Braam & Rademakers, 2002) were able to establish rates of incidents as depicted in Table 6-41 .

Table 6-41 also includes blade throw probabilities as contained in the *Handbook Wind Turbines* (2019) (or translated as *Wind Turbines Handbook*) prepared by the Belgium Government (Department of Omgeving, 2019).

TABLE 6-41 BLADE THROW PROBABILITIES: FREQUENCIES OF OCCURRENCES

Failure Case	***Recommended Value (1 / year)***	
	Braam & Rademakers (2002)	***Handbook Wind turbines (2019)***
Collapse of an entire tower from base	3.2×10^{-4}	1.5×10^{-5}

Failure Case	***Recommended Value (1 / year)***	
	Braam & Rademakers (2002)	***Handbook Wind turbines (2019)***
Loss of entire blade	8.4×10^{-4}	6.2×10^{-4}
Nominal operating rpm (revolutions per minute)	4.2×10^{-4}	6.2 x 10-4
Mechanical braking (1.25 x nominal rpm)	4.2×10^{-4}	-
Emergency (2.0 x nominal rpm)	5.0×10^{-6}	5.0×10^{-6}

Data from the *Wind Turbine Accident and Incident Compilation* (Caithness Windfarm Information Forum, 2023) and other sources identified five blade throw incidents at Australian wind farms, including:

- Dundonnell Wind Farm, Victoria (October, 2020);
- Bald Hills Wind Farm, Victoria (June, 2020);
- Lal Lal Wind Farm, Victoria (September, 2019);
- Wonthaggi Wind Farm, Victoria (March, 2012); and
- Windy Hill Wind Farm, Queensland (July, 2005).

Limited publicly information is available on these incidents; however, no damage to human life or property was reported. Additionally, there is general agreement throughout the literature that the likelihood of damage to human life or property from a blade throw incident is extremely low and well within risk levels typically deemed acceptable by society.

Distance of Blade Throw

Published literature on blade throw indicate that there are many approaches to modelling blade throw potential, whether theoretical or incident based. Documented blade failures and blade throw distances were reported in the aforementioned incident database, in which the maximum throw distance for an entire blade was 150 m (Braam & Rademakers, 2002).

Sarlak & Sorensen (2015) calculated maximum blade throw distances for four different turbine sizes, ranging from 2.3 MW to 20 MW. These calculations consider factors such as blade length, wind speed and blade velocity. Of relevance to the Project are the maximum throw distances calculated for a 5 MW and 10 MW turbine. For a full blade throw under normal operating conditions of 70 m/s blade tip speed, the maximum distance is less than 200 m. Under extreme conditions of 150 m/s blade tip speed, the maximum throw distance is less than 500 m.

At the time of separation, the blade or fragment has the same angular velocity (or spin) as the rotor (Larwood, 2005), as illustrated in **Figure 6-13**.

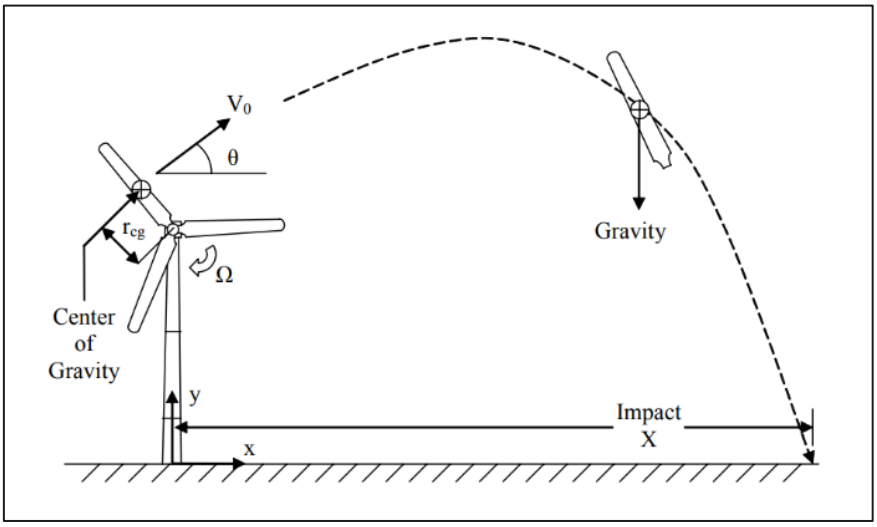


FIGURE 6-13 DIAGRAM ILLUSTRATING BLADE THROW

Source: (Larwood, 2005).

Comparatively, the maximum range of a projectile may be estimated using the following formula (Rogers, Slegers, & Costello, 2011):

$$D = \frac{v_T^2 s_{\theta_T} c_{\theta_T} \pm v_T^2 \sqrt{s_{\theta_T}^2 c_{\theta_T}^2 + 2\frac{g}{v_T^2}\left(h - Rc_{\theta_T}\right) c_{\theta_T}^2}}{g}$$

Where: D = Lateral distance (m)

v_T = Initial velocity (m/s)

θ_T = Initial angle

$c\theta_T = \sin\theta_T$

$c\theta_T = \cos\theta$

g = acceleration due to gravity (m/s^2)

h = Hub height (m)

R = Radial distance (m).

Arriscar (2021) used the above formula to map the probability versus distance distribution for an entire blade (at nominal rpm speed) assuming a tip height of 230 m. Assuming an equal probability of failure at any angle of rotation, a < 10% chance of a blade throw at greater than approximately 380 to 390 m was found.

At nominal rpm an entire blade throws had nil chance of being thrown greater than 430 m. The length and width of the potential impact area was assumed to be equivalent to twice the fragment length and the direction of blade throw was assumed to be perpendicular to the wind direction.

6.6.3.2 BLADE THROW IMPACT ASSESSMENT

For a conservative approach this assessment assumes the theoretical distance radii for a blade throw event to be 500 m, which the research literature confirms has a very low risk of occurrence.

There are no associated or non-associated dwellings located within 500 m of a WTG location. The closest dwelling to a WTG is NAD_12 at approximately 2.7 km to the north (refer **Table 2-9**). As a result, there is no risk of damage to life or property at associated or non-associated dwellings due to blade throw.

The closest WTG to the O&M facility is 435 m, and to the accommodation compound is 430 m (AW10). Several WTGs are also within 500 m of the Project boundary, e.g., the Cobb Highway is within 325m of WTG HW16.

Wind monitoring data indicate that the predominant wind direction in the region is from west (refer **Section 6.11**). However, the failure of a WTG blade could be a result of many factors, and therefore, the blade orientation at failure is 'hardly predictable' (Sarlak & Sørensen, 2015).

Nonetheless, the studies discussed in this risk assessment all assign a very small likelihood of a blade throw event occurring and also a very small likelihood of it being a significant distance. Therefore, this risk assessment finds that that the risk associated with a blade throw event can be considered very low. It is acknowledged that in the unlikely event of a blade throw, the consequence could be significant (e.g., damage to human life or property).

6.6.3.3 MITIGATION AND MANAGEMENT

Management measures that will be implement for the Project to minimise blade throw impacts are included in **Table 6-42**.

TABLE 6-42 SUMMARY OF RECOMMENDED BLADE THROW MITIGATION STRATEGIES AND ACTIONS

ID	*Mitigation Measures*
BT1	Inspection and Testing Procedures will be initiated and audited during the construction and commissioning phase. Once testing finds all WTG components including the blades are passed, the WTG will be commissioned for operation.
BT2	A high quality, comprehensive and robust operations and maintenance program will be implemented to ensure that WTG faults are prevented or detected and rectified quickly, minimising the risk of occurrence of a serious or dangerous problem. This will include inspecting blades for micro-cracks using current best practices. If any cracks above engineering thresholds are detected, the WTG will be immobilised until a replacement blade can be installed.
BT3	The industry is constantly developing measures to limit the cost of blade damages. Once available, the use of new technology developed to mitigate blade throw risks such as sensors that identify blade weaknesses and enable early maintenance and management measures will be implemented.

ID	Mitigation Measures
BT4	The International Electrotechnical Commission (IEC) standards for WTGs will be used for the design and construction of the Project to reinforce the confidence that blade throw will present a very low risk.

6.6.4 PRELIMINARY RISK SCREENING

The hazards and risk associated with the Project have been assessed in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021, and 'Applying SEPP 33 – Hazardous and Offensive Development' (Applying SEPP 33) (Department of Planning, 2011). Under Chapter 3 Hazardous and offensive development, potentially hazardous industry and potentially offensive industry is defined as a development for the purposes of any industry which, if the development were to operate without employing any measures to reduce or minimise its impact in the locality or on the existing or likely future development on other land, that would pose a significant risk or have a significant adverse impact to human health, life or property or to the biophysical environment. This includes an offensive storage establishment, where goods stored during operations were to pose a risk of emitting a polluting dischange that would have a significant adverse impact on the existing or future development, or on other land within the locality.

If potentially hazardous or offensive industry or storage is considered for part of a development, a Preliminary Hazard Analysis (PHA) is required to assess the hazards of the development. The Applying SEPP 33 guidelines sets out thresholds for the transportation of dangerous goods to site (refer Table 2, Section 7) which if exceeded, trigger the requirement for a PHA to be undertaken.

As the Project does not contain a battery energy storage system (BESS), there are no dangerous goods that are anticipated to be used or stored at the site, and therefore the transportation thresholds will not be exceeded.

6.6.5 TELECOMMUNICATIONS

A Telecommunications Impact Assessment (Telco Assessment) was prepared for the Project (Middleton Group Engineering, 2024) to evaluate any potential impact of the WTGs on telecommunication services. The Telco Assessment is provided in **Appendix P**.

The potential telecommunications-related impacts for the Project were assessed in accordance with the SEARs (**Appendix A**), the Wind Energy Guideline (DPE, 2016), and the Draft National Wind Farm Development Guideline (Draft National Guidelines) (DPE, 2023).

All relevant stakeholder engagement outcomes discussed in **Section 5** have been considered in the preparation of the Telco Assessment. Additional consultation with operating services that may be impacted by the Project was also initiated to understand potential telecommunications-related impacts to operations and services. Most stakeholders have not yet responded at the time of preparing this assessment.

Engagement to determine telecommunications-related impacts for the Project is still ongoing, and the outcomes of future consultation will be incorporated into the detailed design of the Project. This approach will ensure that any technological "fixes" to existing services are progressed in preference to Project changes to ensure that telecommunications-related impacts from the Project will be minimal.

6.6.5.1 BACKGROUND

Table 6-43 summarises the existing services surrounding the Project which have the potential to be interfered by the Project.

TABLE 6-43 EXISTING TELECOMMUNICATION SERVICES

Services	***Background***
Point-to-point microwave links	One point-to-point communication link, owned by NSW Government Telecommunications Authority, was identified within 2 km of a WTG of the Project. The link passes through the Project Area with at least 300 m margin before the nearest WTG (DE 14). Additionally, one point-to-point communication site registered with ACMA is located within 2 km of a WTG. No active assignments are associated with this communication site; therefore no further assessment is required.
Meteorological radar	A review of the BoM identified the following 5 meteorological radars, which are all further than 30 km from the Project: • Hilston: 135 km from the closest WTG; • Yarrawonga: 173 km from the closest WTG; • Wagga Wagga: 236 km from the closest WTG • Rainbow: 270 km from the closest WTG; and • Mildura: 285 km from the closest WTG.
Mobile voice-based communications	There are no mobile towers within 2 km of a WTG of the Project. Existing mobile network services, provided by Telstra and Optus, are located beyond 10 km of a WTG.
Wireless and satellite internet services	Satellite services, that typically provide television coverage, wireless internet, and satellite phone coverage, can be interrupted when in extremely close proximity to WTGs. There are five dwellings located within 2 km of proposed WTGs.

Services	Background
Broadcast and digital radio and television	No Amplitude Modulation (AM) transmitters, Frequency Modulation (FM) transmitters, digital radio (DAB), digital television (DTV) or temporary licence transmitters are located within 5 km of a WTG. Further, no digital radio transmitters were identified in the vicinity of the Project.
Trigonometry stations	A review of trigonometrical station and survey mark locations identified: • There are approximately 51 survey marks located within a 2 km of a WTG, of these 48 are located along the Cobb Highway and 3 on the edge of the WTGs 2 km buffer; • There is no proposed WTG location that shares the same location as a survey mark; and • The WTG (IW16) is the closest to a survey mark, which is located at approximately 390 m. Followed by WTG HW16 at 450 m and WTG GW15 at 500 m.
GPS	Review of Global Navigation Satellite Systems (GNSS) via Geoscience Australia has been undertaken which revealed that no GNSS stations exist within 20 km of the Project. The closest GNSS station, MOUL, is located 60 km away from the nearest WTG, followed by WAKL at 70 km.

6.6.5.2 TELECOMMUNICATION IMPACT ASSESSMENT

Table 6-44 summarises the potential impacts of the Project's WTGS on the existing services surrounding.

TABLE 6-44 SUMMARY OF IMPACT ON TELECOMMUNICATION SERVICES

Services	Impacts Summary
Point-to-point microwave links	WTGs have the potential to impact on point-to-point communication links through the following mechanisms: • Near field effects: No active ACMA communication sites were found within 2 km of a WTG, as such, no material near-field effects as a result of the Project are anticipated; • Reflection or scattering effects: No active ACMA communication sites were found within 2 km of a WTG, as such, no material reflection or scattering effects as a result of the Project are anticipated; and • Diffraction: One point-to-point communication link that crosses the Project Area could impinge upon the full 2nd Fresnel Zone. However, the WTGs pose negligible risk to the link owner. Notwithstanding, the link owner NSW Government Telecommunications Authority has been informed of the Project. Based on the assessment, the proposed layout for the WTGs are not sited in the near-field zones of any transmitters/receivers, nor are they located in the reflection or scatter zones. Consultation with link owners is underway to confirm that stakeholders see no impact to their operations from the proposed wind farm. Consultation with link owners is summarised in **Section 5** and **Appendix D** and provided in full in Appendix A of **Appendix P**.

Services	*Impacts Summary*
Meteorological radar	It is recommended by the World Meteorological Organisation (WMO) that wind turbines are sited, at a minimum, beyond 5 km from meteorological radars, and preferably beyond 20 km. Given the closest meteorological radar is located 135 km from the closest wind turbine, the proposed wind farm complied with WMO standards and no impacts are anticipated.
Mobile voice-based communications	In the immediate vicinity of WTGs some reduction in signal may occur, which can be mitigated by relocating the mobile phone receiver in the order of ten of metres. No significant impact on the signal is expected beyond the Project Area. Telstra and Optus have been consulted regarding potential impact to their operations, summarised in **Section 5** and **Appendix D** and provided in full in Appendix A of **Appendix P**.
Wireless and satellite internet services	Satellite services may be interrupted for dwellings within extremely close proximity of a WTG. There are no dwellings within 2 km of the Project area. Therefore, it is highly unlikely that the Plains Wind Farm will impact satellite services.
Broadcast and digital radio and television	No impacts to broadcast, television and radio transmission and reception are expected as a result of the Project.
Trigonometry stations	Project construction may physically impact the survey marks identified. However, site works can be designed to avoid survey marks, or, alternatively, seek assistance from a registered surveyor to move or remove the survey marks.
GPS	Given all the GNSS stations are beyond 20 km from a WTG, it is highly unlikely that the Project will impact on GNSS networks. Consultation with Geoscience Australia has been initiated to further discuss the above.

6.6.5.3 MITIGATION AND MANAGEMENT

Table 6-45 summarises recommendations to assist with mitigations should there be any impact on telecommunications.

TABLE 6-45 TELECOMMUNICATIONS RECOMMENDATIONS

ID	*Mitigation and Management Measures*
TC1	Should reduction in signal of mobile network services occur in the immediate vicinity of WTGs, mobile phone receiver will be relocated in the order of tens of metres.
TC2	To ascertain whether satellite services are, or will be, used at dwellings within 1 km of a WTG, the Applicant will engage with dwelling owners. Should any dwellings use satellite services, where possible, the Applicant will consider either relocate wind turbines or come to an agreement with the dwelling owner regarding impacted satellite service.
TC3	Should survey marks not be avoided during construction works, the Applicant will seek assistance from a registered surveyor to move or remove survey marks and in consultation with the NSW Government.
TC4	If issues are encountered with television reception, impacts will be mitigated by readjusting the receptor to capture signal from an alternative transmitter.

6.6.6 HEALTH AND ELECTRIC AND MAGNETIC FIELDS

An Electromagnetic Field (EMF) and Human Health Assessment has been prepared (Middleton Group, 2023; **Appendix O**) to evaluate the electric and magnetic fields that will be emitted by the conductors associated with the Project and assess the impact on human health.

The EMF and Human Health Assessment responds to the SEARs (**Appendix A**). The assessment references 'International Commission on Non-Ionizing Radiation Projection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields' (ICNIRP, 2010).

6.6.6.1 BACKGROUND

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is the Australian Government's primary authority on radiation protection and nuclear safety. ARPANSA regulates Commonwealth entities using radiation with the objective of protecting people and the environment from radiation.

ARPANSA considers the publications produced by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is a body of independent scientific experts who provide information and advice on the potential health hazards from exposure to non-ionising radiation. ARPANSA is also a contributor to the work of ICNIRP.

ICNIRP has issued Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz -100 kHz) (ICNIRP, 2010) which are aimed at preventing the established health effects resulting from exposure to Extremely Low Frequency (ELF) EMF. Exposure to high levels of ELF EMF is extremely rare and does not occur in people during their day-to-day living (ARPANSA, 2020a).

EMF limits for this assessment are taken from the ICNIRP. The peak field strength from the transmission lines associated with the Project will be at 50 Hz. The limit of electric field strength to protect human health is determined by INCIRP as 5 kV/m (kilovolts per metre) for general public exposure and 10 kV/m for occupational personnel exposure, which constitutes the pass/ fail criterion for the study.

6.6.6.2 IMPACT ASSESSMENT

EMF and Electrical Network

- All locations considered in this assessment are located directly underneath the overhead line, or directly above the underground cable(s) proposed for the Project. Should the assessment determine that magnetic and electric field strength at these locations pass the assessment criteria, then the magnetic and electric field strength at all other areas further away such as associated dwellings, non-associated dwellings and public locations will also pass. Locations assessed are specified in **Table 6-46**.

TABLE 6-46 ASSESSMENT LOCATIONS

Assessment Location	*Scenario*
Ground Level	Person lying on the ground
1 m above ground level	Lowest height impact for person standing
1.5 m above ground level	Typical height of impact for person standing
2.5 m above ground level	Person in small tractor Applies to 33 kV overhead transmission line only[5]
4 m above ground level	Person in heavy vehicle (truck, tractor etc.) Applies to 330 kV overhead transmission line only

Current Distribution Electromagnetic Fields, Ground and Soil Structure Analysis (CDEGS) Modelling was used to model the proposed underground cables and overhead lines. The HIFREQ module was utilized to capture the magnetic and electric field strengths (refer Section 5.3 in **Appendix O**).

The following electrical installation scenarios, expected to produce the highest magnetic fields within the Project, were modelled:

- Three single core 1000 mm^2 cables (33 kV);
- Single circuit overhead lines (33 kV);
- Double circuit overhead lines (33 kV); and
- Single circuit overhead transmission line (330 kV).

Scenarios not modelled will radiate lower magnetic fields due to lower current in conductors (refer Appendix A of **Appendix O**), including:

- Underground cables with fewer than 4 WTGs connected;
- Single circuit overhead 33 kV line with less than 8 WTGs connected; and
- Single circuit overhead 330 kV line with less than 66 WTGs connected.

The worst-case scenario of the 330 kV transmission line was assessed for the Project. It is important to note that substations and collector stations were excluded from the assessment. Additionally, background EMF on site is considered negligible, therefore measurements have not been included.

The modelling determined that the magnetic fields emitted by the proposed electrical power infrastructure of the Project is estimated to be, in the worst-case scenarios, two to ten times lower than the safe upper limit for general public exposure.

To meet electric field strength exposure requirements under the INCIRP guidelines, the 330 kV transmission line conductors would be installed more than 12 m above the

[5] Any closer than 2.5 m above ground level introduces risk of breaching safe clearance between person/vehicle and live conductor as per Australian Standard AS2067:2016 (Committee EL-043, 2016). Refer table 3.1 of AS2067 for safe clearances for operational purposes and maintenance work.

ground in areas where the general public could walk directly below the transmission lines.

A summary of the worst-case measurements is detailed in **Table 6-47**.

TABLE 6-47 MAGNETIC FIELD STRENGTH SUMMARY

Installation Method	***Observation Location***	***Field Strength (µT)***	***Pass/Fail***
Underground Cable	1.5 m above ground (standing height)	<20	PASS
	1 m above ground (lowest height of impact when standing)	<30	PASS
	Ground level (person lying on the ground)	<100	PASS
Overhead 33 kV Conductors Single Circuit	2.5 m above ground (max height before breaching AS 2067)	<10	PASS
	1.5 m above ground (standing height)	<10	PASS
Overhead 33 kV Conductors Double Circuit	2.5 m above ground (max height before breaching AS 2067)	<20	PASS
	1.5 m above ground (standing height)	<10	PASS
Overhead Transmission Line	4 m above ground (person sitting in heavy vehicle)	<20	PASS
	1.5 m above ground (standing height)	<10	PASS

A summary of the worst case scenarios for the overhead transmission line at different heights are presented in **Table 6-48.**

TABLE 6-48 MAGNETIC FIELD STRENGTH SUMMARY (OVERHEAD TRANSMISSION)

Installation Method	***Observation Location***	***Field Strength (µT)***	***Pass/Fail***
Overhead Transmission Line 8 m Height	4m above ground (person sitting in heavy vehicle)	<20	FAIL
	1.5 m above ground (standing height)	<10	PASS for occupational
Overhead Transmission Line 12 m Height	4m above ground (person sitting in heavy vehicle)	<5	PASS
	1.5 m above ground (standing height)	<5	PASS

When the 330 kV Transmission line is at a height of 8 metres, it does not meet INCIRP guidelines for general public exposure. However, it meets occupational guidelines for a

person standing below the transmission lines. If there are plans to make transmission lines at 8 m above ground level, the risk can be managed by restricting general public access. To meet the INCIRP guidelines for general public exposure, the transmission lines have to be built at a minimum height of 12 metres.

EMF and Human Health

The assessment finds that at recommended measurement locations (1-4 m above ground level) the risk to human health due to emitted EMF to be at least 2-10 times lower than the upper safe limit recommended for human exposure. The conductor arrangements are subject to further design; however, the difference is assumed to be minimal and unlikely to affect the EMF safety compliance performance of the transmission line.

6.6.6.3 HEALTH AND EMF MITIGATION AND MANAGEMENT

The risk of exposure to EMFs has been minimised through careful siting of infrastructure and the implementation of best practice design standards for electrical equipment. To achieve electric field strength lower than the public exposure limits, the 330 kV transmission line conductors will be installed at a minimum height of 12 m above the ground in areas where the general public could walk directly below the transmission lines.

6.7 ABORIGINAL HERITAGE

An ACHAR has been prepared to assess potential impacts to Aboriginal cultural heritage that may result from construction and operation of the Project, and to identify mitigation and risk management measures to avoid or minimise these impacts (ERM, 2024), refer **Appendix H**.

The ACHAR addresses the requirements of the SEARs (**Appendix A**), with consideration of relevant stakeholder engagement (**Section 5**), relevant legislation, and in accordance with the following government policies:

- 'Code of Practice for the Investigation of Aboriginal Objects in NSW' (DECCW, 2010c);
- 'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW' (OEH, 2011);
- 'The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance' (Burra Charter) (Australia ICOMOS, 2013); and
- 'Aboriginal Cultural Heritage Consultation Requirements for Applicants 2010' (DECCW, 2010b) (Consultation Requirements).

The ACHAR is provided at **Appendix H**. The scope of the ACHAR included:

- Consultation with Aboriginal communities in relation to the Project;
- Review of the landscape and natural resources of the Project Area;
- Review of Aboriginal cultural heritage literature and archaeological records relevant to the regional and local context of the Project, including review of relevant databases (e.g., Aboriginal Heritage Information Management System [AHIMS]);

- Archaeological surveys undertaken within the Project Area, the aims of which were to:
  - Identify the presence of Aboriginal cultural heritage material within the Project Area;
  - Assess the likely extent and nature of any cultural material;
  - Assess the archaeological significance of any cultural material;
  - Provide an opportunity for Registered Aboriginal Parties (RAPs) to assess the cultural significance of any material; and
  - Assess the management requirements for any cultural material.

The methodology employed for the ACHAR field surveys is provided in **Appendix H**.

Two surveys were undertaken, one between 4 April and 14 April 2023 and one between 8 August and 16 August 2023. Excellent survey conditions were encountered for both surveys. Archaeologists were accompanied by RAPs on each day of the surveys. This included representatives from Hay LALC.

An assessment of potential impacts to Aboriginal cultural heritage along the proposed transport route was also undertaken. This comprised a desktop due diligence assessment and a survey of the transport route from the Port of Adelaide South Australia (SA) to the Project Site. The survey assessed the nine points identified along the transport route that may require road/intersection upgrades ('pinch points').

6.7.1 ABORIGINAL COMMUNITY CONSULTATION

The objective of the ACHAR was to identify any Aboriginal cultural heritage values within the Disturbance Footprint so that those values can be recognised and appropriate mitigation and management measures can be recommended. Aboriginal community consultation was undertaken in accordance with Consultation Requirements (DECCW, 2010b). A log and copies of correspondence with Aboriginal community stakeholders is presented in Appendix A of the ACHAR (**Appendix H**). The Aboriginal community consultation comprised four engagement stages:

- Stage 1: Identify RAPs who wish to be consulted about the Project;
- Stage 2 & 3: Provide information about the Project to the RAPs and acquire information regarding Aboriginal cultural values associated with the Project Area through RAP consultation and field work; and
- Stage 4: Produce a draft ACHAR to be issued to all RAPs for their consideration.

Consultation undertaken for each stage identified above is summarised in **Table 6-49**.

TABLE 6-49 ABORIGINAL COMMUNITY CONSULTATION PROCESS

Stage	*Actions*	*Outcome*
1	A Public Advert stating the location and nature of the Project and seeking registration of interested Aboriginal parties was run in the Riverine Grazier on 25 January 2023 and Deniliquin Pastoral Times on the 24 January 2023.	The following individuals/ groups registered to be consulted, and constitute the RAPs for the Project: • John Jackson – Individual • Wakool Indigenous Corporation - Cynthja Pappin

Stage	Actions	Outcome
	A letter seeking information from various agencies was sent on 12 January 2022. Letters were sent to 32 individuals and groups whose contact details had been provided by the agencies. On 8 March 2024 a notification letter was sent to the Hay LALC, Deniliquin LALC and Heritage NSW to notify them of the interested registered parties for the Project.	• Pappin Family Aboriginal Corporation - Mary • Hay LALC - Ian Woods • Deniliquin LALC - Rose • Neville Whyman - Individual • Patricia Winch - Individual • Bangerang Aboriginal Corporation - Vicki • Yarkuwa Indigenous Knowledge Centre - Jeanette
2 & 3	Detailed project information was provided in the assessment methodology issued to all RAPs for their consideration on 6 March 2023. The document provided the archaeological context of the Project Area, a description of the proposed assessment and survey, and asked whether there were any cultural values that should be considered in the assessment. A cultural heritage and LALC two training workshop sessions occurred in Hay on the 20 March 2023. This workshop was facilitated by IPS Management Consultants, and attended by representatives from Hay LALC, ENGIE and ERM.	No specific comments on the methodology or cultural values were received during the review period of the methodology. Workshop sessions allowed meaningful engagement and benefit sharing: • Hay LALC presented their expectations for the Project as well as heritage values and knowledge prior to the heritage survey and reporting. • A walk on Country led by Hay LALC involved the sharing of cultural information around the types of sites that may be encountered during the heritage survey of the Project Area.
4	The draft ACHAR was sent to RAPs on 4 September 2023, inviting RAPs to review the ACHAR and provide any comments on the cultural values of the sites recorded and the broader Project Area and any recommended management and mitigation measures.	No comments or requested amendments have been received.

6.7.2 BACKGROUND

6.7.2.1 ABORIGINAL ARCHAEOLOGICAL CONTEXT

Project Area

The Murrumbidgee Province of the Riverina Bioregion within which the Project is situated has significant Aboriginal cultural heritage, and the Project Area is considered to demonstrate moderate to high potential to contain Aboriginal sites.

The Project Area is comprised of a landscape which is predominantly flat with small rises generally adjacent to clay pans, ephemeral lakes, and small ponds. Some of these rises are natural dunes formed along paleochannels or lake lunettes, and others are culturally created earth mounds, or a combination of both. These rises have been identified as suitable to retain archaeological deposits as they were the focus of Aboriginal occupation, providing easy access to the nearby retained water during dry seasons, and

providing dry land when much of the surrounding area was underwater during wet seasons.

The Murrumbidgee, Lachlan and Murray rivers and their respective tributaries were central to the Aboriginal way of life, providing a rich concentration of food resources. Pardoe (1988) suggested that communities living along the rivers would have controlled access to the water and its resources, with the 'rights' to this occupation handed down from ancestors (Eardley K. A., 1999). Food in the region was subject to seasonality. In periods where the climate was conducive (some eight months of the year) resources in the region were available in abundance. However, for the remaining four months of the year, due to very dry seasons and extensive floods on the plains it was substantially more difficult to forage for food (Kabaila, 1999). For this reason, the Aboriginal communities followed a semi-sedentary lifestyle, moving periodically based on the availability of resources, setting up temporary villages along the way. During the months when the river systems and associated resources were abundant, Aboriginal communities would remain in the vicinity for weeks or months (Beveridge, 1884).

There is less detail about how Aboriginal people lived on the plains more than 20 km from a main river channel. The plains were predominantly used when there was more surface water resulting from rainfall and/or floodwaters pushed out from the rivers along the normally dry creeks. The Aboriginals within the plains to the west of the lower Murrumbidgee (encompassing the Project Area) were said to retire to the Murrumbidgee and Lachlan Rivers as soon as the water on the plains dried up (Pardoe & Martin, 2001). One of the prominent physical features of the Aboriginal campsites throughout the plains were the ovens and/or mounds that were left behind (Pardoe & Martin, 2001). These features often formed central components within the campsite, most likely to have been used to cook (ovens) and potentially grow food (mounds) (Beveridge, 1884).

The groups within the Murray, Murrumbidgee, Lachlan and Darling region were commercially connected. Trade for certain items would have been vital, as some resources, such as that used for stone tool production, were difficult or impossible to source locally. Trading would have also been an important method to access food during times of drought or hardship. The importance of particular members of society, the Ngalla Wattow, in facilitating trade links between Aboriginal communities is also evident (Beveridge 1884). These men were able to communicate in the languages of the surrounding communities which assisted with the transport of goods between these communities.

The Project Area is within the boundaries of the Kulin language group of the Western Murrumbidgee (Pardoe & Martin, 2001). This encompasses the Nari Nari, Mathi Mathi, Wathi Wathi, and Wemba Wemba language groups, the boundaries of which are difficult to define and often overlap. Anthropologist Norman Tindale's 1940's map which shows the distribution and diversity of Aboriginal tribes and language groups across Australia maps the Project Area within the Nari Nari and Berapa Berapa group.

The first encounter that many of these people would have had with Europeans was in the early 1800s when explorers first entered the Riverine Plain and surveyed land within the Murray, Murrumbidgee, Lachlan and Darling River catchments. The accounts of these

early explorers provide valuable insight into the customs and culture of some of the Aboriginal groups of these areas. Between 1828 and 1831, Charles Sturt explored the Murrumbidgee and lower Murray Rivers. Sturt noted that as he travelled downstream along the Murrumbidgee, the population of Aboriginal groups increased, and that near the confluence of the Murrumbidgee and Lachlan Rivers, there was "a large tribe of natives…one hundred and twenty in number" (Pardoe & Martin, 2001).

Sir Thomas Livingstone Mitchell (1792-1855) explored the Lower Murrumbidgee region in 1836. Mitchell kept journals of his expeditions, detailing observations of Aboriginal people in the region prior to European settlement of the area. Mitchell noted that the staple food crop, bulrush root or balyan was often roasted in features now known as earth mounds or hearths (Mitchell, 1839).

Even before European settlement in the region, about a year after the arrival of the First Fleet in Sydney, a major smallpox epidemic broke out. Smallpox was not detected until members of the Aboriginal communities living between Sydney Cove and the Heads were found. By the time explorers had reached the region, disease had ravaged the population. Beveridge described being involved in exhuming twenty-eight skeletons from a mound. When consulting the Aboriginal elders, he discovered that they were the remains of small-pox victims (Beveridge, 1884).

Transport Route

The SA section of the proposed transport route is largely within the Kaurna and Ngadjuri Aboriginal tribal and language boundaries. The Kaurna people occupied the area extending from Cape Jervis in the south to the Broughton River in the north, or the Adelaide Plain. The abundant marine and bird life of the lower Torrens wetlands and the Port River would have been a valuable resource for the Kaurna people. Due to the lack of a convenient and reliable source of freshwater, it is likely that there would have been a cyclical pattern of migration between the estuary and the hills (Ellis, 1976). By 1870 the Kaura people were reported as being 'extinct'; whilst this notion was incorrect, it is indicative of their people being dispersed from Adelaide by this time due to their ill-treatment by South Australian colonists (Gara, 1990: 64).

The traditional lands of the Ngadjuri people extends from Gawler in the south to Orroroo in the north (Swanbury Penglase, 2019: 20). The Ngadjuri were semi-nomadic people; however, their reliance on water sources resulted in their population concentrating near streams throughout their lands. The Ngadjuri are known to have lived rich ceremonial lives. They performed dances at annual meetings of different groups that took place around Adelaide (Gray, 1930). Initial colonial contact in the region occurred in c.1839, and sheep runs were established soon after. Some of the Ngadjuri people became shepherds, shearers and roustabouts. Various diseases were introduced by colonial settlers which resulted in a decline in the Ngadjuri population during the 1850s (Burra History Group Inc, 2023).

The NSW section of the proposed transport route is within the Wiljakali, Danggali, Barkindji, Barindji, Jitajita and Nari Nari Aboriginal tribal boundaries. The Wiljakali people traditionally occupied the lands around Broken Hill visiting the Barkindji people on the Menindee Lakes each year (NSW NPWS 2003a). The Wiradjuri language group, whose

homeland was traditionally centred on the area south of Cobar on the Lachlan River, reached their westernmost extent along the Lachlan through the Riverina Bioregion to the junction of the Lachlan and Murrumbidgee Rivers. Adjacent to this homeland in the north-west of the Riverina Bioregion and south-east of the Murray Darling Depression were the traditional lands of the Jitajita.

6.7.2.2 PREVIOUSLY REGISTERED ABORIGINAL HERITAGE SITES

The AHIMS database provides information concerning previously recorded Aboriginal sites in NSW. An extensive search of the AHIMS database was conducted on 10 August 2021 and 13 September 2022, the latter to cover changes in the Project Area due to design refinements. Additional searches using specific coordinates were completed on 6 October 2023 to cover further changes to the boundary of the Project Area. The searches were conducted using the parameters provided in **Table 6-50**.

TABLE 6-50 AHIMS DATABASE SEARCH PARAMETERS (OCTOBER 2023)

Parameters	***Search 1***	***Search 2***
Client Service ID	826257	826259
Datum	GDA Zone 55	GDA Zone 55
Buffer	0 m	0m
Number Sites[6]	81	60

A total of 134 valid sites were identified within the Project Area. Seven additional sites recorded within the eastern portion of the Project Area have been destroyed or partly destroyed. The results of the full AHIMS searches are summarised in **Table 6-51**.

TABLE 6-51 AHIMS REGISTERED SITE TYPES (OCTOBER 2023)

Site Type	***Sites within Search Parameters***
Artefact	76
Artefact, Hearth	15
Artefact, PAD	12
Hearth	10
Modified Tree (Carved or Scarred)	9
Artefact, Hearth, Potential Archaeological Deposit (PAD)	8
Potential Archaeological Deposit (PAD)	2
Earth Mound	2

[6] Number of sites registered following data download on 6 October 2023. A total of 141 sites (134 valid sites and 7 recorded as destroyed).

Total	**134**

Note: The 53,894 ha Project Area includes temporary and permanent Project infrastructure with a 100 m buffer applied. Not all sites recorded within the Project Area will be located within the Development Footprint.

Registered sites for the transport route were assessed separately - the SA section assessed in July 2023 and the NSW section in March 2024. The results of these searches are summarised in **Table 6-52** and **Table 6-53.**

TABLE 6-52 TAA WIKA REGISTERED SITE TYPES (APRIL 2024)

Site Type	*Total Number of Site Types across Search Parameters*
Aboriginal archaeological site	6
Aboriginal archaeological/quarry site	1
Aboriginal burial site	3
Total	**10**

TABLE 6-53 AHIMS REGISTERED SITE TYPES

Artefact	66
Scarred tree	6
Artefact / Stone Quarry	2
Artefact / Hearth	2
Stone Quarry	2
Burial	1
Aboriginal Place	1
Total	**80**

For the SA section of the transport route, 10 Aboriginal archaeological sites have been recorded within the search parameters. Seven of these sites are listed as archaeological sites (including one quarry feature). Three were burial sites. The assessment also identified that the Gawler and South Para Rivers, an Aboriginal heritage place, is within the transport route.

Unrecorded Aboriginal heritage may exist along, and in the vicinity of, the Gawler and South Para Rivers. Where ground disturbing works are proposed during the transport route upgrades, appropriate mitigation measures will be adopted to ensure that any suspected Aboriginal heritage discoveries are reported as soon as practicable, and appropriately managed.

For the NSW section of the transport route, there were 79 sites and one Aboriginal Place located within the search parameters. Most sites contained artefacts; however, scarred trees, hearths and burial were also listed on the search results. It should be noted that five sites are located outside of the proposed blade transport route (at Broken Hill). Most of the sites are valid; however, nine artefact sites have been partially destroyed, and a further five (5) have been destroyed.

6.7.2.3 AHIP REGISTER

A review of the following public AHIP registers was also undertaken as part of the ACHAR:

- AHIP public register 2021-2023; and
- AHIP public register archive 2010-2021.

An AHIP permit (C0004833, 4399) was issued for the Combined Paraway Water Efficiency Scheme on 21 May 2019 for seven artefact sites within the eastern portion of the Project area, to the east of Cobb Highway. The artefact sites subject to AHIP are AHIMS #48-5-0406, AHIMS #48-5-0410, AHIMS #48-5-0405, AHIMS #48-5-0404, AHIMS #48-5-0408, AHIMS #48-5-0409 and AHIMS #48-5-0353 (refer Section 6.3.2.3 of **Appendix H**).

6.7.3 IMPACT ASSESSMENT

6.7.3.1 NEWLY RECORDED ABORIGINAL SITES

Project Area

Field surveys identified 93 new sites within the broader Development Footprint; however, no Aboriginal Ancestral Remains (AAR) were recorded.

All newly identified sites have been registered on AHIMS, these include:

- Sixty-four (64) sites (artefacts, hearths, PADs, CMT) were in the scalded red earths, red brown earth and iliceous sand associated with the bordering dunes and lunettes of paleochannels (prior streams) (high sensitivity); and
- Twenty-nine (29) sites (isolated artefacts, hearths) were identified in the red-brown earth or grey-brown cracking clays associated with paleochannel rangelands, bordering aeolian dunefields (moderate sensitivity).

Transport Route

Due to the historic disturbance associated with existing road and bridge infrastructure, most of the proposed transport route has been subject to disturbance and is considered to demonstrate nil potential to contain unidentified Aboriginal objects. Areas that have not undergone gross disturbance may demonstrate moderate potential to contain Aboriginal objects.

Two Taa Wika-registered Aboriginal heritage sites are within the vicinity of pinch point 05. However, the area of pinch point 05 has been previously disturbed by the construction of a network of roads; as such, it is unlikely that this area would be archaeologically sensitive. There are no Taa-Wika registered Aboriginal heritage sites

within the remaining SA pinch points (01-02, and 06-08). There are no AHIMS registered Aboriginal heritage sites within the NSW pinch points (09, 10 & 11).

6.7.3.2 SIGNIFICANCE ASSESSMENT

The ACHAR provides an assessment of significance for the cultural heritage sites located within the Project Area. The assessment of significance is a key step in the process of impact assessment for a proposed activity as the significance or value of an object, site or place will be reflected in recommendations for conservation, management or mitigation.

The 'Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales' (DECCW, 2010a) requires significance assessment according to criteria established in the Australia Burra Charter (Australia ICOMOS, 2013). The Burra Charter and its accompanying guidelines are considered best practice standard for cultural heritage management, specifically conservation, in Australia. Guidelines to the Burra Charter set out four criteria for the assessment of cultural significance, being – Social or cultural value; Historic value; Scientific value; and Aesthetic value.

The Aboriginal cultural heritage significance grade of the Project Area is:

- Social or cultural value: The Project Area forms a component of a cultural landscape associated with Aboriginal use of the Riverina Murray Region for several cultural and subsistence-based activities. The sites vary in type and density, but predominantly represent evidence of residential and subsistence areas;
- Historic value: The current assessment has not identified a specific person or event of historic value associated with the Project Area. The Project Area has been assessed to demonstrate low historic significance;
- Scientific value: Sites with moderate scientific significance include isolated finds and low-density artefact scatters. These sites are likely to represent movement through the landscape rather than continued or intensive occupation. Hearth features also present moderate scientific significance, these sites may represent occupation or activity areas subject to repeated use; and
- Aesthetic value: While the Project Area has some aesthetic values associated with being part of one the flattest landscapes in Australia, it been assessed as having low aesthetic significance due to absence of landmark features within the landscape.

6.7.3.3 LIKELY IMPACTS TO ABORIGINAL HERITAGE

The potential impacts to Aboriginal cultural heritage associated with the Project Area include both the Project Area and a 100 m buffer. The results of the impact assessment are presented within **Appendix H**, and are summarised as follows:

- 27 sites with low significance were identified as having a high potential for impact as they are within the development corridor;
- 2 sites with low significance were identified as having a very low potential for impact as they are located at the very edge of boundary within corridor;
- 14 sites with low significance were identified as having a moderate potential for impact as they are located within the 100 m survey buffer and can be avoided;

- 6 sites with low significance were identified as having a moderate potential for impact as they are located within the 100 m survey buffer and are easy to avoid;
- 22 sites with moderate significance were identified as having a high potential for impact as they are within the development corridor;
- 2 sites with moderate significance were identified as having a very low potential for impact as they are located at the very edge of boundary within corridor;
- 12 sites with moderate significance were identified as having a moderate potential for impact as they are located within the 100 m survey buffer and can be avoided;
- 7 sites with moderate significance were identified as having a low potential for impact as they are located within the 100 m survey buffer and are easy to avoid; and
- 1 site of unknown significance was identified as having a high potential for impact as it is located within the corridor.

6.7.4 MITIGATION AND MANAGEMENT

Impacts to Aboriginal sites (as described in **Section 6.7.3.3**) will be avoided through implementation of specific mitigation and management measures as detailed in **Table 6-54**.

TABLE 6-54 ABORIGINAL HERITAGE MITIGATION AND MANAGEMENT MEASURES

ID	***Mitigation and Management Measures***
AH1	Preservation and management of Aboriginal sites and heritage values will be a key objective of environmental and social management proposed for the Project. Consultation between ENGIE and Hay LALC in August 2023 resulted in agreed future changes to the Project design to avoid impacting Aboriginal sites. A buffer of 200 m will be provided to recorded PADs, a buffer of 100 m to recorded hearths and a buffer of at least 50 m will be provided to recorded Culturally Modified Trees (CMTs). This would affect the following sites: • PREP SU A 01: Artefact, PAD; • PREP SU B 01: Artefact, PAD; • PREP SU C 01: Hearth; • PREP SU C 03: Artefact, Hearth, PAD; • PREP SU C 08: Artefact, Hearth, PAD; • PREP SU C 12: Artefact, PAD; • PREP SU C 13: Artefact, Hearth, PAD; • PREP SU C 16: Artefact, Hearth, PAD; • PREP SU D 01: PAD; • PREP SU D 04: Artefact, Hearth, PAD; • PREP SU D 08: Artefact, PAD; • PREP SU D 09: Artefact, Hearth; • PREP SU E 06: Artefact, PAD; • PREP SU E 07: Artefact, Hearth; • PREP SU E 10: Artefact, Hearth; • PREP SU E 11: Artefact, PAD; • PREP SU E 14: Artefact, Hearth, PAD; • PREP SU F 01: Artefact, Hearth; • PREP SU F 04: Artefact, PAD; • PREP SU F 06: Artefact, Hearth, PAD; • PREP SU F 08: Artefact, PAD; • PREP SU F 11: Artefact, PAD; • PREP SU F 12: Artefact, Hearth, PAD; • PREP SU F 15: Artefact, Hearth;

ID	Mitigation and Management Measures
	• PREP SU F 16: Artefact, PAD; • PREP SU F 17: Hearth; • PREP SU F 18: Artefact, Hearth; • PREP SU F 25: Artefact, Hearth, PAD; • PREP SU G 01: Hearth; • PREP SU G 07: Artefact, PAD; • PREP SU H 03: Artefact, Hearth; • PREP SU I 03: Artefact, Hearth; • PREP SOLAR 03: Artefact, Hearth; • PREP SOLAR 04: Artefact, PAD; • PREP SOLAR 07: Artefact, PAD; and • PREP SU E 15: CMT.
AH2	An ACHMP will be developed to record and describe the processes and procedures required to be implemented regarding Aboriginal cultural heritage prior to and during the construction and operational phases of the Project. The ACHMP will be developed in partnership with the Traditional Owners and should at a minimum include: • Any required archaeological test or salvage excavations for the 54 sites which would be harmed within the current development footprint; • Measures to manage archaeological material that needs to be relocated away from development activities; • Measures to protect and conserve archaeological material that will not be impacted by development activities; • The requirements regarding heritage training and inductions for employees and contractors; • Any requirements regarding monitoring of ground disturbance activities by Traditional Owners; • The development and provision of cultural awareness training by Traditional Owners; and • An Unexpected Finds Protocol.
AH3	Areas of the earth mounds, burials or PADs which may be subject to harm as part of clearing of the development footprint will be subject to archaeological test/and or salvage excavation. During the consultation phase of the ACHAR Hay LALC requested that all test excavation be carried out as part of the post approval stage of the project. This is to minimise unnecessary impacts to Aboriginal cultural sites. Therefore the final design for the Project should be informed by the results of the test excavation. If determined significant, micro-siting of project elements should occur to avoid impacts to these sites.
AH4	The Applicant will liaise between the landowners and the Traditional Owners to develop appropriate stock management strategies to limit the further disturbance and damage to Aboriginal heritage sites.
AH5	The Applicant will consider the appointment and training of a Traditional Owner liaison/s to coordinate appropriately informed access for staff and contractors to culturally sensitive areas and provide cultural awareness training.

6.8 HISTORIC HERITAGE

An assessment of historic heritage has been prepared to inform this EIS. This was included in the ACHAR (ERM, 2024), available at **Appendix H**.

The objectives of the assessment were to:

- Identify whether historical heritage items or areas are, or are likely to be present within the Project Area;

- Assess the significance of any recorded historical heritage items or areas;
- Determine whether the Project is likely to cause harm to recorded historical heritage items or areas; and
- Provide management recommendations and options for mitigating impacts.

Preparation of the historic heritage assessment included desktop investigations and two rounds of field surveys (refer Section 3.1.3 of **Appendix H**). It addresses the requirements of the SEARs (**Appendix A**), and considers relevant stakeholder engagement (**Section 5)**, the Burra Charter, 'NSW Heritage Manual' (Heritage Office , 1996), and relevant Practice Notes.

An assessment of heritage for the preferred transport route (refer **Section 3.4.7**) for the Project (from the Port of Adelaide) was also prepared to inform the EIS (ERM, 2024b) and is included in **Appendix I**. The outcomes of the report recommended the completion of a Heritage Impact Statements (HIS) and Statement of Heritage Impact (SOHI) for road works required along the transport route. These assessments are included within **Appendix I** and assess the following areas respectively:

- SA State heritage item Burra Railway Station (Station Buildings, Water Columns and Tank); and
- NSW local heritage item Mining Precinct 9, as this is not included in the heritage citations for the sites.

6.8.1 BACKGROUND

6.8.1.1 HISTORICAL ARCHAEOLOGICAL CONTEXT

Project Area

Early European exploration of the Murrumbidgee Region occurred from the 1820s with expeditions originally focused along the Murrumbidgee River. Charles Sturt's accounts, from his explorations of the Murrumbidgee and lower Murray Rivers between 1828-31, described treeless plains and good water sources that lured graziers to the region. Pastoral stations focused on cattle grazing were established in the lower Murrumbidgee River region from the 1820s. By 1841, the Murrumbidgee District, which is now mostly known as the Riverina region, contained 147 stations, and by 1845 an average cattle-stocked pastoral property around the Murray-Murrumbidgee junction comprised eighty thousand hectares (Eardley K. A., 1999).

Hay, the closest major population centre to the Project Area, was gazetted as a town in 1859. It was named after Sir John Hay, a local pastoralist and Member of Parliament. Hay's first post office was opened in 1859 and the original courthouse (now present location of the new Post Office) was built in 1860. Cobb & Co Coaches made Hay the headquarters of their Victorian and Riverina operations from 1862 to 1896, setting up a coach factory on the corner of Lachlan and Randall Streets. This became Australia's largest coach factory outside of Sydney (Hay Shire Council, 2023). As it developed, Hay became a service hub for the surrounding pastoral district. The Municipal Council of Hay was proclaimed in 1872 and the town was connected by rail to Narrandera in 1882 (Historical Encounters, 2023)

Mungadingadal run was originally held by John Tooth but was acquired by the Lang brothers (whom Lang's Crossing was later named after) in c.1845. The main homestead of the property was built near Lang's Crossing on the Murrumbidgee River, to the north of the Project Area (Beissel, 2008). The Mungadingadal Run was later acquired in c.1865 by Colin William Simson who focused on sheep farming and wool production (NSW Government Gazette, 2022). The run became known as 'Mungadal' in c. 1983 at which time several pastoral improvements and structures had been constructed across the run.

Mungadal Stud was established in 1902 and continues to operate under the same name today (The Australasian, 1914). Anthony Hordern purchased Mungadal Station in 1923 for £250,000, which at the time, and at 111,710 acres (45,207 hectares), was one of the largest freehold pastoral stations in the Murrumbidgee region.

Paraway Pastoral Company purchased Mungadal Station in 2010. They have expanded the property through the acquisition of the Pevensey (2011), Ulonga (2015), and Rosevale (2016) properties. Today, Mungadal Station covers 116,994 hectares (Paraway Pastoral Co., 2021). The station consists mostly of native saltbush plains which are used for sheep grazing, and has numerous bores, areas of irrigated cropping, an extensive pipe and trough system, and frontage onto the Murrumbidgee River.

Transport Route

SA

In the early nineteenth century, the coastline of South Australia was explored by Matthew Flinders and Captain Charles Sturt (Burra History Group Inc, 2023). The first pastoral land was sold at auction in 1837 in Adelaide and by 1839, 179,841 acres had been sold (Scott, 1887). In 1842, nine counties were proclaimed, and pastoralists took up licences to occupy the lands to the north of Adelaide, where the soil was suitable for agricultural pursuits.

Australia's first major metal mines were established in South Australia. This included 'Wheal Gawler' a silver and lead mine that commenced operations at Glen Osmond in 1841. This was followed soon after by mining of copper ores at Kupunda (1844) and Burra (1845). These mines sparked widespread interest in metal mining and caused the first major decentralisation from Adelaide (South Australian Mining History, 2023).

By 1850, South Australia was the third largest copper producer in the world. A network of roads from Burra to Port Adelaide (one of which is now the Barrier Highway) had been established by 1870 to cart ore and to deliver heavy machinery to the numerous mines (Figure 4.3). By 1870 railways had been established inland of Adelaide, and as far north as Burra (Burra History Group Inc, 2023).

The discovery of copper at Burra Burra Creek in 1845 by Thomas Pickett lead to the Special Survey of 20,000 acres at Burra. Shortly after the opening of the mine, the South Australian Mining Association (SAMA) laid out the private company town of Kooringa, located to the south of the mine on the company's land. Following the closure of the Burra Burra Mine in 1877, the townships collectively developed as pastoral and

agricultural centres. The various townships including Kooringa, Aberdeen, and New Aberdeen became known as Burra by 1940 (Swanbury Penglase, 2019: 37).

NSW

Early European exploration of the Riverina occurred in 1817 when John Oxley followed the Lachlan River downstream to the south of Booligal; and later in c.1828-31 by Charles Sturt who focused his expeditions along the Murrumbidgee and lower Murray Rivers. Pastoral stations, primarily cattle grazing, were established in the lower Murrumbidgee region from the 1820s (Eardley, 1999).

European surveyor Major Thomas Mitchell was the first to explore the Far West and Central Darling regions of NSW in 1835, and in 1844 Charles Sturt began exploring the land to the west of the Darling River and reported that the land was mostly dry and useless. Settlement through the early 1840s largely followed the routes of previous explorers in the region and was concentrated along rivers. However, activity in the northern and north-western areas of the region was limited due to the remoteness and unreliable access to water (Godden Mckay, 1998: 38).

By the mid-1850s, river transport was firmly established in the region. Supply to the Victorian market (in the wake of the gold rushes) was transported via the stock route at Lang's Crossing (now the town of Hay) was well established and the 'Great North Road', whick crossed the Murrumbidgee River at this location (Beissel, 2008). In 1858-59 a store, inn and punt service were built at Lang's Crossing; the place became an important port for steam-boat navigation of the Murrumbidgee (Hay Shire Council, 2023). By 1866, Wilcannia had also been established as a trading post on the Upper Darling River (Far West Proud, 2020; Godden McKay, 1998: 39).

Following Charles Rasp's discovery of mineral-ore at Broken Hill, a mining lease was pegged out on an area of 40 acres. Rasp formed the 'Syndicate of Seven' with six sheep station employees, who took out a further six, 40-acre leases. By 1885, Broken Hill had become a major township; it was originally known as 'Willyama', believed to be a local Aboriginal term meaning 'Leaping Crest'. The layout of the town was in a grid-pattern to the north of the Line of Lode (PocketOz, 2023; NHL Citation Broken Hill). Another grid was established to the south of the Line of Lode, known as 'Alma'. Both towns became known collectively as Broken Hill. In 1884 a railway was constructed to serve the Silverton and Broken Hill mining districts, further aiding the growth of the town. In 1907 Broken Hill was declared a city and was the second largest in NSW after Sydney, with its population reaching a maximum of 35,000 in 1915 (PocketOz, 2023). By the 1930s the rail network has developed to provide access to all the mines and ultimately linked to the South Australian Railways and to Sydney (GML, 2007: 18).

6.8.1.2 PREVIOUSLY RECORDED SITES

A desktop search was conducted to identify previously recorded items of historic heritage within 5 km of the Project Area. The results of this search are summarised in **Table 6-55.**

TABLE 6-55 HISTORIC HERITAGE: DESKTOP DATABASE SEARCH RESULTS

Name of Database Searched	***Date of Search***	***Type of Search***	***Comment***
National and Commonwealth Heritage Listings	8 May 2023	Hay Shire LGA	Search returned no National and/or Commonwealth Heritage Listings within 5 km of the Project Area.
State Heritage Listings	8 May 2023	NSW	Search returned no State Heritage Listings within 5 km of the Project Area. The search noted four SHR items located within the township of Hay, approximately 25 km from the Project Area.
LEP	8 May 2023	Hay LEP 2013	Search returned no LEP listed sites near or within the Project Area. The search noted 16 locally listed heritage items located within the township of Hay, about 25 km from the Project Area.
Section 170 Heritage Registers	8 May 2023	NSW	No Section 170 heritage places are located within, or in proximity to, the Project Area.

6.8.2 IMPACT ASSESSMENT

6.8.2.1 HISTORICAL ARCHAEOLOGICAL POTENTIAL

Project Area

During the archaeological field survey a small number of historic objects were observed. The two new identified Aboriginal heritage sites (PREP SU G 03 and PREP SU G 05) also included some accumulated historic heritage material (glass fragments, nails, and sandstock bricks) (refer **Photo 6-1**). These features may be the remnants of former structures.

PHOTO 6-1 HISTORIC BRICKS IN LOCATION OF PREP SU G 03 (ERM, 2023).

The review of the potential for historical archaeological resources to be present within the Project Area is based on a consideration of current ground conditions and analysis of historic development within the Project Area. Built structures noted within the boundaries of the Project Area are limited to several tanks, troughs, dams and fence lines.

The gradings for archaeological potential that were used for this assessment are detailed in **Table 6-56**.

TABLE 6-56 GRADING OF ARCHAEOLOGICAL POTENTIAL

Grading	***Justification***
Nil	No evidence of historical development or use, or where previous impacts would have removed all archaeological potential
Low	Research indicates little or low intensity historical development, or substantial previous impacts. Expected that deep subsurface archaeological features may survive
Moderate	Known historical development with some evidence of previous impact. Likely that archaeological remains survive with some localised truncation and disturbance
High	Evidence of multiple phases of historical development and structures with minimal or localised twentieth century development impacts. Archaeological remains likely to be largely intact

Due to the deflating nature of the landscape, the scarce and unsubstantial built structures, the long-term use of the Project area for grazing, and the limited historical material observed during survey, the historical archaeological potential of the Project area is considered **Nil-Low**.

Transport Route

Six statutory heritage items were identified within the pinch points along the proposed transport route. These include two National heritage sites, two SA State heritage sites, and one NSW local heritage item, specifically:

- Pinch Point 8, SA:
  - Australian Cornish Mining Sites: Burra, listed on the NHL (Place ID 106304), the SAHR (as Burra State Heritage Area, No. 16183), and RNE (Place ID 7400); and
  - Burra Railway Station (Station Buildings, Water Columns and Tank), listed on the SAHR (as a State Heritage Place, No. 10009), and RNE (Place ID 16576).
- Pinch Points 9 & 10, NSW:
  - City of Broken Hill, listed on the NHL (Place ID 105861) (encompasses all pinch point options).
- Pinch Point 10C:
  - Mining Precinct 9, listed on the Broken Hill LEP 2013 (Item 310-341).

No other listed heritage items were identified as having impacts from the transport route assessment. Pinch points 8 and 10C were identified as requiring further historical assessment, with the results presented within the following sections. The required road upgrades are referred to as the 'Proposed Action' and the locations of the upgrades are referred to as the Proposed Activity Area' in respective assessment for each pinch point assessed.

6.8.2.2 PINCH POINT 8 ASSESSMENT: BURRA

The Proposed Activity Area comprises pinch point 8 along the proposed transport route in the town of Burra in South Australia. Pinch point 8 is located on the left hand turn from Copperhouse Street onto West Street. The Proposed Action involves:

- Trimming or removal of one tree within the Proposed Activity Area to provide clearance for the large rear overhang of the blades. The tree is within the north-west boundary of the Burra Railway Station; and
- The installation of hardstand material is also required where the truck and trailer wheels leave the existing road surface to make the required turn. Approximately 150 square metres of hardstand is required within the western property boundary of the Bon Accord Hotel on West Street.

The assessment has found the Proposed Action will not result in the identified National Heritage Values of the Australian Cornish Mine Sites: Burra being lost, degraded or damaged or notably altered, modified, obscured or diminished. The Proposed Action would not have a significant impact on the heritage values of the National Heritage Place, and therefore, an EBPC Referral is not required.

The assessment has also found that the removal of a tree within the lot boundary of the State Heritage Burra Railway Station and Burra State Heritage Area is unlikely to have an adverse impact on the heritage values of these places. Any potential impacts from the tree removal along the north-west boundary of the Burra Railway Station could potentially be softened by implementing the replacement planting of recommended

species (such as the SA Blue Gum [*Eucalyptus leucoxylon ssp. Leucoxylong*]) in accordance with the Burra North Street Tree Management report (2007).

Similarly, the assessment has found that the installation of hardstand within the Bon Accord Hotel lot boundary is unlikely to have an impact on the local heritage values of the place.

6.8.2.3 PINCH POINT 10C ASSESSMENT: BROKEN HILL

The Proposed Activity Area encompasses Pinch Point 10C of the proposed transport route, to make the right hand turn from Sturt/ Chettle Street to the Barrier Highway at Broken Hill, NSW.

The assessment concluded that the Proposed Action will not result in the identified National Heritage values of the *City of Broken Hill* being lost, degraded or damaged or notably altered, modified, obscured or diminished. The Proposed Action should not have a significant impact on the heritage values of the National Heritage Place, and therefore, an EBPC Referral would not be required.

This assessment has also found that the Proposed Action at the Proposed Activity Area will not have an adverse effect or impact on the locally listed item *Mining Precinct 9*. The proposed works are consistent with the Section 139(4) Excavation Permit Exceptions, which state that an excavation permit under the *Heritage Act 1977* is not required for disturbance or excavation of land, provided the proposal is for minor works or activities that have minimal impact on archaeological relics of local heritage significance. The proposed works meet the following criteria provided in Clause 2 'Exceptions' of the NSW Government Gazette 59:

- *The following disturbance or excavation of land does not require an excavation permit under subsections 139(1) or (2) of the Heritage Act 1977 provided that it falls within one or more of the exceptions described at clauses 2(a) to (f) below, and is undertaken in compliance with the General Conditions prescribed at clause 3 further below:*
    - *(a) Any disturbance or excavation of land that has limited archaeological research potential, as demonstrated by a heritage management document, such as an Archaeological Assessment, completed within the last five years.*

The use of exceptions under Section 139(4) is self-assessed and is based on the current understanding of the Project and Project's adherence to the management and mitigation as set out below.

6.8.3 MITIGATION AND MANAGEMENT

The historical archaeological potential of the Project Area has been assessed as Nil-Low. However, if unexpected heritage items are identified, specific mitigation and management measures will be implemented, as detailed in **Table 6-57**.

TABLE 6-57 HISTORIC HERITAGE MITIGATION AND MANAGEMENT MEASURES

ID	Mitigation and Management Measures
HH1	If relics (defined by the *Heritage Act 1977* as 'any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance') are unexpectedly recovered during the proposed works, all works will be ceased immediately, and an Unexpected Finds Protocol will be implemented.
HH2	If unexpected heritage items are identified during the proposed works, the following steps will be adopted: • Where a potential historic heritage item is found during works, all works within the vicinity of the item, or with the potential to impact the item will be ceased and a temporary exclusion zone established; • An appropriately qualified heritage consultant will examine the item to assess its significance and further archaeological potential; • Where a relic is found, the NSW Heritage Council will be notified (in accordance with Section 146 of the *Heritage Act 1977*) and approval will likely be required prior to the continuation of works. Other archaeological deposits will be recorded and assessed for significance and potential salvage by an appropriately qualified heritage consultant; and • Additional assessment and approval under the *Heritage Act 1977* will be undertaken, as required, prior to the recommencement of excavation in the affected area.
HH3	Prior to the commencement of works, all contractors will be briefed on the Unexpected Finds Protocol.
HH4	Along the transport route, extensive ground disturbance for the installation of the hardstand and the removal of the tree should be avoided. If the proposed works extend outside of the area under assessment in this report, additional assessment may be required.
HH5	Lodgement of both HIS should lodged as part of an 'application for development' with the applicable regional council.
HH6	Consultation with the regional council and key stakeholders for the replacement of vegetation removed as part of the assessment to maintain landscape values to items of historical heritage.

6.9 SOILS AND AGRICULTURE

An Agricultural Impact Assessment (AIA) has been prepared to identify and evaluate the impacts associated with the construction and operation of the Project on agricultural resources and agricultural production (Tremain Ivey Advisory, 2024), refer **Appendix L**.

The AIA responds to the SEARs (**Appendix A**) in consultation with relevant agricultural authorities, landowners, and in consideration of relevant stakeholder engagement outcomes as discussed in **Section 5**.

The AIA has considered the following guidelines, policy and literature:

- CIA Guidelines (DPIE, 2021d);
- 'Riverina Murray Regional Plan 2041' (DPE, 2023c);
- 'Land and Soil Capability Assessment Scheme' (LSC Scheme) (OEH, 2012);
- 'Infrastructure Proposals on Rural Land' (DPI, 2013)'; and

- 'Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land' (OEH, 2013).

The methodology for the AIA has been designed to meet the requirements of the SEARs in assessing the impacts on agriculture and identifying mitigation and management measures for the Project. The scope of works included desktop study, engagement with landowners, biosecurity officers, regulators, and stakeholders, property inspections, professional knowledge, and various information sources. The detailed methodology is provided in Section 3 of **Appendix L**.

For the purposes of the AIA the Project Area is also referred to as 'investigation area', the Development Footprint is referred to as 'construction footprint' and the Permanent Development Footprint as 'permanent footprint'.

6.9.1 BACKGROUND

The topography of the Project Area consists of relatively flat alluvial plains, crossed by, crossed by five intermittent watercourses, namely;

- Abercrombie Creek towards the north of the Project area;
- Telegraph Creek also towards the north of the Project area;
- Curtains Creek in the south east;
- Nyangay Creek in the extreme south east corner; and
- A drainage line near The Forest Creek, adjacent to the southern boundary.

The elevation across the Project Area ranges from approximately 80 m to 95 m AHD, generally with a slight fall from east to west and from north to south.

According to the NSW SEED database, land use mapping, the land use within the Project Area is considered mostly 'grazing of native pastures', with some 'river' along Curtains Creek, 'marsh or wetlands' in intermittent lakes and watercourses, and 'transport' along Cobb Highway.

6.9.1.1 SOILS AND LAND CAPABILITY

A search of the NSW regional soil mapping (**Figure 6-14**), which has been prepared commensurate with the Australian Soil Classification (ASC) identifies the following soils present within the Project Area:

- Vertosols: The dominant soil type within the Project Area comprising of moderate fertility. Vertosols have clay texture throughout the profile, display strong cracking when dry, and shrink and swell considerably during wetting and drying phases (Agriculture Victoria, 2021). All the construction and operation areas are located on these moderate fertility soils;
- Rudosols: These soils are characterised by lighter textured, low fertility, and a sandy, weakly developed profile. They are typically acid throughout the profile and plant nutrient availability is quite variable. Usually low water holding capacity, but may have good infiltration; and

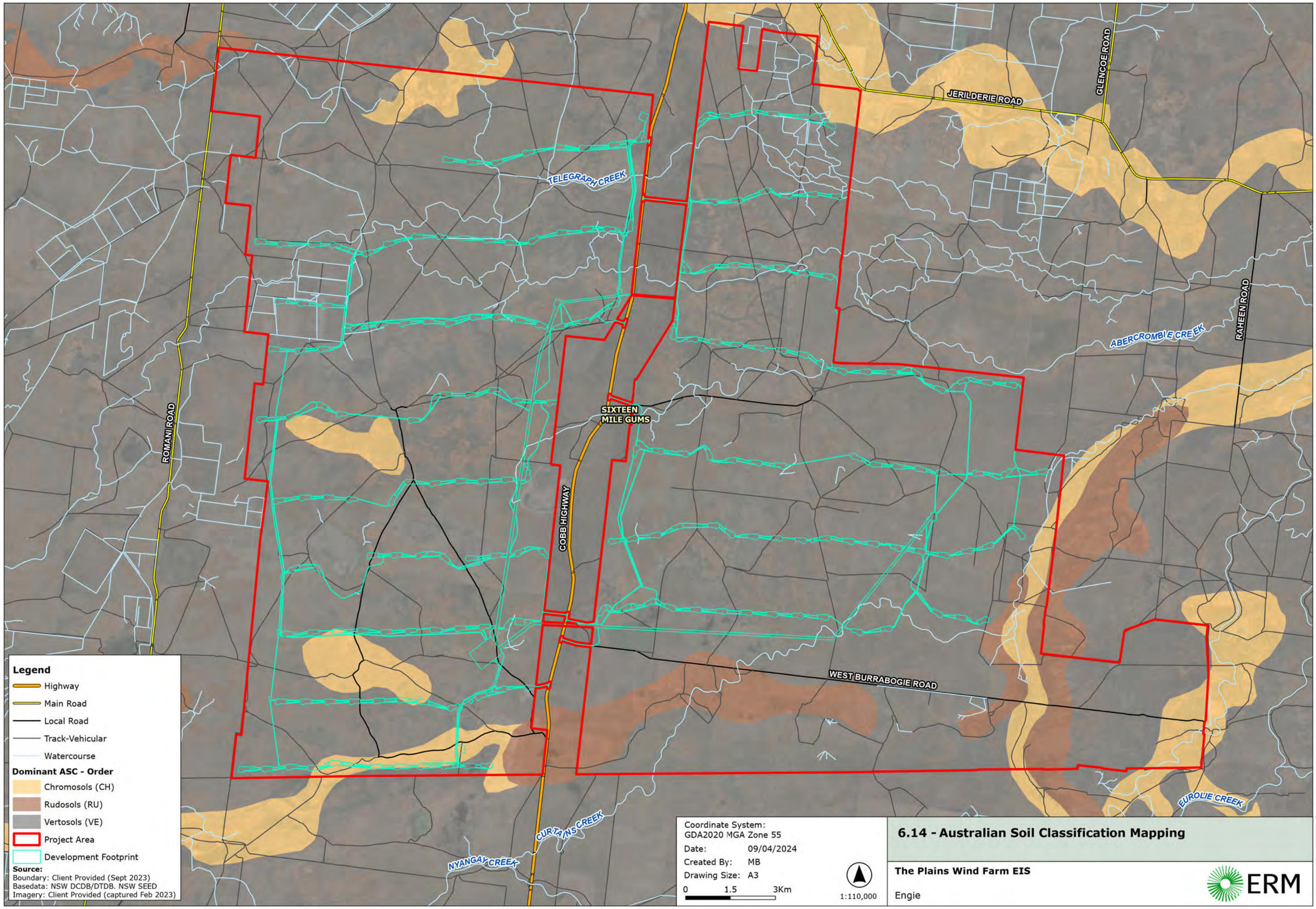
- Chromosols: In an area along Curtains Creek in the south east of the Project area and in a band across the southern part of the Project area. Chromosols have a distinct texture contrast between the loamy A horizons and the clayey B horizons, but the latter is neither strongly acidic nor sodic.

A search of LSC mapping for NSW shows the Project Area contains the following LSC classes:

- Class 4 (moderate capability land) land has moderate to high limitations for high-impact land uses which restrict land management options for regular high-impact land uses (11.9% of the Development Footprint);
- Class 5 (moderate-low capability land) land has high limitations for high-impact land uses (84.6% of the Development Footprint); and
- Class 6 (low capability land) land has very high limitations for high-impact land uses (3.5% of the Development Footprint).

These are shown in **Figure 6-15**. The LSC scheme evaluates the physical capacity of the land to maintain a range of land uses and management practices in the long term without leading to degradation of land, soil, water resources and air quality.

The 'Strategic Regional Land Use Policy' (DPI, 2011) identifies strategic agricultural land across NSW, including biophysical strategic agricultural land (BSAL) and State Significant Agricultural Land (SSAL). No areas containing BSAL were identified within or near the Project Area. Only four (4) WTGs and an associated access track, electrical reticulation and hardstand areas would be located on the SSAL in the north west of the Project Area. Additionally, a small distance of access track and electrical reticulation in the north east of the Project Area would cross SSAL. These areas of SSAL correspond to the areas developed for irrigation, covering approximately 880 hectares, or about 1.5% of the Project Area. It is noted that SSAL mapping does not preclude non-agricultural developments from progressing on this land, rather it is an indictor of the location of fertile and productive agricultural lands (refer Section 2.1.2 of **Appendix L**).



6.14 - Australian Soil Classification Mapping

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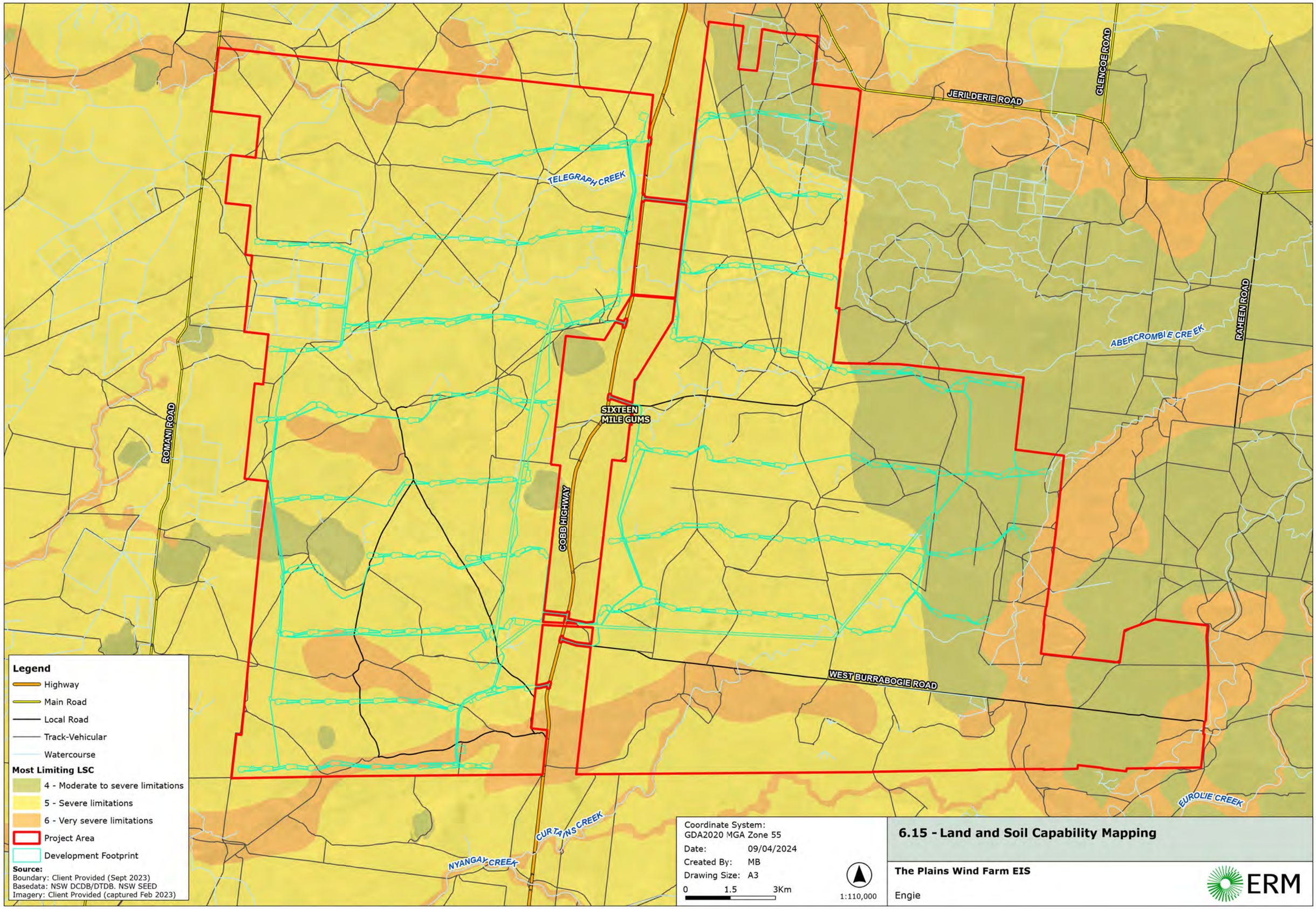

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6.9.1.2 AGRICULTURAL PRODUCTIVITY

Table 6-58 describes the existing agricultural productivity within the Hay Shire LGA and the Project Area. For the purposes of this assessment, the Project Area was divided into four properties as follows:

- Property 1 (Mungadal Station) covers most of the Project Area across approximately 50,414 ha (93.4%), it will host 177 WTGs. The area operates two merino ewe flocks, a self-replacing merino ewe flock with the ewes joined to Merino rams and a 'terminal' Merino ewe flock with the ewes joined to Dorset rams. Approximately 45% of the merino are joined to Dorset rams, with the remainder joined to Merino rams. Approximately 24,000 ewes are being carried with 13,000 joined to Merino rams on 115,000 ha. Previously about 27,000 to 30,000 ewes were operated, with lower numbers during poor seasons.;
- Property 2 covers the southeastern section of the Project Area across approximately 800 ha (1.5%) and will host two (2) WTGs. It operates two (2) merino ewe flocks, a self-replacing merino ewe flock with the ewes joined to Merino rams and a 'terminal' Merino ewe flock with the ewes joined to White Suffolk 'terminal' sires. Approximately 60% of ewes are joined to White Suffolk rams, with the remainder joined to Merino rams. Approximately 5,000 ewes are run on about 11,300 ha, and currently about 900 Merino ewes have been retained as replacement for the ewe flock. In 2023, a wether flock of 300 head has been retained.;
- Property 3 covers the northwestern section of the Project Area across approximately 820 ha (1.5%), which will host three (3) WTGs. It is used for grazing, with approximately 587 ha of this property is set out to irrigated cropping paddocks. However, the area has not been regularly used for irrigated cropping in recent years. The remaining area is rangeland grazing;
- Property 4 covers the northeastern section of the Project Area across approximately 650 ha (1.2%), hosting three (3) WTGs. Approximately 422 ha of this property is used for grazing and the remaining 229 ha is set out to irrigated cropping paddocks. However, the area has not been regularly used for irrigated cropping in recent years; and
- Property 5 in the south of the Project Area across 1,300 ha (2.4%) hosting three (3) WTGs. This land is used for rangeland grazing.

It is important to note that agricultural productivity is subject to long term climate and rainfall variables, as well as changes in economic, social and policy frameworks, often at a scale well beyond the Project Area.

TABLE 6-58 AGRICULTURAL PRODUCTIVITY OF THE REGION AND PROJECT AREA

Aspect	Agricultural Productivity Assessment
Employment and businesses	The largest industry in Hay Shire LGA is 'agriculture, forestry and fishing', which represented 23.8% of all employment in 2021 and 41% of all business (ABS, 2023). The region comprises mostly of productive agricultural land and is well known for the export of Merino sheep and wool.
Agricultural land use	The number of agricultural businesses in Hay Shire LGA in 2020-21 was 85 across a total area of agricultural holdings of 1,092,559 ha (ABS, 2022a), which gives an average size of 12,854 ha per business. Approximately 92% of the total agricultural holdings area is used for grazing, and remaining is used for wheat for grain, other broadacre crops, unused cropping land (e.g., fallow), and hay and silage.
Livestock	In the Hay Shire LGA, the average stocking rate was 0.57 units per hectare in 2020-21. By comparison, the average stocking rate in NSW in 2016 was 1.53 stock units per grazing hectare (ABS, 2022a). The low stocking rate in the Hay Shire LGA reflects the semi-arid conditions and the high proportion of native pastures rather than improved pastures.
Agricultural production value	The total gross value of agricultural production across Hay Shire LGA in 2020-21 (ABS, 2022b) was about $75 million across 1,092,559 ha, which is equivalent to $73 per hectare over the total agricultural area of holdings. The four main agricultural products produced within Hay Shire LGA were 'other broadacre crops', 'wool', 'sheep and lambs' and 'cattle and calves' with gross value varying between $11 million and $25 million. Note that the value of agricultural production is greatly influenced by seasonal and market conditions and can fluctuate widely from year to year. Of relevance to production undertaken on the Project Area, the enterprise budget for 20 micron Merino wethers showed a gross income of $80 per head, and a gross income obtained from agistment cattle of $50 per dry sheep equivalent (DSE).
Average stocking rate [7]	Based on the long-term average of 27,000 to 30,000 head of ewes and an average of 2,000 agistment steers per year at the Mungadal property. The stocking rate per DSE is 0.74 (refer Section 4.6.2 of **Appendix L**).
Average overall gross income	Based on $80 annual gross incomes per head, a DSE per ha of 0.74, and the gross income of cropping land, the average overall gross income is $89.60/ha per year at the Mungadal property.

6.9.2 AGRICULTURE IMPACT ASSESSMENT

The potential impacts of the construction and operation of the Project on land resources and agricultural productivity range from short term temporary impacts to long term and permanent impacts. **Table 6-59** summarises the potential impacts to soils and agriculture associated with the Project.

TABLE 6-59 SOILS AND AGRICULTURE IMPACTS

Risk Category	Impact Assessment
Agricultural land use and productivity	• The impact of the construction of the Project on agricultural land use is likely across all the Development Footprint (1,997 ha);

[7] Derived from the NSW DPI Livestock Budgets for Merino Ewes (20 micron) – Merino Rams.

Risk Category	Impact Assessment

	• During operation of the Project the potential area of agricultural land affected would correspond to the Permanent Development Footprint (1,296 ha). However, the area of pasture permanently taken out of production is expected to be smaller as much of the 100 m WTG buffer would continue to be grazed;
	• The impact of the Project on productivity of agricultural land and subsequent potential loss of income was estimated to be:
	  ◦ During construction: $178,931 per year, or $536,794 during the estimated 36-month construction period (refer Section 5.1.3 of **Appendix L**); and
	  ◦ During operations: $116,122 per year considering full grazing on the Project Area (refer Section 6.1.3 of **Appendix L**);
	• No change to current agricultural land use and productivity on agricultural lands immediately surrounding and in the broader locality because of the Project; and
	• The Project will have a negligible impact on local, regional and state agricultural services.

Biosecurity	• There is a risk that animal diseases, plant diseases, pests and weeds could be introduced or spread during construction of the Project; • Pest and/or weed species could be introduced to the Project Area from imported materials, machinery, earthworks, vehicle and personnel accessing the Project Area; and • Weed growth may increase due to disturbance of ground cover and soil. However, with implementation of the measures outlined in **Section 6.9.3**, the economy, environment and community will be protected from pests, diseases and weeds. It is therefore expected that the Project will not have any impact on the biosecurity of agricultural resources and enterprises within the region.
Restricted movement	• The Applicant has contractual agreements with landowners to ensure their agricultural activities are not restricted by the Project during construction or operation. This will allow continued grazing and other farming practices; • During construction some movements (for agricultural purposes) may be temporarily affected due to the need to restrict access to areas under construction. However, restriction of access would generally be short in duration and managed to minimise the areas restricted at any point in time. Therefore, it is unlikely that construction activities will materially impact agricultural activities, particularly given the large areas of similar agricultural land (on the same property) that will remain unaffected by the Project; and • It is unlikely that the operation of the Project would significantly restrict the movements of landowners, workers, livestock or equipment.
Fire	• Human activities, equipment, vehicles and mechanical failure have the potential to ignite fires. Fire risks may involve hot work, or the storage and use of dangerous materials. With the implementation of fire mitigation measures, it is expected that bushfire risk during will be adequately managed as further discussed in **Section 6.6.2**.

Livestock disturbance	• Impacts to livestock may occur during construction and in lower rate during operations, particularly during sensitive periods (e.g., lambing, calving). Livestock disturbance include:
	  ◦ Noise and vehicle disturbance;
	  ◦ Stock water pipelines or fences are damaged and not promptly repaired during construction, or if gates are left open, causing livestock deaths, illness and stress, disease spread, mixing of animals and uncontrolled breeding; and

Risk Category	Impact Assessment
	° Physical damage to water pipelines or fences, and localised impacts on rangeland pasture; • Overall, the effects on agricultural productivity is expected to be minor, and can be reduced through consultation, cooperation and planning with landowners
On-ground agricultural operations	• Construction activities have the potential to disrupt on-ground husbandry operations such as spraying, cultivation, sowing, slashing and harvesting. During operations, the presence of structures on crop and pasture land could disrupt, to some extent, normal on-ground husbandry operations around the structure. However, impact would be very low to low given the prevalence of low input native pastures and the limited cropping area on the Development Footprint; • Localised impacts to air quality may result from dust emissions generated by traffic on unsealed roads, vegetation removal and other land disturbance activities during construction and operation of the Project. These impacts can be avoided or minimised with appropriate mitigation (**Section 6.11**). As such residual impacts are expected to be negligible to minor.
Aerial agriculture	• Aerial agriculture operations (such as aerial spreading of fertilisers, monitoring and aerial spraying) by aircraft or drones has potential to be impacted. However, the past and likely future of aerial agriculture is very limited and therefore impacts would be minimal.
Travelling stock reserves	• Eight (8) access points to the Project are proposed off the Cobb Highway; • The overhead transmission lines servicing the Project would cross the Cobb Highway in two (2) places; • The impact on travelling stock would be minimal due to the relatively short time that it would be affected by construction of the transmission line, and the relatively low usage of roadsides for moving livestock; and • No impact on TRS is expected during operations.
Strategic Agricultural Land	• Given there are only four (4) WTGs proposed to be built on SSAL and the irrigation land has not been regularly cropped in recent years, the impact on SSAL is considered relatively low. Irrigated or dryland cropping could continue on the affected SSAL apart from a buffer area around each WTG.
Frost	• WTGs can reduce the occurrence of frost on surrounding land (Henschen, 2011). However, this is unlikely to be significant on the Project Area due to the relatively low frost incidence, a lack of cropping and the low intensity of pasture production. Crops are generally more susceptible to frosts than pastures.

6.9.3 MITIGATION AND MANAGEMENT

Table 6-60 summarises the mitigation measures to be implemented for the Project to avoid or minimise impacts on agricultural resources and enterprise.

TABLE 6-60 SOILS AND AGRICULTURE MITIGATION AND MANAGEMENT MEASURES

Impact	*ID*	*Environmental Safeguard*	*Timing*
Project Elements	SA1	Permanent and temporary structures will be located to avoid or minimise impacts (where possible), or as agreed with the affected landowner.	Detailed design and construction

Impact	*ID*	*Environmental Safeguard*	*Timing*
Disruption	SA2	Host landowners will be consulted regarding: • Property infrastructure works and timing, particularly where some restriction on vehicular or stock movements would be necessary; • Management of infrastructure such as gates; • Repair of any damage to infrastructure caused by construction.	Detailed design and construction
	SA3	Use of existing roads, tracks and other existing disturbed areas will be prioritised.	
	SA4	To ensure minimum damage to the surface, vehicular or equipment movement will be confined to one route, where possible.	
	SA5	The placement of infrastructure such as fencing will be determined in consultation with landowners.	Operation
	SA6	Any damage caused by the Applicant during maintenance activities will be repaired promptly.	
Fire	SA7	A bushfire plan will be prepared for the Project, which will include mitigation measures applicable to construction and operation activities, particularly during the bushfire danger period.	Construction and operation
Rehabilitation	SA8	Following completion of construction, disturbed areas will be stabilised and rehabilitated in line with approval conditions and contractual agreements with landowners.	Construction
Livestock disturbance	SA9	Procedures will be implemented to manage potential impacts on livestock (as described in **Table 6-59**), and in consultation with affected landowners	Construction and operation
Biosecurity	SA10	Temporary fencing can be used as an exclusion barrier will be installed around facilities such as construction compound, concrete batching plants, materials storage and laydown areas.	Construction
	SA11	Biosecurity protocols will be implemented, including recording of all persons entering the Project Area.	Construction and operation
	SA12	All project vehicles will be washed down prior to entering any agricultural areas.	
	SA13	All vehicles will be washed down when moving between paddocks with known weed infestations.	

Impact	*ID*	*Environmental Safeguard*	*Timing*
	SA14	Infestations (existing or new) of any priority weed species will be reported to the relevant authority.	
	SA15	Weeds will be managed in accordance with the *Biosecurity Act 2015* and the relevant regional strategic weed management plans and in consultation with landowners.	
	SA16	The land around transmission line structures and other project infrastructure will be monitored for the spread of weeds.	Operation
	SA17	The Project Area will be monitored for pest fauna species. Should any pest fauna species be identified as present on the Project Area, appropriate control measures will be implemented.	
Decommissioning	SA18	The Project Area will be rehabilitated the condition agreed with the landowners and as specified in contractual agreements.	Decommission
	SA19	Underground infrastructure (such as cables and footings) will be removed where practical to a depth of 0.3 m below ground surface.	
	SA20	Any contamination or waste will be removed or managed in consultation with the landowners and according to regulations and weed infestations will be controlled during the decommissioning process, as necessary.	

6.10 WATER RESOURCES, HYDROLOGY AND FLOODING

A water resource and hydrology assessment was undertaken to identify and assess groundwater and surface water resources within and adjacent to the Project Area. The risk of impacts to water resources, risk of flooding within the Project Area, as well as the impact Project infrastructure may have on flood and surface water behaviour was also undertaken (Lyall and Associates, 2023; **Appendix M**). The flood assessment included hydraulic modelling of 5%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) and probably maximum flood (PMF) events for the Project Area in consideration of the Project layout as described in **Section 3**.

The water resources, hydrology and flooding assessments were conducted to satisfy the relevant SEARs (refer **Appendix A**) and in consideration of relevant stakeholder engagement as described in **Section 5**.

The following references apply to the assessment of water resources, hydrology and flooding for the Project:

- 'Australian Rainfall and Runoff: A guide to flood estimation' (ARR) (Ball J, et al., 2019);
- 'NSW Floodplain Development Manual 2005' (DPI, 2005);
- 'Flood Risk Management Manual' (FRMM) (DPE, 2023);
- 'Hay Shire Local Flood Plan' (NSW SES, 2014);
- 'Floodplain Risk Management Guideline: Practical Considerations of Climate Change' (DECC, 2007);
- 'Guidelines for Controlled Activities on Waterfront Land' (DPI, 2018);
- 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (DPI, 2003);
- 'Policy & Guidelines for Fish Habitat Conservation & Management' (DPI, 2013);
- 'Managing Urban Stormwater: Soils & Construction' (the 'Blue Book') (Landcom, 2004); and
- 'Best Practice Erosion and Sediment Control' (BPESC) (IECA, 2008).

6.10.1 BACKGROUND

6.10.1.1 SURFACE WATER AND WATER COURSES

The Project is located within the Murrumbidgee River catchment, which covers an area of about 84,000 square kilometres (km^2) and comprises 8 % of the Murray-Darling Basin area. The Project Area is located at a minimum distance of 11.8 km south of the Murrumbidgee River and 5.6 km north of the irrigation channel Coleambally Outfall Drain.

Several non-perennial creeks traverse the Project Area, all of which are fifth Strahler stream order or higher. Higher order streams near the Project Area include Abercrombie Creek and Telegraph Creek, which are located to the north, and Curtains and Nyangay Creeks, which flows through the southeastern portion of the Project Area. Abercrombie Creek is a seventh order stream and Curtains Creek is a first order stream.

Under the *Fisheries Management Act 1994*, waterways that are third order or above are considered key fish habitat; therefore, both the Abercrombie Creek and Curtains Creek are key fish habitat. These two waterways would also meet the definition of 'waterfront land' under the WM Act.

Based on a review of database records, there are no known threatened freshwater fish species within either Abercrombie Creek or Curtains Creek. There are no wetlands of international importance, nationally important wetlands, or large waterbodies within the Project Area. There are several farm dams, and three larger dams dispersed within the Project Area. The watercourses present within the Project Area and the surroundings are presented in **Figure 6-16.**

6.10.1.2 GROUNDWATER AND GROUNDWATER DEPENDENT ECOSYSTEMS

The Groundwater Dependent Ecosystem (GDE) Atlas (BoM, 2023) was used to determine GDEs present within and adjacent to the Project Area. The results are presented in **Table 6-61** and **Figure 6-16**.

TABLE 6-61 GDE RELEVANT TO THE PROJECT AREA

GDE Type	*Description*
Aquatic	There is an aquatic GDE mapped within the Project Area associated with a small waterbody 2.5 km south west from 16 Mile Gums Rest Area. Medium potential aquatic GDEs are mapped along Eurolie Creek, located at a minimum of about 1.15 km east of the Project. Additionally, medium potential aquatic GDEs are mapped along the Coleambally Outfall Drain about 5 km south of the project.
Terrestrial	The majority of the site is mapped as terrestrial GDE. Most terrestrial GDEs mapped within the Project Area are low potential; however, small areas of high potential terrestrial GDEs are present in the north eastern portion of the site.
Subterranean	The Project Area is not in an area where subterranean GDEs have been assessed or mapped.

The Hay LEP has identified areas with the Hay Shire LGA in proximity to the Murrumbidgee River as groundwater vulnerable. These areas were identified to protect vulnerable groundwater resources from depletion and contamination due to inappropriate development. However, the Project Area is not identified as groundwater vulnerable within the Hay LEP.

6.10.1.3 WATER QUALITY OBJECTIVES

The NSW Water Quality Objectives (WQOs) are the agreed environmental values and long-term goals to achieve healthy waterways in surface water catchments across the State. The WQOs include a range of water quality indicators to help assess the current conditions of waterways and their ability to support their respective uses and values.

The Murrumbidgee River catchment overlaps the towns of Cooma, Canberra, Yass, Tumut, Gundagai, Cootamundra, Wagga Wagga, Narrandera, Leeton, Griffith, Hay and Queanbeyan, numerous smaller villages and the alpine regions of Kosciuszko National Park and the Monaro High Plains. The key users of water within the catchment include irrigated agriculture, hydro-electricity, urban water supply for local councils and water utilities.

Under the Murray-Darling Basin Plan 2012, there is a requirement to develop water quality management plans for each water resource plan area within the Murray-Darling Basin with the purpose of providing a framework to protect, enhance and restore water quality that is suitable for a range of outcomes. The 'Water quality management plan for the Murrumbidgee water resource plan area SW9' (DPIE, 2019) identifies relevant water quality objectives for the Murrumbidgee River catchment watercourses and the water quality targets required to achieve these objectives.

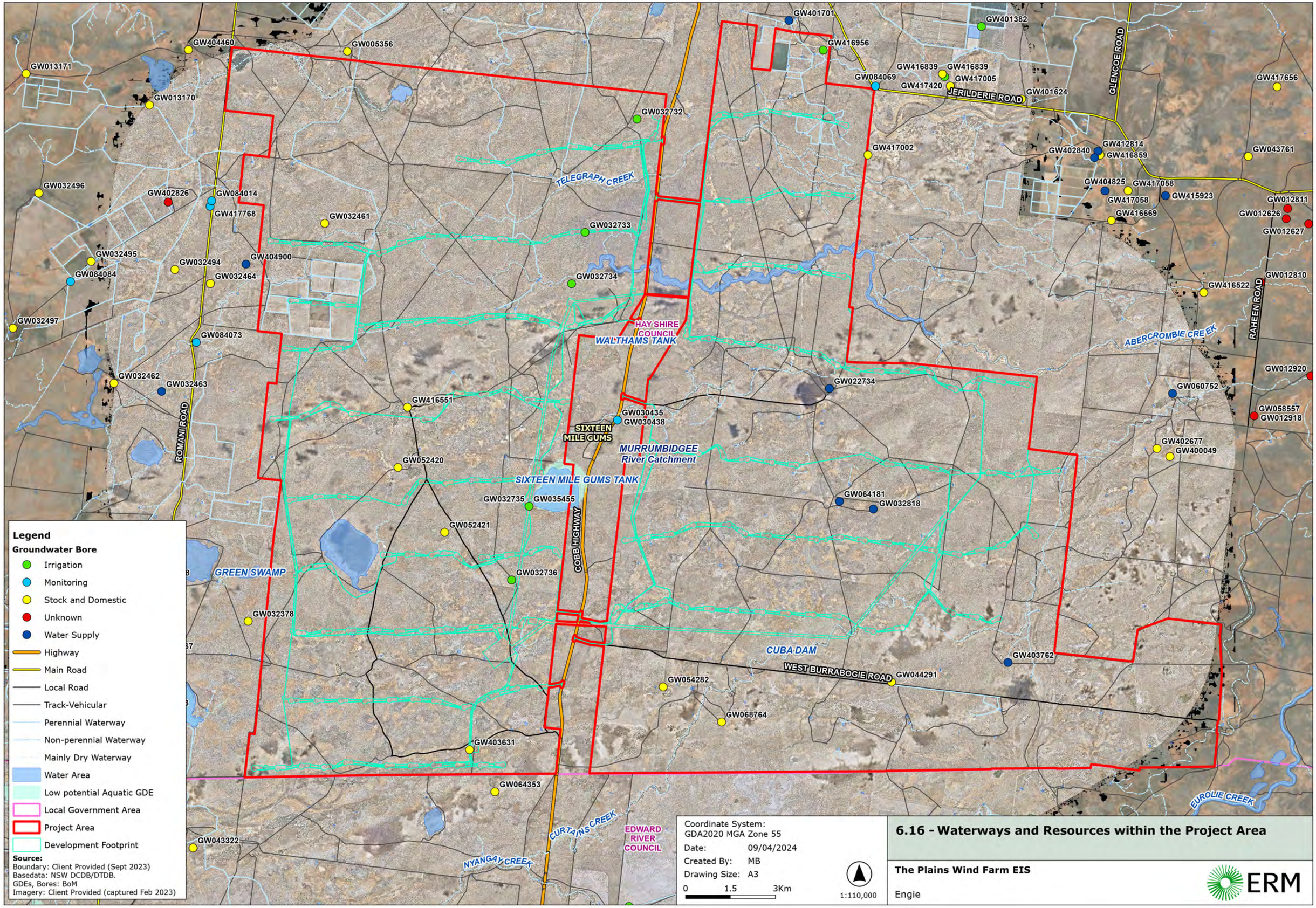
Murrumbidgee water resource plan area WQO have been developed to provide guideline levels to assist water quality planning and management. The WQOs for the Murrumbidgee River catchment are detailed in **Table 6-62**.

TABLE 6-62 MURRUMBIDGEE RIVER CATCHMENT WATER QUALITY OBJECTIVES

Catchment Area	***Applicable Water Quality Objectives***	
Murrumbidgee River	Indigenous People	Maintain water quality to protect First Nations people's water dependent values and uses.
	Environment	Maintain water quality to protect and restore water dependent ecosystems.
	Drinking water – disinfection	Maintain the quality of raw surface water for treatment for human consumption.
	Irrigation water supply	Maintain the quality of surface water for irrigation use.
	Primary Contact Recreation	Maintain the quality of surface water for recreational use.
	Water Supply	Maintain good levels of water quality.

The Project Area is situated in proximity to a fifth order stream (or above); therefore, construction and operation of the Project must not diminish the WQO so that local ecosystem, environmental values, and public uses can be protected.

To achieve this, waterway health is assessed against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (DCCEEW, 2023). The Guideline establishes default guideline values (DGVs) for various water quality measures which support the WQOs.



6.16 - Waterways and Resources within the Project Area

The Plains Wind Farm EIS

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6.10.1.4 WATER SUPPLY ENTITLEMENTS

The Project Area is within the jurisdiction of the following water sharing plans (WSPs):

- Murrumbidgee Western Water Source, managed by the Murrumbidgee Unregulated River Water Sources 2012 WSP; and
- Lower Murrumbidgee Shallow and Deep Groundwater Sources, both managed by the WSP for the Murrumbidgee Alluvial Groundwater Sources 2020.

Water volumes that will be required during construction and operation of the Project have been estimated based on an understanding of the construction requirements and schedule, and operational parameters. During construction of the Project (40 months) water requirements for construction activities are estimated to be 270.53 ML per year (ML/year), as shown in **Table 3-7**. During operations (minimum of 30 years) 4 ML/year water will be required.

Potable or drinking water will be required for workforce associated with the construction and operation of the Project and will be collected in rainwater tanks or imported during construction as needed.

The Applicant has investigated potential supply options for the Project during construction. Four options to obtain the water volumes required for the Project have been identified:

- Council water supply (or treated wastewater), in agreement with the relevant Council(s);
- Extraction of water collected from existing or new dams using landowner basic rights or an existing landowner bore, in agreement to use their allocation;
- Use of existing surface water or groundwater supply works and WAL and onsite storage using dams or tanks; and
- Extraction from one or more new groundwater bores, which will require Water Access Licences (WALs) in consultation with WaterNSW.

Water required during the operation of the Project will be from potable water, that is trucked into site.

The total number of WALs for water sources relevant to the Project and the total allocations available for the period of financial year 2023/2024 (WaterNSW, 2023) are summarised in **Table 6-63** below.

TABLE 6-63 CATCHMENT WATER LICENSES AND ALLOCATIONS

WSP Management Area	*WAL Category*	*No. of WALs*	*Water Available to use (ML)*	*Usage YTD (ML)*
Murrumbidgee Western Water Source	Unregulated River	12	14,870	20.6
Lower Murrumbidgee Shallow Groundwater Source	Aquifer	30	5,201	410.1

WSP Management Area	*WAL Category*	*No. of WALs*	*Water Available to use (ML)*	*Usage YTD (ML)*
Lower Murrumbidgee Deep Groundwater Source	Aquifer	402	275,402	30,946.9
	Aquifer (Community and Education)	395	272,825	30757.6
	Aquifer (Town Water Supply)	2	23	0
	Domestic And Stock (Stock)	1	20	1.2
	Local Water Utility	1	324	72.3

There are 19 groundwater bores within the Project Area (refer **Table 6-64** and **Figure 6-16**). Should additional groundwater bores or water from other sources covered under the relevant water sharing plan be required, the Applicant would seek to obtain a WAL, and other relevant approvals, subject to availability. As the Project is designated SSD, it is exempt from a water approvals under Sections 89, 90, and 91 of the WM Act (refer **Table 4-1**).

The Project may store water for use during construction in the numerous dams that are within the Project Area. Water within those dams could be supplemented with water imported from offsite.

The Applicant is currently in negotiations with an identified landholder for use of an existing surface water licence, water supply works permit for a river pump and the potential for a temporary transfer from the registered bore identified within The Plains Renewable Energy Park.

TABLE 6-64 GROUNDWATER BORES WITHIN THE PROJECT AREA

Bore ID	*Bore Depth (m)*	Coordinates
GW416956.1.1	180	-34.632887,144.86998
GW032732.1.1	130.5	-34.652364,144.801826
GW032734.1.1	136.6	-34.701253,144.776826
GW032461.1.1	48.8	-34.681531,144.687661
GW032733.1.1	123.4	-34.685975,144.782104
GW052420.1.1	55	-34.755143,144.712384
GW068764.1.1	61	-34.833531,144.827774
GW052421.1.1	55	-34.774865,144.728773
GW054282.1.1	35	-34.822642,144.806827

Bore ID	*Bore Depth (m)*	Coordinates
GW035455.1.1	35.3	-34.767642,144.759605
GW022734.1.1	86.6	-34.734308,144.869603
GW064181.1.1	130	-34.768197,144.872381
GW032818.1.1	80.5	-34.770697,144.884603
GW403762.1.1	76	-34.8175,144.932271
GW416551.1.1	104	-34.737153,144.71628
GW032736.1.1	172.8	-34.789587,144.752661
GW044291.1.1	78.3	-34.822641,144.889882
GW032735.1.1	130.1	-34.767642,144.759605
GW403631.1.1	147	-34.840167,144.736005

FLOODING

Two separate hydraulic (TUFLOW) models were developed to investigate flood risk of the Project Area from both Murrumbidgee River and local catchment flooding. Modelling of existing flood conditions (pre-Project) was undertaken for the Project Area for 5% and 1% AEP and PMF.

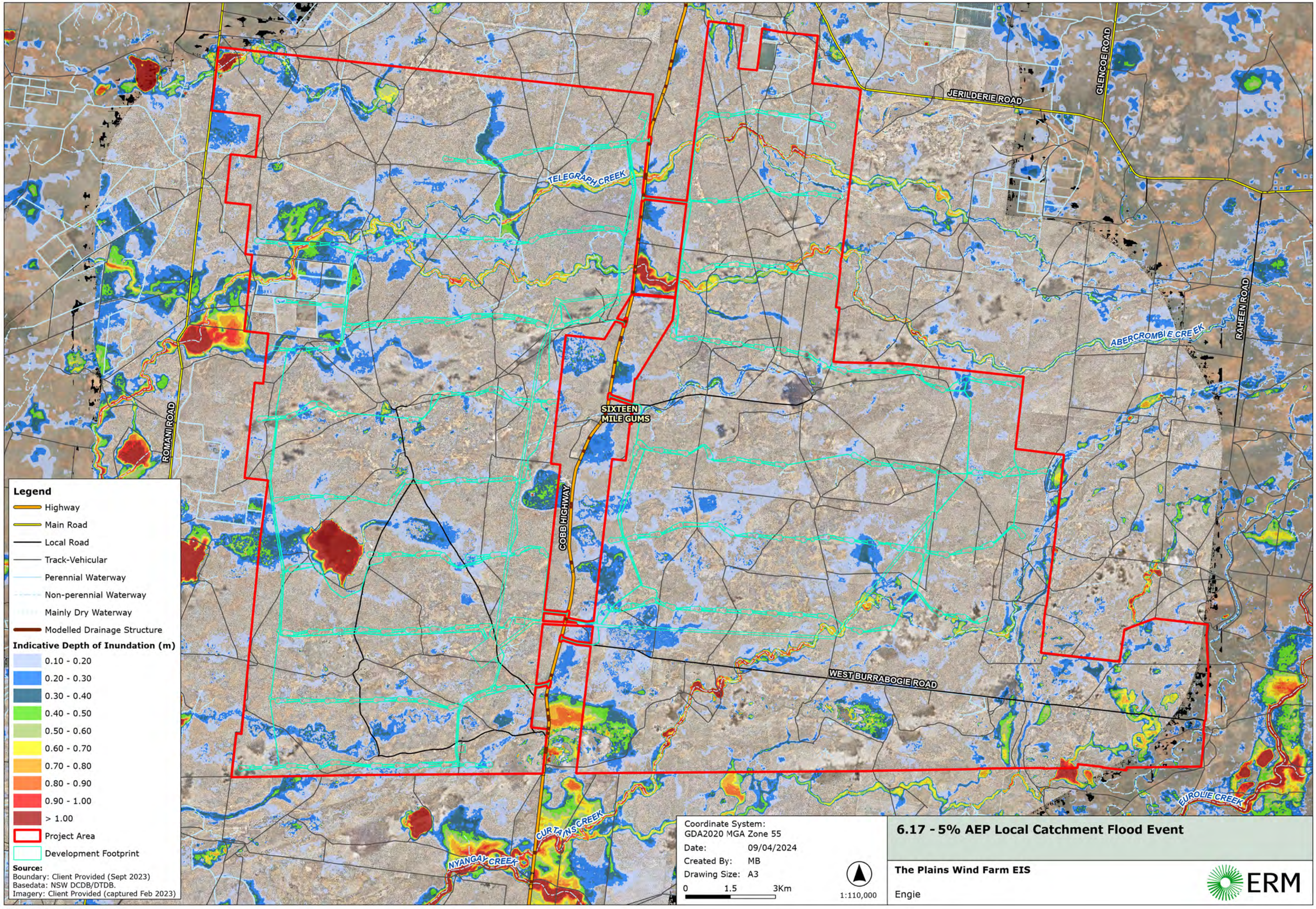
The outputs of the modelling are shown in Table 6-65. The pre-Project 5% and 1% AEP and PMF Local Catchment modelled scenarios are presented in **Figure 6-17** to Figure 6-19 respectively (refer Appendices D and E of **Appendix M**).

As shown in **Figure 6-19** the PMF is the largest flood that could conceivably occur at the Project Area, usually estimated from probable maximum precipitation coupled with the worst flood producing catchment conditions.

TABLE 6-65 RIVERINE AND LOCAL CATCHMENT FLOOD BEHAVIOUR – 5% AND 1% AEP AND PMF FLOOD EVENTS T

5% AEP	*1% AEP*	*PMF*
Murrumbidgee River		
• *The Project Area is not impacted by floodwater originating from the Murrumbidgee River during a 5% AEP flood event.*	• The Project Area is generally not impacted by floodwater originating from the Murrumbidgee River during a 5% AEP flood event. However, in the southernmost extent of the Project Area, maximum depths of flow in Nyangay Creek range between 1.0 to 1.5 m and velocities of about	• Widespread flooding of the Project Area is not predicted to occur. However, flow at depths of up to 2.2 m and velocities of 0.3 – 0.4 m/s. would be experienced in Telegraph, Abercrombie, Curtains and Nyangay Creeks.

5% AEP	*1% AEP*	*PMF*
	0.2 – 0.3 metres per second (m/s). The floodwater is primarily contained within the creek banks and connected off-channel storage areas in the vicinity of the Project Area.	
Local Catchment		
The Project Area and substation infrastructure are generally not impacted by local catchment flooding. However, shallow ponding may occur and local ponding of surface water is expected across the wider Project Area.		• Widespread flooding across the wider Hay Plains area is predicted, with all local drainage lines conveying flow at depth. • The Cobb Highway presents a barrier to overland flow, with extensive aggregation of surface waters predicted on the eastern side of the highway.
• *Shallow ponding of surface waters is shown to occur to depths of up to about 0.25 m;* • *Existing unsealed roads and proposed access tracks are inundated to depths of 0.2 - 0.3 m;* • *Existing roads which cross major waterways are inundated to depths of 1.0 m at several locations;* • *Telegraph, Abercrombie, Curtains and Nyangay Creek*s experience depths of flow of up to 0.8 m and velocities of 0.2 – 0.3 m/s where these creeks run through the Project Area. • *Standing surface water is predicted across the wider Project Area at depths of 0.2 - 0.3 m within the area 5 km east of the Cobb Highway.*	• Shallow ponding of surface waters is shown to occur to depths of up to about 0.25 m; • Existing unsealed roads and proposed access tracks are inundated to depths of 0.5 m; • Existing roads which cross major waterways are inundated to depths of 1.0 m at several locations; • Telegraph, Abercrombie, Curtains and Nyangay Creeks experience depths of flow of up to 0.8 m and velocities of 0.2 – 0.3 m/s where these creeks run through the Project Area. • Standing surface water is predicted across the wider Project Area at depths of 0.2 - 0.3 m within the area 5 km east of the Cobb Highway.	•



6.17 - 5% AEP Local Catchment Flood Event

The Plains Wind Farm EIS

Engie

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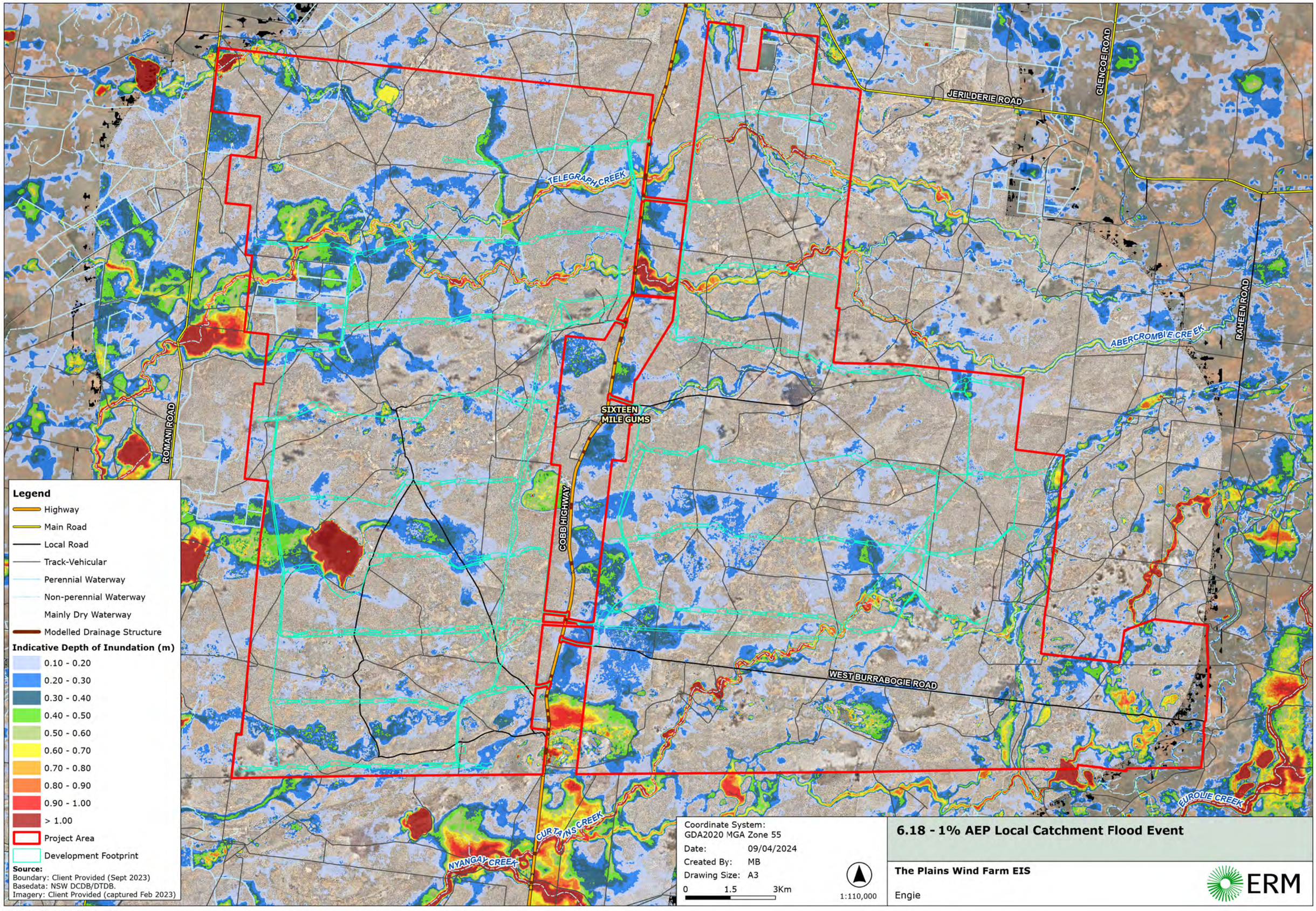

6.18 - 1% AEP Local Catchment Flood Event

The Plains Wind Farm EIS

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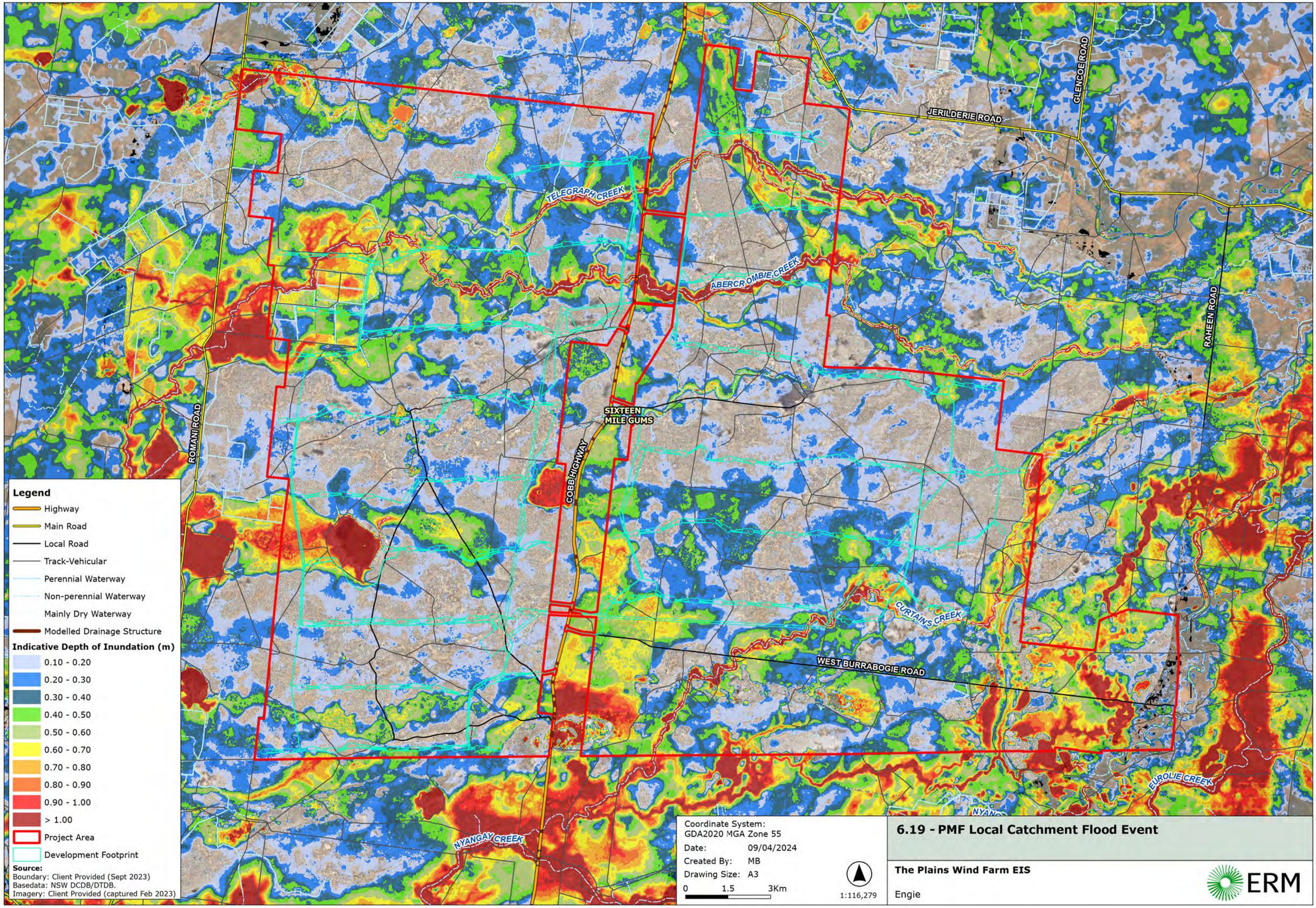

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6.10.2 IMPACT ASSESSMENT

6.10.2.1 CONSTRUCTION

Water Resources and Hydrology

During construction, it is anticipated that water will be required for the following activities:

- Construction of roads, and miscellaneous construction work;
- Dust suppression; and
- Potential watering of revegetated areas.

The water demand for construction (270.53 ML/year) has been estimated based on these activities and the likely construction schedule (refer **Section 3.4.5.1**). Potential impacts to water resources and water courses from construction are outlined in Table 6-66. Impacts to groundwater are not expected as construction activities will not be to a depth that will intersect groundwater aquifers.

TABLE 6-66 POTENTIAL CONSTRUCTION IMPACTS TO WATERWAYS

Activity	***Potential Impacts***

Watercourse Crossings	Construction of watercourses crossings have the potential to:
	• Erode drainage lines and lead to subsequent sediment runoff;
	• Remove vegetation and the subsequent increased erosion potential;
	• If vehicle movements across unaltered watercourses are allowed during the construction phase, this may:
	  ◦ Cause damage to creek beds;
	  ◦ Lead to unstable steep banks collapsing under the weight of vehicles or machinery; and
	• Culvert installations may lead to bank erosion at creek crossings.

Water Supply	• Over-extractions of surface water or groundwater may result in reduced environmental water flows, reduced water availability for existing licensed users and impacts on water dependent ecosystems.
General Construction Activities (e.g., Machinery Operations)	Poor construction practices have the potential to: • Lead to sediment run-off from erosion from stockpiles; • Spill hydrocarbon from machinery (e.g., burst hoses, mechanical failures, leaking machinery); and • Poor refuelling practices may cause contamination of soils.
Ancillary Infrastructure (e.g., substation, operations and maintenance facility)	Construction of ancillary infrastructure have the potential to: • Erode disturbed areas and subsequent sediment run-off; and • Lead to sediment run-off from erosion from stockpiles.
Stockpile Management	• Poor stockpile management can lead to erosion from soil stockpiles and subsequent sediment run-off.

Flooding

Floodwaters have the potential to impact construction areas if appropriate management measures are not implemented. Potential impacts to construction areas include:

- Damage to construction works and delays in construction programming;
- Safety risk to construction workers;
- Transport of sediments and construction materials by floodwater to downstream waterways;
- Obstruct the passage of floodwater and overland flow, which in turn could exacerbate flooding conditions in areas located outside the construction footprint;
- Potential impact to temporary construction facilities by shallow surface water ponding during localised rainfall events; and
- Potential widespread ponding of surface water impacts to earthworks and wind turbine infrastructure. Several WTGs and hardstand blocks are situated in identified flood storage areas, adjacent to major waterways and may be subject to floodwaters during local catchment flood events, and extreme riverine based flood events.

As the Project will not alter the floodplain landform or waterways, no change to flood levels or flood behaviour is anticipated. Construction of access tracks and roads may result in localised ponding of floodwaters and altered drainage pathways adjacent to the constructed tracks. However, flood modelling has shown that flood levels or flood behaviour will not be impacted by construction activities of the Project.

6.10.2.2 OPERATION

Water Resources and Hydrology

Water demand during the operation of the Project is expected to be minimal, with a maximum of 4 ML estimated to be required. Water will also be made available for other general maintenance activities and emergency water supply (in the event of a fire).

Potential impacts to water sources during operation are expected to be negligible. These are summarised in **Table 6-67**.

TABLE 6-67 POTENTIAL OPERATIONAL IMPACTS TO WATERWAYS

Activity	***Potential Impacts***
General Operational Activities (e.g., Machinery Operations)	General operational activities of the Project have the potential to: • Lead to erosion from stockpiles and subsequent sediment run-off if stockpiles are not managed appropriately; • Spill hydrocarbon from machinery (e.g., burst hoses, mechanical failures, leaking machinery), if appropriate storage, containment facilities and handling are not followed; and • Lead to soil erosion following heavy rainfall and subsequent sediment run-off.
Watercourse Crossings	Poor management of watercourses crossings during operations have the potential to: • Lead to bank erosion at culvert crossings; and

Activity	*Potential Impacts*
	• Lead to damage to creek beds if vehicle movements across unaltered watercourses are allowed.
Driving on Unsealed Access Roads	Driving on unsealed roads during operations have the potential to: • Lead to erosion of roads and roadside drainage system; and • Lead to mud tracking at the confluence of internal access roads and public roads.

Flooding

The flood risk and impact to and from the operation of Project if appropriate mitigation measures are not incorporated include:

- Potential flood risk to the 33 kV and 330 kV overhead transmission line infrastructure situated within the inbank areas of Telegraph Creek, Abercrombie Creek and Curtains Creek subject to maximum PMF flood events as described in Table 6-68. Floodwater levels or velocities in these creeks are unlikely to be impacted due to the relatively small sectional area of the transmission line infrastructure, however it would be subject to indicative flood depths of up to 1.5 m.

As the Project will not alter the landform of the floodplain, it will not result in measurable changes in flood levels or flood behaviour, nor impact to the FPL, overall flood hazard and/ or adverse impact on the NSW State Emergency Service's emergency response arrangements as set out in the Hay Shire Local Flood Plan (NSW SES, 2014).

6.10.2.3 FUTURE CLIMATE CHANGE MODELLED EVENTS

The assessment of impact to the Project of future climate change was based on two scenarios, 10 % and 30 % increase in currently adopted 1% AEP design rainfall intensities. As proxies the 0.5% AEP and 0.2% AEP storm events have been used. Appendices B and C of the flooding report (refer **Appendix M**) provides the modelled events extent and depth of inundation during a 0.5% AEP and 0.2% AEP for the Murrumbidgee River and local catchment flood events respectively.

Table 6-68 summarises the outputs of the modelling. The pre-Project 0.5% and 0.2% AEP Local Catchment modelled scenarios are presented in **Figure 6-20** and **Figure 6-21** respectively.

TABLE 6-68 RIVERINE AND LOCAL CATCHMENT FLOOD BEHAVIOUR - O.5% AND 0.2% AEP FLOOD EVENTS

0.5% AEP	*0.2% AEP*
Murrumbidgee River	
• The majority of the Project Area including the WTG layout, internal transmission line and substation areas are not impacted by riverine based flooding from the Murrumbidgee River. However, shallow inundation (0.1 to 0.3 m) may occur at one WTG location and nearby access tracks.	• The Project Area including the WTG layout and substation area are not directly impacted by riverine type flooding; • The internal transmission line would be subject to increased flooding where it crosses Curtains Creek, with depths of inundation

0.5% AEP	*0.2% AEP*
	up to 0.3 m and flow velocities of 0.2 m/s; and • The western boundary of the Project Area would be encroached by shallow overbank inundation at depths of up to 0.2 m.
Local Catchment	
• The substation area are generally not impacted by local catchment flooding. However, local ponding of surface water is expected across the wider Project Area.	
• The inbank area of Curtains Creek where transmission line infrastructure of the Project is located would reach a maximum depth of 1.1 m and flow velocities of 0.4 m/s; and • Access tracks and transmission lines which crosses local drainage lines would be exposed to inundation depths of up to 0.5 m.	• Access tracks and 33 kV and 330 kV transmission line corridors are inundated by shallow ponding of surface waters at depths of up to 0.5 m; and • Where access tracks and transmission line infrastructure crosses creek lines, inundation to depths exceeding 1.0 m and flow velocities of up to 0.5 m/s could be expected.

The impact of the Project on flood behaviour under future climate change conditions was assessed based on its effect on pre-Project flood behaviour during a 0.5 % and 0.2 % AEP events. The Project will not alter the landform of the floodplain and potential increases in rainfall intensities will result in only minor increases in the depth, extent and velocity of flow internal to the Project Area. Therefore, the Project would not have a measurable impact on flood behaviour under future climate change conditions.

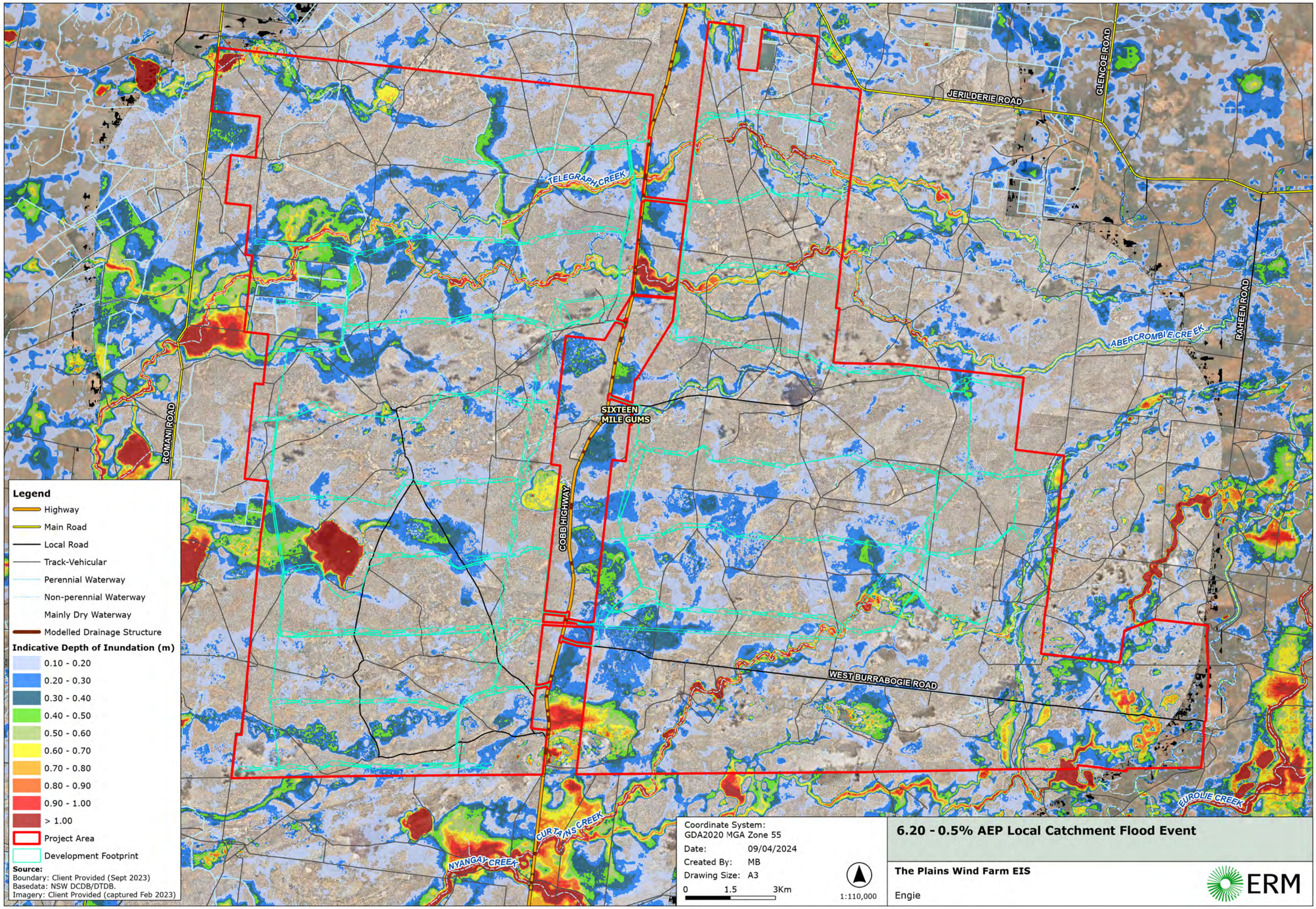
6.10.3 MITIGATION AND MANAGEMENT

Management measures that will be employed to minimise the Project impacts are included in **Table 6-69.**

TABLE 6-69 EROSION AND SEDIMENTATION MANAGEMENT AND MITIGATION

Aspect	*ID*	*Mitigation Measures*
Water Resources	WHF1	Should additional groundwater bores or water from other sources covered under the relevant water sharing plan be required, the Applicant will seek to obtain a WAL, and other relevant approvals, subject to availability.
	WHF2	A Soil and Water Management Plan (SWMP) will be prepared and will: • Incorporate best practice principles for stormwater and sediment control during all phases of the Project, as described in the BPESC; and • Be prepared by a suitably qualified person in accordance with the Blue Book, particularly Volumes 2A and 2C.
	WHF3	A progressive erosion and sediment control plan (ESCP) will be prepared to address specific high-risk areas identified during detailed design. ESCP measures will include site stabilisation measures such as sediment fences and sediment basins.
	WHF4	A CEMP will be prepared and include measures to minimise the risk of contamination from chemical spills in waterways.
	WHF5	Design and construction of Project infrastructure crossing watercourses will be in accordance with the 'Guidelines for Controlled Activities on Waterfront Land' (DPI, 2018).
	WHF6	Detailed design of any scour protection at potential creek crossing points will consider the 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (DPI, 2003) to ensure that fish passage is not impeded.
Flooding	WHF7	Procedures and measures will be recorded to manage the risk of flooding to the Project and the potential for adverse impacts on existing flood behaviour within the vicinity of the Project.
	WHF8	Design standards will be identified for managing the flood risk and implementing stormwater management controls during the construction and operational phases of the Project.
	WHF9	Procedures aimed at reducing the flooding threat to human safety and infrastructure will be prepared.
	WHF10	Controls to mitigate the impact of the Project (during construction and operation) on flood behaviour will be prepared.
	WHF11	The impact of the Project on flood behaviour in consideration of future climate change will be confirmed during detailed design.
	WHF12	The Project will be designed to minimise adverse flood related impacts in Telegraph Creek, Abercrombie Creek, Curtains Creek and Nyangay Creek.
	WHF13	Access tracks will be designed to have a minimum hydrologic standard of 10 % AEP.
	WHF14	Access track connections will be designed to ensure that the existing level of flood immunity of the Cobb Highway is maintained and increases in flood depths and hazards along the road network are minimised.
	WHF15	Construction compounds and workforce accommodation camps will be located outside high flood hazard areas based on a 1% AEP flood.

Aspect	*ID*	*Mitigation Measures*
	WHF16	Consider flood risk at construction sites and support facilities during construction planning. Including the review of construction site layouts and staging construction activities, and implementing measures to mitigate alterations to local runoff conditions.
	WHF17	Construction spoil stockpiles will be located in areas not subject to frequent inundation by floodwater, ideally outside the 10% AEP flood extent.
	WHF18	Incorporate a construction flood emergency management measures into relevant environmental and/or safety management documentation.
	WHF19	Scour protection and energy dissipation measures will be provided to mitigate localised increases in flow velocities at drainage outlets and waterway crossings.



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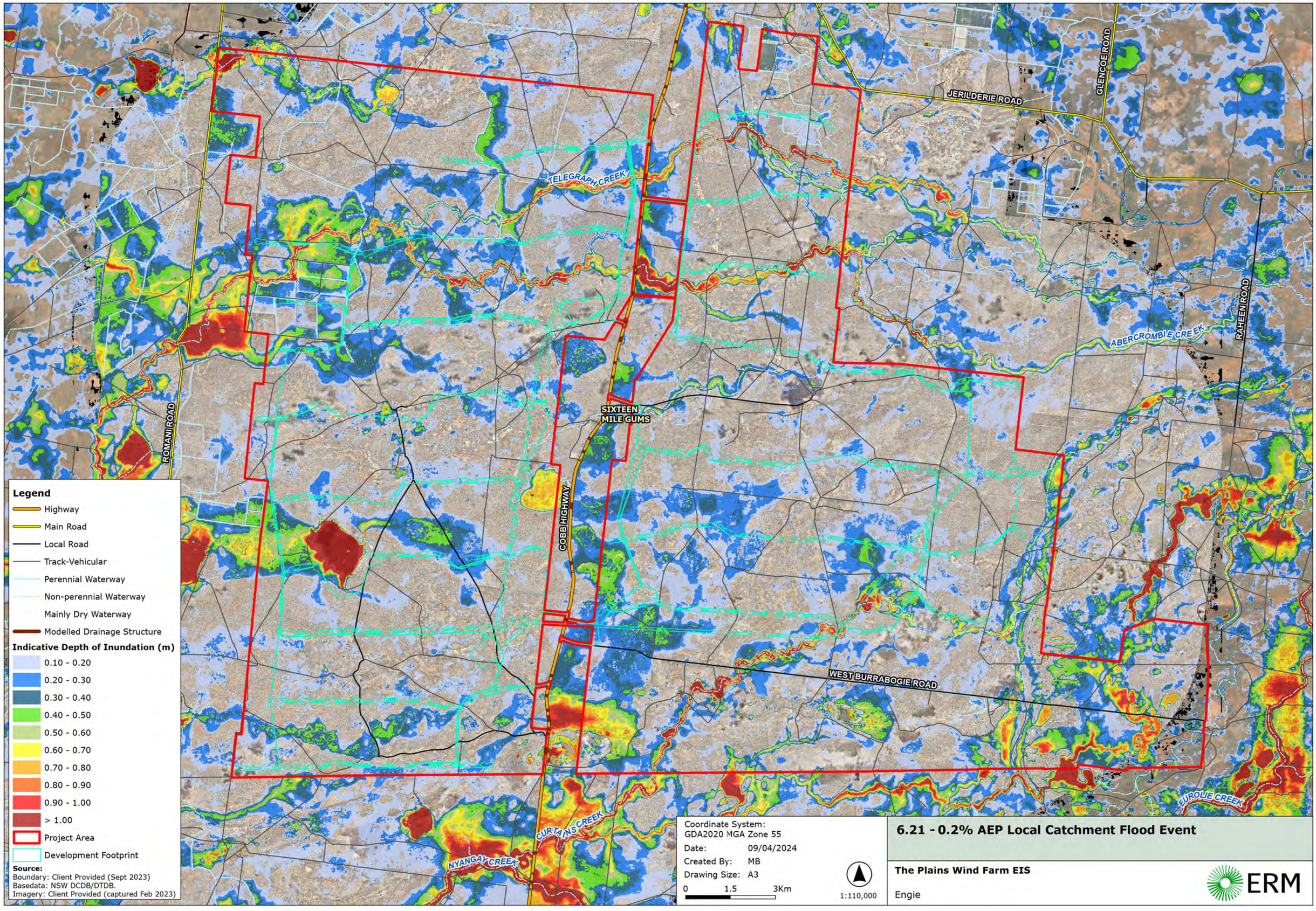

6.21 - 0.2% AEP Local Catchment Flood Event

The Plains Wind Farm EIS

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6.11 AIR QUALITY

This air quality assessment has been prepared to describe the air quality of the region and evaluate impacts to air quality that may occur during construction, operation and decommissioning of the Project. It also summarises the mitigation measures proposed to manage impacts to air quality predominantly associated with the construction stage of the Project. Due to the lack of significant point and fugitive sources of air pollutants from the Project, a quantitative assessment is not necessary.

This air quality assessment addresses the relevant requirements of the SEARs (**Appendix A**) and considers all stakeholder engagement as described in **Section 5**.

The following methodology was undertaken to assess the impact of the Project to air quality:

- Description of local climate, including rainfall, wind speed and direction;
- Description of existing air quality based on background monitoring data;
- Identification of sensitive receivers relevant to air quality;
- Qualitative assessment of Project emissions; and
- Development of mitigation and management measures to control potential impacts.

6.11.1 BACKGROUND

6.11.1.1 LOCALITY CONSIDERATIONS

The Project Area is in a rural setting in which agricultural primary production is the predominant land use. Agricultural operations are unlikely to have a significant influence on local and regional air quality.

The town centre of Hay is located approximately 15 km (by road) to the north of the Project and has a population of 2,208 (ABS, 2023a). Booroorban is a smaller settlement with a population of 36 (ABS, 2023b), located about 6.6 km (by road) to the south of the Project, via the Cobb Highway.

6.11.1.2 LOCAL CLIMATE

The Project is located within the Riverina IBRA Bioregion, which is characterised by semiarid climate with low, winter-dominant rainfall, hot summers and cool winters.

The closest operating weather station is Hay Airport AWS at Hay (BoM 075019), approximately 9.5 km to the north of the Project (direct-line). **Figure 6-22** and **Table 6-70** show the mean annual rainfall (mm) for Hay Airport AWS from records obtained between 2007 and 2023. Mean annual rainfall at Hay is 354.2 mm. November has the highest average monthly rainfall total of 48.7 mm and July the lowest at 21.7 mm.

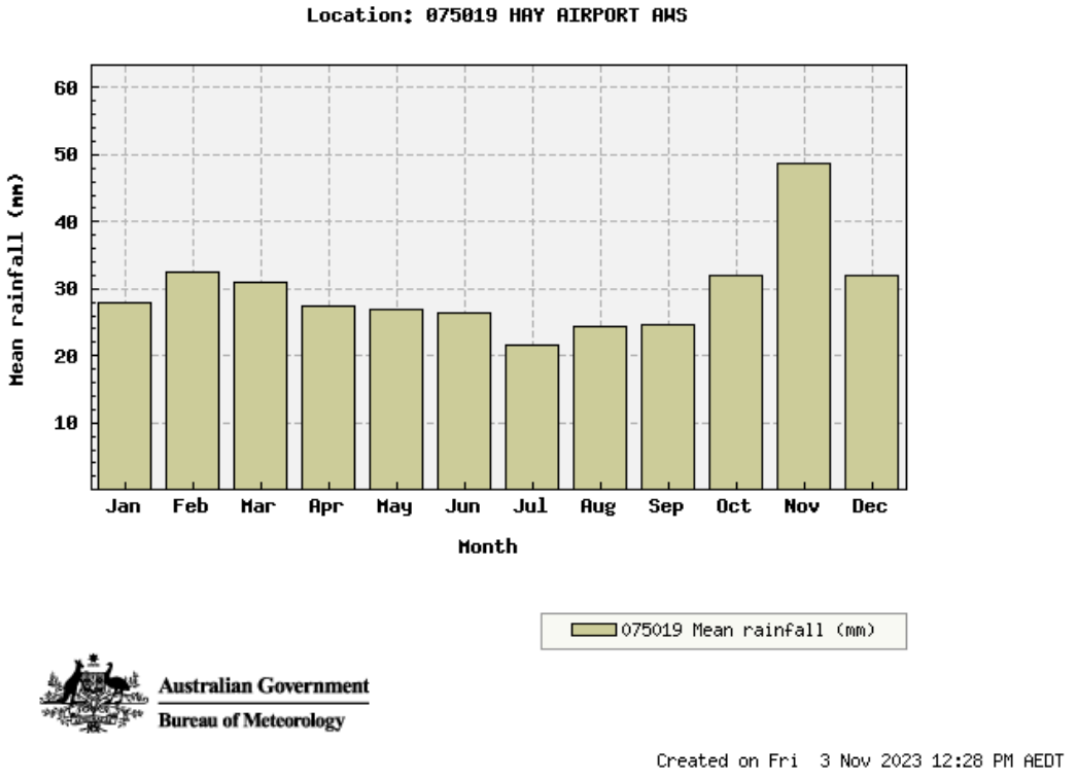


FIGURE 6-22 MEAN RAINFALL AT HAY AIRPORT WEATHER STATION 2007-2023

TABLE 6-70 MEAN RAINFALL AT HAY AIRPORT WEATHER STATION 2007-2023

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*
Mean rainfall (mm)	27.8	32.6	30.9	27.4	26.9	26.4	21.7	24.4	24.6	32.0	48.7	31.9	354.2

Across Australia, wind speed and wind direction measurements are made at various times of the day. Wind roses summarise the occurrence of winds at a location, showing their strength, direction, and frequency, noting that:

- The percentage of calm conditions is represented by the size of the centre circle – the bigger the circle, the higher the frequency of calm conditions;
- Each branch of the rose represents wind coming from that direction, with the top of the diagram representing winds blowing from the north (e.g., northerly winds); and
- The length of the bar represents the frequency of occurrence of winds from that direction, and the colour and width of the bar sections correspond to wind speed categories.

Figure 6-23 illustrates how to interpret a wind rose and **Figure 6-24** illustrates local wind speed and direction based on 1957 to 2015 records measured at 9 am at Hay weather station (ABS 075031). Prevailing weather conditions are winds from the west around to the north accompanied by high daytime temperatures and low relative humidity. Wind annual observations indicate that at 9 am 16% of the wind is calm and at 3 pm 12% is calm.

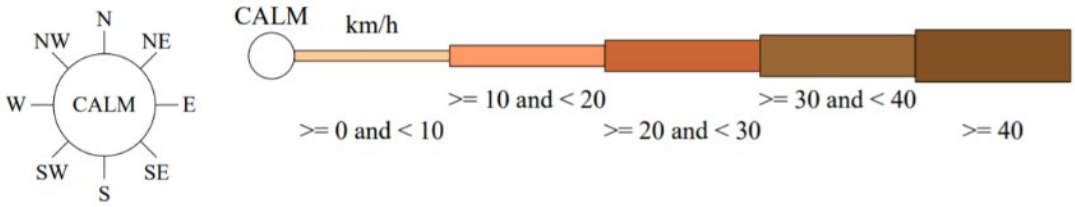
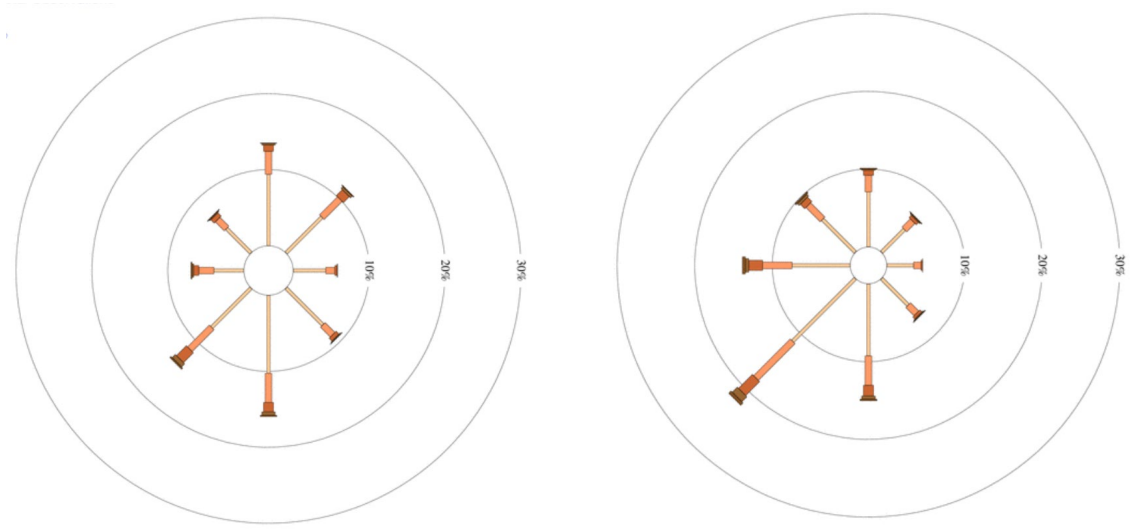


FIGURE 6-23 GUIDE TO INTERPRETING THE WIND ROSE



9 am - 16% Calm 3 pm - 12% Calm

FIGURE 6-24 HAY WIND ANNUAL OBSERVATIONS 1957-2015

Source: Bureau of Meteorology (BoM, 2023)

6.11.1.3 LOCAL AIR QUALITY

Air quality of the Project locality is influenced by land use. Land uses in the area of the Project is predominantly agricultural. Existing sources of air pollution in the vicinity of the Project include:

- Particulate matter (e.g., wood smoke, bushfires, dust (unsealed roads and dust storms);
- Agricultural farming activities and earthworks creating dust and odours; and
- GHG emissions (industry, plant and equipment, petrol /diesel engine motor vehicle use).

Hay typically records "good" daily air quality index (AQI) ratings (DPE, 2023), and the NSW Annual Air Quality Statement 2022 reports that air quality monitoring stations within the Riverina-Murray region, at minimum, recorded air pollutant levels within the national standards 97% of the time (NSW DPE, 2022b). No wind conditions are reported at the Hay Airport weather station.

It is important to note that there is annual variability in air quality, driven largely by climatic events. For example, the Black Summer bushfires during the 2019–20 summer significantly increase particle pollution (NSW Annual Compliance Report 2020). Similarly, widespread dust storms also significantly impacted air quality during early 2020. Drought and low rainfall resulted in poor groundcover in central and western parts of NSW, significantly contributing to increased dust levels under high winds. Other influences which led to elevated particle concentrations during 2020 were hazard reduction burning, wood smoke from domestic wood heating and site-specific local dust (DPIE, 2021d).

6.11.2 IMPACT ASSESSMENT

6.11.2.1 AIR QUALITY

Emissions to the atmosphere from the Project would predominantly be associated with construction activities which will be temporary and limited to:

- Localised dust emissions generated by land disturbance; and
- Exhaust emissions of civil construction and vehicle, plant and machinery.

The construction timeframe for the Project is approximately 40 months. During construction, dust particles and other air quality emissions could potentially be released from activities including:

- Construction activities associated with earthmoving and construction equipment;
- Vegetation clearing and creation of exposed areas;
- Earthworks including clearing, erosion and sediment control, site levelling, access tracks, site drainage works, fencing and foundations;
- Mobile concrete batching plants;
- Rock crushing;
- Transport of material and equipment and haulage activities along unsealed roads;
- Processing and handling of material;
- Transfer points; and
- Loading and unloading of material.

Vehicular access within the Project Area will be provided via several internal access tracks through sealed and/or unsealed local roads. The implementation of the recommended mitigation measures in **Section 6.11.3** will ensure that the Project can be constructed without any significant impact to local and regional air quality.

6.11.2.2 GREENHOUSE GAS EMISSIONS

The Project will contribute to air quality improvement through the displacement of GHG emissions that would otherwise be generated through the burning of fossil fuels used to generate electricity from traditional coal fired power stations. The Project would thus abate the production of approximately 3.6 million tonnes of CO_2^{-e} per annum which is a substantial contribution towards a cleaner atmosphere.

The Project does not include any point or fugitive source of offensive odours and hence will not cause or permit the emission of any offensive odour pursuant to section 129 of the POEO Act.

Some GHG emissions will be generated from the Project construction and operations, largely related to combustion of fuels. The use of heavy machinery, equipment and heavy vehicles during construction of the Project will be limited to the construction phase and emissions will be localised, therefore, considered negligible. There will also be embodied emissions in materials to be used to construct the wind farm, including processing and transportation to site, and clearing of vegetation; however this will be minor.

During operations, the Project will generate electricity without directly emitting air pollutants that are known to affect the climate and human health. However, ongoing maintenance of infrastructure and land will result in minor, localised vehicle and machinery emissions.

6.11.2.3 DECOMMISSIONING

Potential impacts to air quality during the decommissioning of the Project would be like those during construction, with the omission of clearing vegetation required for site preparation.

Additionally, at the time of decommissioning the Applicant will consider best available technologies to avoid and minimise air quality impacts, which may include the potential for decommissioning to be undertaken using technologies such as electrical vehicles.

Therefore, air quality impacts during decommissioning would be less than expected for construction.

6.11.3 MITIGATION AND MANAGEMENT

The implementation of mitigation measures will ensure that the Project will not generate significant air quality impacts during construction, operation or decommissioning and ensure that dust will not be dispersed off to surrounding properties and dwellings.

Air quality impacts associated with the Project will be temporary and minor during the construction phase of the Project. Appropriate measures will be included in the EMS and implemented to minimise the potential for offsite dust impacts resulting from construction.

Table 6-71 provides a summary of the measures to be included in the EMS, where appropriate.

TABLE 6-71 AIR QUALITY MANAGEMENT AND MITIGATION

ID	*Mitigation Measures*
AQ1	Dust suppression measures (watering roadways) or preparing roadways with coarse gravel or other road coverings will be implemented where required to minimise wheel-generated offsite dust emissions.
AQ2	Material loads which may generate dust, such as aggregates, will be covered and/or stabilised during transport into and within the construction site where practicable.

ID	Mitigation Measures
AQ3	Soil stockpiles will be managed through stabilisation, light watering or the use of covers.
AQ4	Where practicable, vegetation clearance will be minimised, undertaken in stages, and cleared areas will be stabilised.
AQ5	Vehicle speed will be managed when travelling on unsealed roads.
AQ6	Speed of dumping from tip trucks will be controlled.
AQ7	Vehicle movements will be minimised, where practicable.
AQ8	Vehicles, plant and equipment will be cleaned and washed.
AQ9	Disturbance areas no longer required for construction will be progressive revegetated and stabilised.
AQ10	All vehicles, plant and equipment will be regularly inspected and maintained to ensure operational efficiency.
AQ11	Environmental conditions will be regularly monitored during construction, such as wind, that may result in dust generation and implementation of control measures as specified above.
AQ12	As part of the detailed design, the Applicant will continue to investigate options to further avoid and minimise impacts, including but not limited, the use of light vehicle fleet and potentially some heavy construction vehicles be electric.

6.12 WASTE MANAGEMENT

This waste assessment has been prepared to characterise and quantify the waste streams likely to be generated from the construction, operation and decommissioning of the Project. It also describes measures to manage these waste streams.

The waste assessment addresses the requirements of the SEARs (refer **Appendix A**). The requirements of the following legislation will also be considered during construction and operation of the Project, to ensure the effective management of wastes onsite:

- POEO Act;
- Protection of the Environment Operations (Waste) Regulation 2014; and
- *Waste Avoidance and Resource Recovery Act 2001* (NSW) (WARR Act).

The following guidelines and strategies were considered to ensure resources are used effectively and impacts to the environment that may result because of waste generated from the Project are minimised:

- 'NSW EPA Waste Classification Guidelines – Part 1: classifying waste' (NSW EPA, 2014a) and Addendum (NSW EPA, 2016);
- 'NSW EPA Waste Avoidance and Resource Recovery Strategy 2014-2021' (WARR Strategy) (NSW EPA, 2014b); and
- 'NSW EPA Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012' (NSW EPA, 2012).

Further, this waste assessment considered the relevant outcomes of stakeholder engagement as described in **Section 5**.

The qualitative desktop assessment included the following tasks:

- Review of waste legislation and policy to ensure compliance and manage mitigations towards the development of appropriate management strategies;
- Determination of potential waste streams generated during construction, operation and decommissioning of the Project; and
- Establishment of waste mitigation and management options.

NSW waste management legislation, guidelines and policy have been considered to help identify requirements for waste management for the Project.

Best practice for waste management was considered in this assessment to implement the waste hierarchy principles (refer **Figure 6-25**), in accordance with the WARR Act and the principles of ESD:

- Avoidance of unnecessary resource consumption;
- Resource recovery (including reuse, reprocessing, recycling and energy recovery); and
- Disposal.

The Waste Classification Guidelines provide direction on the appropriate classification of waste, specifying requirements and opportunities for management, transportation and disposal of each waste category. The following classification was adopted in this assessment (NSW EPA, 2014a):

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste;
- General solid waste (putrescible); and
- General solid waste (non-putrescible).

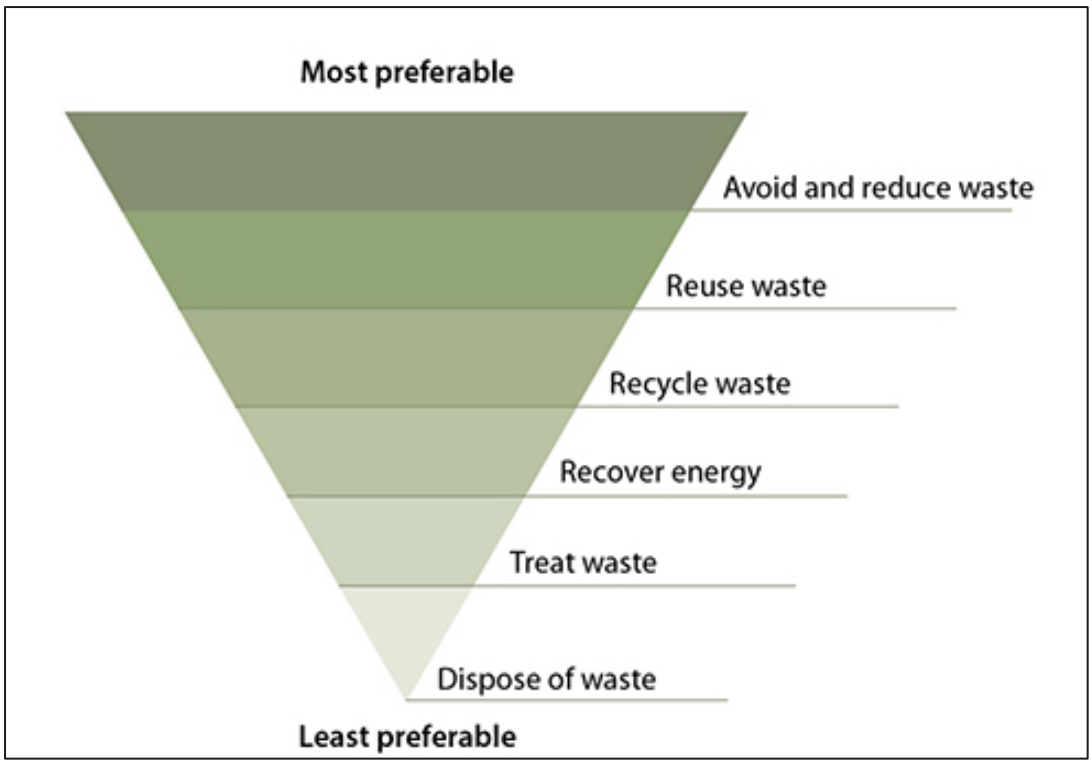


FIGURE 6-25 WASTE HIERARCHY

Source: (NSW EPA, 2022)

6.12.1 BACKGROUND

The Project Area is characterised by grazing of native pastures. The management of waste generated because of these activities currently lies with the landowner.

Existing waste management facilities in the vicinity of the Project and their distance by road to the Project site access point are listed in **Table 6-72**.

TABLE 6-72 EXISTING WASTE MANAGEMENT FACILITIES

Waste Management Facility	***Location***	***Distance to Project***
Booroorban Landfill	Cobb Highway, Booroorban	8 km
Wanganella Landfill	Wanganella Tip Road, Wanganella	40 km
Hay Tip Site	Thelangerin Road, Hay	29 km
Pretty Pine Landfill	Pretty Pine Tip Road, Pretty Pine	74 km
Deniliquin Resource Recovery Centre (RRC)	Hay Road, Deniliquin	74 km
Maude Landfill	Maude Moulamein Road, Maude	68 km
Conargo Landfill	McKenzie Street, Congaro	90 km
Moulamein Landfill	152 Tchelery Road, Moulamein	92 km

6.12.2 IMPACT ASSESSMENT

6.12.2.1 WASTE STREAMS

Construction Phase

Waste generated during construction phase will include green waste and soil from site establishment and earthworks, packaging materials (e.g., carboard, plastics, wooden pallets), and excess construction materials such as electrical cabling, metals. Some types of waste, such as hazardous chemicals, cannot be safely recycled and direct treatment or disposal is the most appropriate management option.

Under the waste definitions in the POEO Act, most of the waste generated during the construction phase will be classified as general solid waste, either putrescible or non-putrescible. Staff facilities such as transportable amenities would also produce sanitary wastes defined as general solid wastes (putrescible) is accordance with the relevant waste definitions under the POEO Act.

Table 6-73 details the anticipated waste types, volume and classification as a result of site preparation and activities from the Project construction phase.

TABLE 6-73 INDICATIVE CONSTRUCTION WASTE STREAMS

Waste Type	***Indicative Quantities***	***Waste Stream***	***Source***	***Classification***
Green waste	All material expected to be reused	Reuse	Site establishment and clearing of Development Footprint	General solid waste (non-putrescible)
Spoil	All material expected to be reused	Reuse	Site earthworks	General solid waste (non-putrescible)
Timber (including pallets)	1,300 tonnes (t)	Reuse / General Waste	Construction and packaging waste, store, workshop	General solid waste (non-putrescible)
Cardboard packaging / paper waste	330 t	Recyclable	Construction waste, store, workshop, O&M office	General solid waste (non-putrescible)
Polystyrene sheets	Negligible	Recyclable	Construction waste, store, workshop, O&M office	General solid waste (non-putrescible)
Plastic packaging	45 t	Recyclable	Construction and packaging waste, store, workshop, O&M office	General solid waste (non-putrescible)
Aluminium packaging	Negligible	Reuse or Recycling	Construction waste, store and workshop	General solid waste (non-putrescible)
Cable	159 t	Recyclable (nearly all), General solid	Offcuts and damaged items	General solid waste (non-putrescible)

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
		waste (minimal)		
Metal	350 t	Recyclable	Offcuts and damaged items	General solid waste (non-putrescible)
Concrete	120 t	Recyclable	Construction waste	General solid waste (non-putrescible)
Electronics and electrical infrastructure	41 t	Reuse, Recyclable, General solid waste	Offcuts and damaged items	General solid waste (non-putrescible)
Oil spill clean-up material	1000 kg	Hazardous waste	Construction waste, store, and workshop	General solid waste (non-putrescible)
Recyclable domestic waste	38 t	Recyclable	Recyclable domestic waste during construction	General solid waste (non-putrescible)
Domestic wastes	73 m^3	General solid waste	Domestic waste during construction	General solid waste (putrescible)
Septic tank waste	800 kL	Sewage	Ablutions during construction, operations and decommissioning	Liquid waste

Operational Phase

During the Project operations, the waste streams will be limited to minor quantities of putrescible waste associated with site maintenance activities and domestic and sewerage waste from the O&M facility. Materials such as fuels and lubricants, redundant equipment and metals may require replacement over the operational life of the Project. No waste streams would be associated with the generation of electricity.

Table 6-74 details the annual anticipated waste types, volume and classification as a result of the operational phase.

In general, the potential impacts associated with waste generation and management during the operational phase would be similar to those for construction, albeit at a much smaller scale per annum.

TABLE 6-74 INDICATIVE PROJECT OPERATIONAL WASTE STREAMS

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
Green waste	All material expected to be reused	Reuse	Site maintenance	General solid waste (non-putrescible)

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
Metal	33 t	Recyclable	Offcuts, damaged items during site maintenance	General solid waste (non-putrescible)
Electronics and electrical infrastructure	295 t	Reuse, Recyclable, General solid waste	Repairs, offcuts, damaged items, site maintenance	General solid waste (non-putrescible)
Oil spill clean-up material	21 t	Hazardous waste	Store, workshop and site maintenance	General solid waste (non-putrescible)
Dangerous goods	966 t	Reuse, Recyclable, Hazardous waste	Damaged lithium-ion cell and batteries	General solid waste (non-putrescible)
Recyclable domestic waste	45 t	Recyclable	Recyclable domestic waste during operations	General solid waste (non-putrescible)
Domestic wastes	136 m^3	General solid waste	Domestic waste from offices during operations	General solid waste (putrescible)
Septic tank waste	417 kL	Sewage	Ablutions during operations	Liquid waste

Decommissioning Phase

At Project retirement, infrastructure and facilities will be decommissioned with the various structures, plant, equipment, and buildings de-energised, disconnected, dismantled, demolished and removed. **Table 6-75** details the anticipated waste types, volume and classification as a result of the Project's one-off decommissioning.

At the end of the infrastructure life, most materials are likely to be recycled or reused in accordance with waste hierarchy principles. Items that cannot be reused or recycled, would be classified and disposed of at suitable facilities following applicable regulations. Batteries would be disposed in accordance with the hazardous waste policies active at the time of decommissioning.

TABLE 6-75 INDICATIVE PROJECT DECOMMISSIONING WASTE STREAMS

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
Green waste	All material expected to be reused	Reuse	Site rehabilitation	General solid waste (non-putrescible)
Wind turbines	To be determined during	Recyclable (nearly all), General solid	Decommissioning of wind turbines structures	General solid waste (non-putrescible)

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
	detailed design	waste (minimal)		
Cable	3,146 t	Recyclable (nearly all), General solid waste (minimal)	Decommissioning of underground cabling including 1500V DC and 33kV AC cabling	General solid waste (non-putrescible)
Metal	13,160 t	Reuse, Recyclable	Disassembly of equipment such as the inverters, transformers, tracker piles and similar components	General solid waste (non-putrescible)
Concrete	13,700 t	Recyclable	Infrastructure demolishment	General solid waste (non-putrescible)
Recyclable domestic waste	7 t	Recyclable	Recyclable domestic waste during decommissioning	General solid waste (non-putrescible)
Gravel	95,400 t	Reuse	Road base and hard stand areas	General solid waste (non-putrescible)
Oil	703 t	Hazardous waste	De-tanking of transformer insulating oil	General solid waste (non-putrescible)
Domestic wastes	23 m^3	General solid waste	Domestic waste from offices during decommissioning	General solid waste (putrescible)
Septic tank waste	75 kL	Sewage	Ablutions during decommissioning	Liquid waste

6.12.2.2 WASTE DISPOSAL OPTIONS

Table 6-76 provides the waste streams accepted at each waste facility currently operational nearby the Project, two facilities are licensed under the POEO Act. The waste classification and volume accepted at these facilities are further described in **Table 6-77** and **Table 6-78**.

Given Project Area has no access to sewer a septic tank may be constructed, or amenity facilities may be pumped out via tanker and delivered to the closest available sewage treatment facility, or as agreed with Hay Shire Council and defined prior to commencement of construction.

TABLE 6-76 EXISTING WASTE MANAGEMENT FACILITIES

Waste Management Facility	Waste Streams Accepted
Booroorban Landfill	• General solid waste (putrescible).
Wanganella Landfill	• General solid waste (non-putrescible) including scrap metal, bricks and concrete; • General solid waste (putrescible);

Waste Management Facility	***Waste Streams Accepted***
	• Liquid waste (oil); and • Special waste (tyres).
Hay Tip Site	• Refer **Table 6-77**.
Pretty Pine Landfill	• General solid waste (non-putrescible) including scrap metal, bricks and concrete; • General solid waste (putrescible); • DrumMUSTER; • Liquid waste (oil); • Special waste (tyres); and • Hazardous waste (batteries),
Deniliquin RRC	• Refer **Table 6-78.**
Maude Landfill	• General solid waste (non-putrescible) including steel; • General solid waste (putrescible).
Conargo Landfill	• General solid waste (non-putrescible) including construction waste, demolition waste, steel, timber and mattresses; • General solid waste (putrescible); • DrumMUSTER; • Liquid waste (oil); and • Special waste (tyres).
Moulamein Landfill	• Landfill and Community recycling centre; • General solid waste (non-putrescible) including fire extinguishers, fluoro globes and tubes, and smoke detectors; • DrumMUSTER; • Liquid waste (oil); and • Hazardous waste (batteries and paint).

TABLE 6-77 LICENSED FACILITY: EPL 21707 HAY TIP SITE

Hay Tip Site			
EPL number	Scheduled Activity	Fee Based Activity	Scale
21707	Composting	Composting	0-5000T annual capacity to receive organics
	Resource Recovery	Recovery of general waste	Any capacity
Waste Streams Accepted	**Description**	**Activity**	**Other Limits**
General solid waste (putrescible)	As defined in Schedule 1 of the POEO Act, as in force from time to time.	Composting	A maximum of 3,000 tonnes received at the premises in each 12 month reporting period.
General solid waste (non-putrescible)	As defined in Schedule 1 of the POEO Act, as in force from time to time.	Resource Recovery	A maximum of 7,000 tonnes received at the premises in each 12 month annual return reporting period.

TABLE 6-78 LICENSED FACILITY: EPL 6188 DENILIQUIN WASTE DISPOSAL DEPOT

Deniliquin Waste Disposal Depot			
EPL number	Scheduled Activity	Fee Based Activity	Scale
6188	Waste disposal (application to land)	Waste disposal by application to land	Any annual processing capacity
Waste Streams Accepted	**Description**	**Activity**	**Other Limits**
Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	N/A
General solid waste (putrescible)	As defined in Schedule 1 of the POEO Act, in force from time to time	Waste disposal (application to land)	The total quantity of waste disposed of at the premises must not exceed 20,000 tonnes per annum
General solid waste (non-putrescible)			
Asbestos waste			
Waste tyres			
Clinical and related waste	As defined in Schedule 1 of the POEO Act, in force from time to time	Waste disposal (application to land)	The total quantity of waste disposed of at the premises must not exceed 20,000 tonnes per annum.

Deniliquin Waste Disposal Depot			
			The quantity of clinical waste disposed of at the premises must not exceed 200kg at any one time.

6.12.3 MITIGATION AND MANAGEMENT

A Waste Management Plan (WMP) will be prepared and will describe the measures to be implemented to manage, reuse, recycle and safely dispose of waste.

Table 6-79 summarises specific measures to be included in the WMP of the Project for each phase (C - construction; O - operation; D – decommissioning).

TABLE 6-79 WASTE MANAGEMENT MITIGATION MEASURES

ID	***Measures***	***Phase***		
		C	**O**	**D**
WM1	Adopt protocols to identify opportunities to follow the waste hierarchy, to encourage the most efficient use of resources, as well as reduce costs and environmental harm in accordance with the principles of ESD.	■	■	■
WM2	Adopt purchasing protocols in the selection of all components of the Project, in order to reduce the likelihood of equipment failure and minimise the potential for waste.	■	■	
WM3	Select solar panels manufacturers as recommended by Clean Energy Council, that will meet a range of higher standards in addition to relevant Australian and International Standards.	■		
WM4	Engage with Tamworth Regional Council to discuss the options for disposal and reuse of the identified waste streams likely to be generated, in order to ensure that any use of local waste management facilities does not exhaust available capacity, nor disadvantage the local community.	■		■
WM5	Classify wastes in accordance with the NSW EPA Waste Classification Guidelines – Part 1: classifying waste (NSW EPA, 2014a) and Addendum (NSW EPA, 2016).	■	■	■
WM6	Provide waste storage locations within assigned area, with sufficient space for separation and storage of different waste.	■	■	■
WM7	Store and dispose of waste lawfully at a licensed waste facility, including fuels, oils and hazardous substances used onsite.	■	■	■
WM8	Separate recyclable and non-recyclable materials onsite prior to being transported to waste facility.	■	■	■
WM9	Investigate opportunities for recycling of wastes prior to sending to landfill.	■	■	■
WM10	Waste receptacles will be collected on a regular basis by licensed contractors or Council collection service and transported for offsite disposal at an appropriately licensed landfill or recycling facility.	■	■	■
WM11	Provide toilet facilities for onsite workers and how sullage would be disposed of (e.g., pump out to local sewage treatment plant).	■	■	■

ID	Measures	Phase		
		C	O	D
WM12	Provisions protocol for the packaging, transportation of spent lithium-ion batteries to collection and recycling facilities.	■	■	■

Decommission and rehabilitation of the Project will be undertaken in accordance with Project approval requirements. Indicative management strategies that will be adopted for each waste type are detailed in **Table 6-80**.

TABLE 6-80 INDICATIVE WASTE GENERATION AND MANAGEMENT STRATEGIES

ID	Waste Type	Management Strategies
WM13	*Green waste*	Onsite reuse where possible or reused offsite in accordance with the 'Mulch Resource Recovery Order and Exemption' (NSW EPA, 2016).
WM14	*Spoil*	Onsite reuse; or reused offsite as Virgin Excavated Natural Material or the Excavated Natural Material Resource Recovery Order and Exemption' (NSW EPA, 2014b) (as applicable).
WM15	*Concrete*	Source separated and stored in separate receptacles/ storage areas. Reused onsite where feasible; reused offsite in accordance with the 'Recovered Aggregate Resource Recovery Order and Exemption' (NSW EPA, 2014c); or transported off site for recycling
WM16	*Timber*	Where practicable procurement of surplus pallets will be avoided. Delivery of material on pallets will be limited where practicable; however, if materials have to be delivered on pallets, these will be returned to the supplier at time of delivery (where practicable). Pallets will be reused where possible, through product stewardship arrangements sought by the Applicant prior to construction. Damaged pallets will be sold for wood chip where practicable (e.g., if untreated and uncontaminated). Wood pallets not suitable for reuse or recycling would be stored in designated waste storage areas for collection by an authorised contractor for offsite drop-off.
WM17	*Plastic packaging*	Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM18	*PET*	Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM19	*Cardboard packaging/ paper waste*	Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM20	*Glass*	Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM21	*Empty chemical drums*	Reused onsite, recycled via contractor or returned to supplier.
WM22	*Paint*	Transported from site and disposed of in accordance with the 'Waste Classification Guidelines' (NSW EPA, 2014a).

ID	Waste Type	Management Strategies
WM23	*Oil spill clean-up material*	Collected oily rags and spill clean-up material will be collected in regulated waste bins and transported by a licensed regulated waste contractor to a licenced regulated waste receiver for disposal.
WM24	*Waste oils, lubricants and liquids*	Stored separately and transported by a licensed regulated waste contractor to a licensed regulated waste receiver for disposal.
WM25	*Metals (ferrous and non-ferrous)*	Scrap metal will be stored in for periodic transportation offsite to applicable recycling facilities.
WM26	*Solar panels*	Damaged and end-of-life solar panels and associated infrastructure will be transported by a licensed regulated waste contractor to a licenced regulated waste receiver for disposal. As technology allows waste management providers that specialise in recycling of solar panels will be investigated.
WM27	*Electronics and electrical infrastructure*	Stored in dedicated areas prior to offsite transport. As far as possible, all materials and components will be reused, sold as scrap, recycled or re-purposed to the maximum amount economically practicable. Where not practicable, transported from site and disposed of in accordance with the 'Waste Classification Guidelines' (NSW EPA, 2014a)
WM28	*Recyclable domestic waste*	Stored in dedicated recyclable bins for periodic transportation offsite to applicable recycling facilities.
WM29	*Septic tank waste*	Collected waste will be transported by a licenced regulated waste contractor to a licenced regulated waste receiver for disposal.
WM30	*Domestic wastes*	Transported from site and disposed of in accordance with the Waste Classification Guidelines (NSW EPA, 2014a).

6.13 ECONOMIC

An Economic Assessment was undertaken to assess the potential economic impacts of the construction and operation of the Project on the regional and NSW economy (Gillespie, 2023; **Appendix S**). The Economic Assessment addresses the relevant requirements of the SEARs (**Appendix A**) and considers all relevant stakeholder engagement as described in **Section 5**.

The following methodology was used to assess potential economic impacts that may result from the Project:

- Identification and description of the Study Area and regional economy;
- Input-output (IO) analysis to assess the direct and indirect impacts (gross economic footprint) of the construction and operation of the Project on the regional and NSW economy, which involves:
  - IO table development: to identify the economic structure of the region and multipliers for each existing sector of the economy;
  - Direct impact or stimulus of the Project identification: to estimate the IO multipliers and flow-on effects for the impacts or stimulus of the Project;

The IO analysis identifies the economic activity of a project on the economy in terms the four main indicators, including:

- Gross regional output - the gross value of business turnover in the region;
- Value-added - the difference between the gross value of business turnover and the costs of the inputs of raw materials, components and services bought in to produce the gross regional output, but excluding wage costs;
- Income - the wages paid to employees including imputed wages for self-employed and business owners;
- Employment - the number of people employed (including self-employed, full-time, and part-time), occur in a near-proportional way within a region;

The assessment also considered consumption induced flow-on effects, which only occur in a proportional way if workers and their families are in the region or migrate into the region. Where workers commute from outside the region, some of the consumption-induced flow-on effects leak from the region.

As assessment of agricultural economic activity reduction from the construction and operation footprint was also undertaken, as was an assessment of cumulative impacts on economic development associated with the concurrent construction and operation of the Project and other relevant future developments.

6.13.1 BACKGROUND

The Study Area (also referred to as 'regional economy') assessed in the Economic Assessment is the region within which the Project is located, which has the potential to provide inputs to, and derive economic benefits from the construction and operation of the Project. This region may experience impacts from reduction in agricultural activity and from increased demand for labour and other inputs to production. The Study Area is defined as the combined LGAs of Balranald, Hay, Edward River, Murrumbidgee, and Griffith.

Table 6-81 provides a summary of relevant economic indicators of the Study Area based on the 2021 ABS Census of Population and Housing and the Australian and New Zealand Industry Classification (ANZSIC).

TABLE 6-81 CHARACTERISTICS OF THE STUDY AREA

Aspects	***Study Area Summary***
Residents	• In 2021, the Study Area total population was 43,985, with Griffith LGA accounting for the majority with 62%, followed by Edward River 19%, Murrumbidgee 7.5%, Hay 6.5% and Balranald 5%. • The Study Area total labour force was 22,068, Griffith LGA representing 64% of the total, followed by Edward River 18%, Murrumbidgee 7.5%, Hay 6% and Balranald 4.5%. • During the same period, 697 people were identified as being unemployed, which accounts for approximately 3.2% of the total labour force in the Study Area. The majority of these (423 unemployed) are located in the Griffith LGA, followed by Edward River (140 unemployed), Hay (54 unemployed) Murrumbidgee (49 unemployed), and Balranald (31 unemployed).

Aspects	***Study Area Summary***
Population Growth	• The population of the Study Area has been growing at an average annual rate of 0.4% since 2006 (less than half that of the NSW population). • The past population growth rate in the Study Area is largely driven by the population growth rate for Griffith LGA, with an average annual rate of 0.7%, for the period from 2006 to 2021. The Edward River (-0.6%), Balranald (-0.8%), Murrumbidgee (1.0%), and Hay (-1.1%) LGAs declined in population from 2006 to 2021. • The population for the Study Area from 2021 to 2041 is predicted to continue to grow, with average an annual rate of 0.4%, which is approximately half that of the NSW growth prediction of 1.0%. • The predicted growth rate from 2021 to 2041 for Balranald LGA are slower compared to the period of 2006 to 2021. Griffith LGA prediction average growth rate is 0.8%, followed by Murrumbidgee 0.1%, Edward River 0.0%, then Hay with -0.5%.
Occupation	• The main occupation in the Study Area were Managers *(including farm managers)*, accounting for 18.4% of the total employed people aged 15 years and over. Followed by Labourers with 17.6% and Technicians and Trade Workers 13.3%. • In Griffith the main occupation was Labourers accounting for 19.0% of the total employment in the LGA, followed by Managers 15.5%. • In Hay the main occupation was Managers accounting for 19.9% of the total employment in the LGA, followed by Labourers 17.7%. • In Edward River the main occupation was Managers accounting for 14.7% of the total employment in the LGA, and Professionals 14.7 %. • In Murrumbidgee the main occupation was Managers accounting for 29.8% of the total employment in the LGA, followed by Labourers 13.5%. • In Balranald the main occupation was Managers accounting for 24.5% of the total employment in the LGA, followed by Labourers 17%.
Top Industry Sectors of Employment for Usual Residents	• *Poultry Processing* was the most significant employment sector for residents of the Study Area reflecting the significance of this sector to the Griffith LGA • Wine and Other Alcoholic Beverage Manufacturing, Hospitals (except Psychiatric Hospitals), Supermarket and Grocery Stores, and Primary Education were the following most significant employment sectors for residents of the Study Area.
Exporting Industries	• Exporting sectors are key drivers of regional economies and reflect a region's endowments and competitive advantages. The Gross Regional Product (GRP) of the regional economy was estimated at $2.6 billion for 2020 (Gillespie Economics IO Table). Using the IO industry sector classifications, the largest four exporting industries in the Study accounts for $1.9 billion in total or 77% of the total exports, these industries are: ◦ Manufacturing ($1.3 billion), mainly Meat and Meat Product Manufacturing, Wine, Spirits and Tobacco Manufacturing, and Soft Drinks, Cordial and Syrup Manufacturing. ◦ Utilities ($0.2 billion) mainly Water Supply, Sewerage and Drainage Services, and Electricity Transmission. ◦ Agriculture, Forestry and Fishing ($0.2 billion) mainly Sheep, Grains, Beef and Dairy Cattle Sector, and Other Agriculture. ◦ Construction ($0.2 billion) mainly Heavy and Civil Engineering Construction.

6.13.2 IMPACT ASSESSMENT

6.13.2.1 IMPACT ON ECONOMY

The Project will provide economic activity to the Study Area and NSW economy during construction and operation. Expenditure during construction of the Project is associated with the following IO industry classifications:

- *Heavy and Civil Engineering Construction Sector*: includes businesses involved in engineering construction and project management services for a diverse range of activities;
- *Construction Services Sector*: includes businesses involved in earthmoving work; and
- *Non-Residential Building Construction Sector*: includes businesses engaged in the construction of industrial buildings.

Note that a conservative approach was adopted in the Economic Assessment, where all machinery manufacturing is assumed to occur outside the Study Area and NSW.

The average annual employment over the 3 year construction phase of the Project is estimated at 550 FTE.

Based on the IO coefficients of the above construction sectors in the regional IO table, $200M of (direct) expenditure would be required across these sectors to generate the level of annual workforce required for the Project (refer **Section 3.4.2**).

Table 6-82 summarises the estimated direct and indirect annual economic impact of the Project in the regional and NSW economy.

TABLE 6-82 ANNUAL ECONOMIC IMPACTS OF THE PROJECT

Impacts	***Total Effect***				***Phase***
	Study Area		***NSW***		
	Direct	***Indirect***	***Direct***	***Indirect***	
Output	$200M	$128M	$200M	$399M	Construction
	$354M	$20M	$324M	$67M	Operation
Value-added	$80M	$40M	$80M	$176M	Construction
	$324M	$9M	$324M	$35M	Operation
Household income	$42M	$18M	$59M	$105M	Construction
	$2M	$3M	$3M	$18M	Operation
Jobs	550	298	550	1,177	Construction
	40	41	40	186	Operation

To separate flow on effects leaking from the region, it was assumed that approximately 50% of the construction workforce would be from the Study Area, while 75% of the construction workforce is assumed to come from NSW. As such, **Table 6-82** has been adjusted to only include 50% of consumption induced flow-on for the Study Area and 75% for NSW.

The construction and operation impacts are larger for the NSW economy since there is less leakage of direct and indirect expenditure out of the NSW economy compared to the regional economy. For instance, the NSW economy because of its size and diversity is better placed to provide more of the inputs to production than the regional economy.

6.13.2.2 IMPACT ON SECTORS

Table 6-83 summarises the sectors of the Study Area likely to be impacted because of the Project.

TABLE 6-83 STUDY AREA ECONOMY MAIN SECTORS AFFECTED

Sectors Impacted	***Phase***
Output, value-added, income and employment production induced flow-on effects	
Food and Beverage Services	Construction
Structural Metal Product Manufacturing	Construction
Professional, Scientific and Technical Services.	Construction and Operation
Wholesale and Retail Trade	Construction and Operation
Road Transport	Construction and Operation
Employment, Travel Agency, and Other Administrative Services	Construction and Operation
Finance	Operation
Construction Services	Operation
Auxiliary Finance and Insurance Services	Operation
Electricity Transmission, Distribution, On Selling and Electricity Market Operation.	Operation
Consumption induced flow-on effects	
Retail and Wholesale Trade	Construction and Operation
Food and Beverage Services	Construction and Operation
Health Care Services	Construction and Operation
Primary and Secondary Education	Construction and Operation
Residential Care and Social Assistance	Construction and Operation
Road Transport	Construction and Operation

Table 6-84 summarises the sectors of the NSW economy likely to be impacted from the development of the Project.

TABLE 6-84 NSW ECONOMY MAIN SECTORS AFFECTED

Sectors Impacted	***Phase***
Output, value-added, income and employment production induced flow-on effects	

Sectors Impacted	***Phase***
Non-Residential Property Operators and Real Estate Services	Construction
Finance	Construction
Auxiliary Finance and Insurance	Construction
Computer Systems Design and Related Services	Operation
Electricity Transmission, Distribution, On-selling, and Electricity Market Operation	Operation
Consumption induced flow-on effects	
Insurance and Superannuation	Construction
Personal Services	Construction
Non-Residential Property Operators and Real Estate Services	Construction
Finance	Construction and Operation
Professional, Scientific and Technical Services	Construction and Operation
Other Administrative Services	Construction and Operation
Travel Agency	Operation
Employment	Operation

6.13.2.3 MULTIPLIERS

Multipliers are summary measures used to predict the total impact on all industries in an economy from changes in the demand for the output of any one industry (ABS, 1995). There are many types of multipliers that can be generated from IO analysis. Type 11A ratio multipliers, used for this assessment, summarise the total impact on all industries in an economy in relation to the initial own sector effect. For instance, it considers the total income effect from an initial income effect and total employment effect from an initial employment effect, etc.

During construction, the adjusted type 11A ratio multipliers for the construction workforce of the Project range from 1.42 for income up to 1.64 for output for the Study Area. Whilst for NSW the type 11A ratio multipliers for the construction workforce range from 2.78 for income up to 3.19 for value added.

During operation, the Type 11A ratio multipliers for the Project's impact on the Study Area economy range from 1.51 for output up to 3.13 for employment. Whilst the NSW Type 11A ratio multipliers for the Project range from 2.50 for output up to 9.14 for employment.

6.13.2.4 IMPACT ON AGRICULTURE

Construction of the Project will result in a reduction of up to 1,997 ha of agricultural land that is currently used for sheep. Operation of the Project was assumed to result in 1,129.62 ha of land being unavailable for agriculture (refer **Table 6-59**). The AIA identified an annual loss of income of $178,332 during construction and $1,129.62 during operation. **Table** 6-85 summarises the estimated direct and indirect economic impacts of foregone agriculture associated with the construction and operation of the

Project on the Study Area and NSW economy for one year. It indicates that the agricultural impacts from the operation and construction of the Project on direct and indirect jobs are negligible.

TABLE 6-85 ANNUAL ECONOMIC IMPACTS OF FOREGONE AGRICULTURE

Impacts	***Total Effect***		***Phase***
	Study Area	***NSW***	
Direct and indirect output	$0.30M	$0.49M	Construction
	$0.20M	$0.32M	Operation
Direct and indirect value-added	$0.13M	$0.23M	Construction
	$0.09M	$0.15M	Operation
Direct and indirect household income	$0.05M	$0.12M	Construction
	$0.03M	$0.08M	Operation
Direct and indirect jobs	0.91 jobs	1.52 jobs	Construction
	0.59 jobs	0.99 jobs	Operation

6.13.2.5 OTHER IMPACTS

The construction of the Project will create demand for regional labour resources and regional inputs to production. Where there is excess capacity in the regional economy, or the region has access to labour and other resources from outside the region this demand will increase economic activity in the region as per the above analysis.

Importantly, non-marginal changes in labour demand from an individual project can in the short-term lead to increased construction wages, and attraction of workers from other sectors. This can lead to labour shortages in those other sectors, and inflation as firms pass wage increases on to consumers. The extent of these impacts on regional economies will depend on the balance of labour supply from within and outside the region. Similarly, in the short-term, excess demand for construction materials can inflate prices for these materials and lead to shortage of supply for other sectors.

Whether, or the extent to which these impacts may occur due to the Project is uncertain. However, considering a direct demand of an average of 700 FTE for the 1.5-year construction of the Project, no or modest observable price effects are anticipated. Regardless, such a shift represents the operation of a market system where scarce resources are reallocated to where they are most valued and where society will benefit from them the most. This is therefore a positive impact.

During operations, the Project will create a very small demand for regional labour resources and regional inputs to production when compared to the construction phase. Consequently, no wage or price increases or production shortages are anticipated.

6.13.3 MITIGATION AND MANAGEMENT

Table 6-86 provides the economic impact mitigation and management measures for the Project.

TABLE 6-86 ECONOMIC MANAGEMENT AND MITIGATION

ID	*Mitigation Measures*
EC1	The Applicant will work in partnership with the relevant Council in the Study Area, and the local community so that the projected economic benefits of the Project are maximised, and the impacts minimised.
EC2	Regional residents where they have the required skills, experience, and commitment will be employed for the Project.
EC3	Participate, as appropriate, in business groups, events or programs in the regional community.
EC4	Non-labour inputs to production will be locally sourced where local producers can be cost and quality competitive.
EC5	A benefit sharing program will be established to fund community projects and supporting a range of benefit sharing initiatives.
EC6	Lease payments will be provided to host landowners that provide an alternative drought proof income with potential flow-on benefits to the regional economy.
EC7	Payments will be provided to neighbours within 10 km of the Project to share economic benefits.
EC8	Agricultural activities will continue during the operational phase of the Project and following Project decommissioning, agricultural production will be fully reinstated as per pre-project.
EC9	Drive-in drive-out (DIDO)/ fly-in fly-out (FIFO) will be used for the Project and workforce accommodation will be provided to reduce impacts on the regional labour market (wage increases and labour shortages) and accommodation market (price/rent increases).

6.14 SOCIAL

An assessment of the Project's potential to create social impacts and the means by which these social impacts are managed and monitored has been undertaken. The Social Impact Assessment (SIA) is provided in **Appendix T**.

The SIA addresses the relevant requirements of the SEARs (**Appendix A**) and considers all relevant stakeholder engagement as described in **Section 5**. It was completed in line with the 'Social Impact Assessment Guideline for State Significant Projects' (SIA Guideline) (DPE, 2023a) and the 'Technical Supplement: Social Impact Assessment Guideline for State Significant Projects' (SIA Technical Supplement) (DPE, 2023b). The SIA Technical Supplement aims to enhance the rigour applied to SIAs with a view to minimising impacts and enhancing benefits in line with good international industry practice.

Figure 6-26 outlines the steps taken to complete the SIA, which are described in the following sections.

FIGURE 6-26 SIA PROCESS

The phases adopted by the SIA are as follows:

- Phase 1: Scoping aimed to capture and characterise the likely social impacts to inform Project planning and ensuring level of assessment is proportionate to the scale and nature of the likely social impacts;
- Phase 2: The social baseline describes the social context in the absence of the Project. It documents the existing social environment, conditions and trends relevant to the impacts identified. The social baseline is the benchmark against which direct, indirect and cumulative impacts are predicted and analysed;
- Phase 3: The impact assessment undertaken in the SIA places people at the centre and considers the impacts from their perspective. The primary and secondary data collected and compiled for the social baseline, including community voices, is then assessed with the rigorous impact significance methodology, as outlined in the SIA Technical Supplement. In this approach, impact significance is understood as the likelihood of an impact occurring combined with the magnitude of impacts, both positive and negative, and prior to the application of any mitigation or management measures;
- Phase 4: Following the assessment of impacts, measures to avoid and/or minimise negative impacts are considered, including those implemented in earlier stages of Project planning and development. Where avoidance or minimisation is not possible, management strategies are identified. Where an impact is predicted to be positive, measures to enhance positive impacts are identified to ensure the maximum benefit to the community across all impact significance ratings; and
- Phase 5: The accuracy of the impact assessment, progress towards implementation of mitigation and management measures, and their effectiveness is understood through implementation of a monitoring and management framework. The framework includes a program for monitoring the predicted social impacts against actual impacts that arise as a result of the Project.

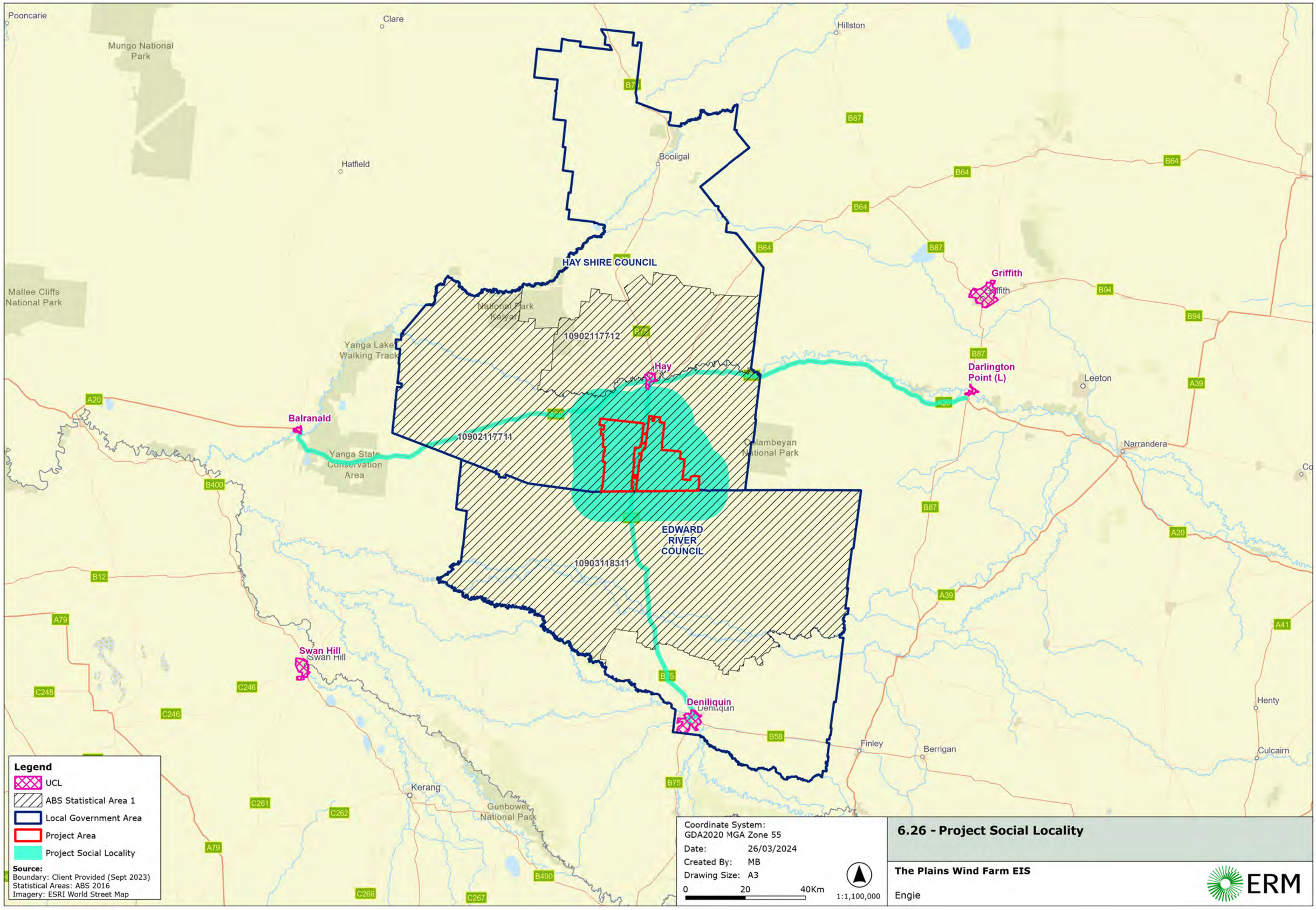
6.14.1 BACKGROUND

6.14.1.1 SOCIAL LOCALITY

The first step in a SIA is the scoping process, which helps to define the social area of influence, or Social Locality (**Figure 6-27**), as well as the potential interactions between the Project and people surrounding the Project who may experience impacts.

For the purposes of the SIA, the Social Locality includes the Project Area, the area surrounding the Project Area where noise, visual and other impacts may occur, the transport routes where similar amenity impacts may be experienced, and the communities in larger centres that may provide workers or goods and services to the Project. The Project's Social Locality is comprised of the following three components:

- The Project Area and immediate surrounding areas: located within the Hay Shire LGA. LGA level data for the Hay LGA, Edward River LGA and State level data for NSW and national level data for Australia are used to provide an understanding of the broader and comparative social context within which the Project sits;
- The transportation and haulage routes: routes from and to larger town centres via the Hume Highway and Sturt Highway. Primary access will be via the Cobb Highway, which runs north-south through the Project Area. Secondary access, if required, may be proposed for the Sturt Highway; and
- The surrounding towns and regional centres: Hay, Swan Hill, Griffith, Balranald, Deniliquin and Darlington Point may provide goods and services to support the construction phase of the Project. ABS Urban Centres and Localities (UCLs) provide baseline data for these regional centres.



6.26 - Project Social Locality

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6.14.1.2 SOCIAL BASELINE

The social baseline describes the social context in the absence of the Project. It documents the existing social environment, conditions and trends relevant to the impacts identified. The social baseline is the benchmark against which direct, indirect and cumulative impacts are predicted and analysed.

Land Use Context

The Project Area's immediate surroundings comprise sparsely populated rural communities mainly employed in sheep and/or beef cattle farming. The Project Area contains little to no social infrastructure or commerce with the closest such services available at Hay.

The Project Area and its surroundings are zoned RU1 (Primary Production) under the Hay Shire LEP. Land use within the vicinity of the Project Area typically comprises mixed farming with livestock and crops and other farming activities.

Population Demographics

The Social Locality is generally characterised by an ageing population, consistent with that of the Hay LGA and surrounding town centres. This Social Locality also has a much higher proportion of residents identified as Indigenous Australian when compared to the state of NSW. Section 5.2 of the SIA (refer **Appendix T**) further summarises the primary ABS datasets used to provide key demographic data across the Project's Social Locality, drawing on select ABS datasets.

Housing and Accommodation

Rental affordability and availability are the most likely portion of the housing market to respond to change in population prompted by large projects and is a key component for economic vitality of communities and wellbeing of individuals (Lawrie, Tonts, & Plummer, 2011). Generally, housing stress can occur when rent exceeds 30% of a low-income household gross income.[8] SGS Economics and Planning in partnership with National Shelter, Beyond Bank, and Brotherhood of St Laurence have published the Rental Affordability Index (RAI) since 2015 (SGS, 2023). The findings identify that in Quarter 2, 2022 postcode 2711 which includes Hay UCL was considered 'Very Affordable', whilst postcode 2710 which includes Deniliquin was listed as 'Acceptable' (SGS, 2023).

The LGAs in the Social Locality are included in both the Riverina and Murray tourism regions, which according to Tourism Research Australia (2021) have occupancy rates of 59.7% and 51.1% respectively.

Short-term tourist accommodation such as hotels, motels, cabins and caravan parks are important in regional areas to provide accommodation for visitors and to support regional tourism and economic activity. The LGA's of the Social Locality include the Hay

[8] Specifically, the ABS and the Australian Institute of Health and Welfare apply the 30/40 rule which identifies households in the lowest 40% of incomes that spend more than 30% of gross household income on housing costs as being subject to financial housing stress **Invalid source specified.**.

LGA which has 17.4% of dwellings unoccupied, and Edward River LGA which has only 3.6% of dwellings unoccupied (ABS, 2021b).

Social Infrastructure and Community Wellbeing

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

Social infrastructure in the rural localities in the immediate vicinity of the Project Area is limited to outdoor recreation areas in Lachlan Valley National Park and Oolambeyan National Park, various trails throughout the National Park and lookout points.

Hay (population of 2,208) is located 25 km north of the Project Area. Hay hosts a private and public primary school, a public high school, a childcare centre, TAFE campus, a general hospital, a church, two NSW Rural Fire station, sporting facilities, and various shops, restaurants, and cafes. Hay also has a range of accommodation options a corner store, IGA, and Foodworks.

Access and Connectivity

The Cobb Highway splits the Project Area into two sections east and west. The Cobb Highway is a state highway travelling north-south through the region connecting Barrer Highway near Wilcannia, NSW and Echuca, Victoria. The Project Area is 38 km south of the Sturt Highway, which is a national highway travelling east-west through the region connecting the Hume Highway near Tarcutta, NSW, through Mildura, Victoria to Gawler, South Australia

The Hay LGA, approximately eight hours from Sydney and five hours from Melbourne, is ideally located with highways and main roads leading south to Shepparton, Bendigo and Melbourne, east to Wagga Wagga and Canberra, and northeast to Bathurst and Dubbo, making the route a popular drive and destination for tourists, bringing economic activity into the area.

Attractions associated with the natural environment and cultural activities, such as national parks, retreats, historic buildings and museums and country experiences assist with bringing tourists to visit the region.

Griffith, Deniliquin, Swan Hill, and Balranald have airports that service the area. Griffith Airport connects direct flights to Sydney and is approximately an hour and a half drive from Hay. Hay can be accessed by public transport via a train from Sydney or Melbourne to Cootamundra, with connecting bus services to Hay. There are also taxi services available in both Hay and Edward River LGAs.

Community Values

Hay and Deniliquin are the regional centres of the Hay and Edward River LGAs. Hay, Deniliquin and Griffith host a large rural community providing services to surrounding towns. The Hay LGA is known as an agricultural and cropping region, that is generally regarded as one of the best wool growing merino regions in Australia. In addition to

wool, the LGA supports sheep meat and beef cattle industries, an established cropping industry including the production of lettuce, pumpkins, tomatoes, maize, cotton, and wheat. Attractions such as festivals, museums and galleries has allowed tourism to act as an economic driver. Outdoor pursuits throughout the region include gardens, parks, and camping sites which are popular for locals and tourists.

The stakeholder engagement conducted for the Project indicates that community values most strongly resonate with the natural environment, farming, and community and family.

6.14.2 ASSESSMENT OF IMPACTS

The key drivers of social change that may affect communities in the Social Locality resulting from the Project relate to:

- The commencement of the CEF during Project construction and operation;
- Increased demand for goods and services stimulating the local economy;
- Procurement opportunities for local businesses and employment opportunities for the local workforce;
- Opportunities for diversification of income streams for host landowners;
- Disruptions due to construction related activities (noise, dust, transportation of materials and workers, etc.);
- Accommodation arrangements for construction workforce in Hay as well as the provision on site workers accommodation; and
- Amenity (noise, visual) and other land use and landscape changes due to altered landscapes.

The impacts have been assessed based on the likelihood of the impact occurring, the magnitude of the impact if it occurs, and the vulnerability of the impacted receivers. This EIS has also considered issues raised by stakeholders during the engagement process and outcomes from technical studies undertaken by the Project (noise, visual, cultural heritage etc.).

Table 6-87 provides an overview of predicted impacts likely to be experienced by different stakeholder groups and the cumulative impact likely to arise from additional projects in the South West REZ.

TABLE 6-87 IMPACT ISSUES

Potential Impact	***Impact Category, Stakeholders***	***Pre-Mitigation/ Enhancement Rating***			***Key Mitigation Measures / Enhancement Opportunities***
		Magnitude	***Likelihood***	***Impact Significance***	
Transportation requirements have the potential to cause road traffic inconvenience and safety impacts for road users along the haulage routes to site and on local roads.	Health and Wellbeing: Host Landowners, Project Neighbours, Wider Community, Visitors to the Region	Moderate	Possible	**Medium**	• Develop and implement a Traffic Management Plan. • Develop and implement a CES to engage surrounding landowners and understand traffic movements and local road use patterns and preferences. • Repair damaged Council roads and/or upgrade roads as required in accordance with Council Engineering Standards. • Develop and implement a grievance mechanism to ensure that concerns/ complaints are identified and acted upon.
Increased disruption, congestion and wear and tear on local roads	Way of Life: Host Landowners, Project Neighbours, Wider Community	Moderate	Possible	**Medium**	
Risk of traffic injury or in the worst case a fatality, resulting from increased vehicle movements during the transportation of goods and workers to and from the Project Area.	Health and Wellbeing: Host Landowners, Project Neighbours, Wider Community, Visitors to the Region	Moderate	Likely	**High**	
Construction environmental impacts, including noise, vibration, dust, visual amenity, and increased risk of fire.	Health and Wellbeing: Host Landowners and Project Neighbours	Moderate	Likely	**High**	• Develop and implement a CEMP. • Develop and implement a TMP as above. • Develop and implement a CES. • Develop and implement a grievance mechanism to ensure that road user concerns/ complaints are identified and acted upon.

6.14.3 MITIGATION AND MANAGEMENT

A range of social management and mitigation measures to be adopted for the Project is summarised in **Table 6-88** (further detailed in **Appendix T**) .

TABLE 6-88 SOCIAL MANAGEMENT AND MITIGATION

ID	*Mitigation Measures*
SO1	A Stakeholder Engagement Plan (SEP) will be developed and implemented.
SO2	A Grievance Mechanism will be developed and implemented.
SO3	Job awareness opportunities will be investigated and created amongst the community (in partnership with the relevant Councils and other partner organisations).
SO4	A Local Employment Plan (LEMP) will be developed and implemented.
SO5	The Applicant will work with the Engineering, Procurement and Construction (EPC) Contractor to minimise social impacts.
SO6	Skills shortages within the region will be monitored and taken into consideration with EPC recruitment objectives.
SO7	A Construction Traffic Management Plan (CTMP) will be developed and implemented.
SO8	A Construction Environmental Management Plan (CEMP) will be developed and implemented.
SO9	A Workforce Accommodation Management Plan (WAMP) will be developed and implemented.
SO10	An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed and implemented.
SO11	An Operational Environmental Management Plan (OEMP) will be developed and implemented.
SO12	A CEF will be developed and implemented in consultation with key stakeholders and potential partner and publish to the wider community.
SO13	Mitigation and management measures outlined in the Noise and Vibration Impact Assessment (NVIA) will be developed and implemented.
SO14	A Legacy Fund will be developed and implemented, which will be administered by independent community groups following cessation of the Project.
SO15	Impacts to accommodation availability and cost inflation attributable to Project workforce accommodation arrangements will be monitored.
SO16	Accessibility impacts to local services attributable to increased service demand from the Project workforce will be monitored.
SO17	Local content initiatives which include local procurement goals for the operation phase will be developed and implemented.
SO18	Host and near neighbour landowner agreements will be enacted as agreed.
SO19	To understand land devaluation concerns, open communication with surrounding landowners will be fostered.

ID	Mitigation Measures
SO20	Community benefits will be considered to be extended to surrounding landowners (the community typically views these as an "offset"), for the perceived devaluation of land through Neighbour Agreements.
SO21	Project developer will undertake localised visual impact assessment where merited (including properties that may have previously declined a visual impact assessment) and communicate the outcomes of the visual impact assessment.
SO22	Development and implementation of a Community Engagement Strategy (CES)

6.15 CUMULATIVE IMPACTS

The CIA Guidelines require the consideration of impacts from the Project in combination with other past, present and reasonably foreseeable future SSDs (DPIE, 2021d).

The CIA Guidelines state that the assessment should focus on the key matters that are within the immediate geographical area of influence of the Project (e.g., within proximity to the Project Area) and within the relevant strategic context.

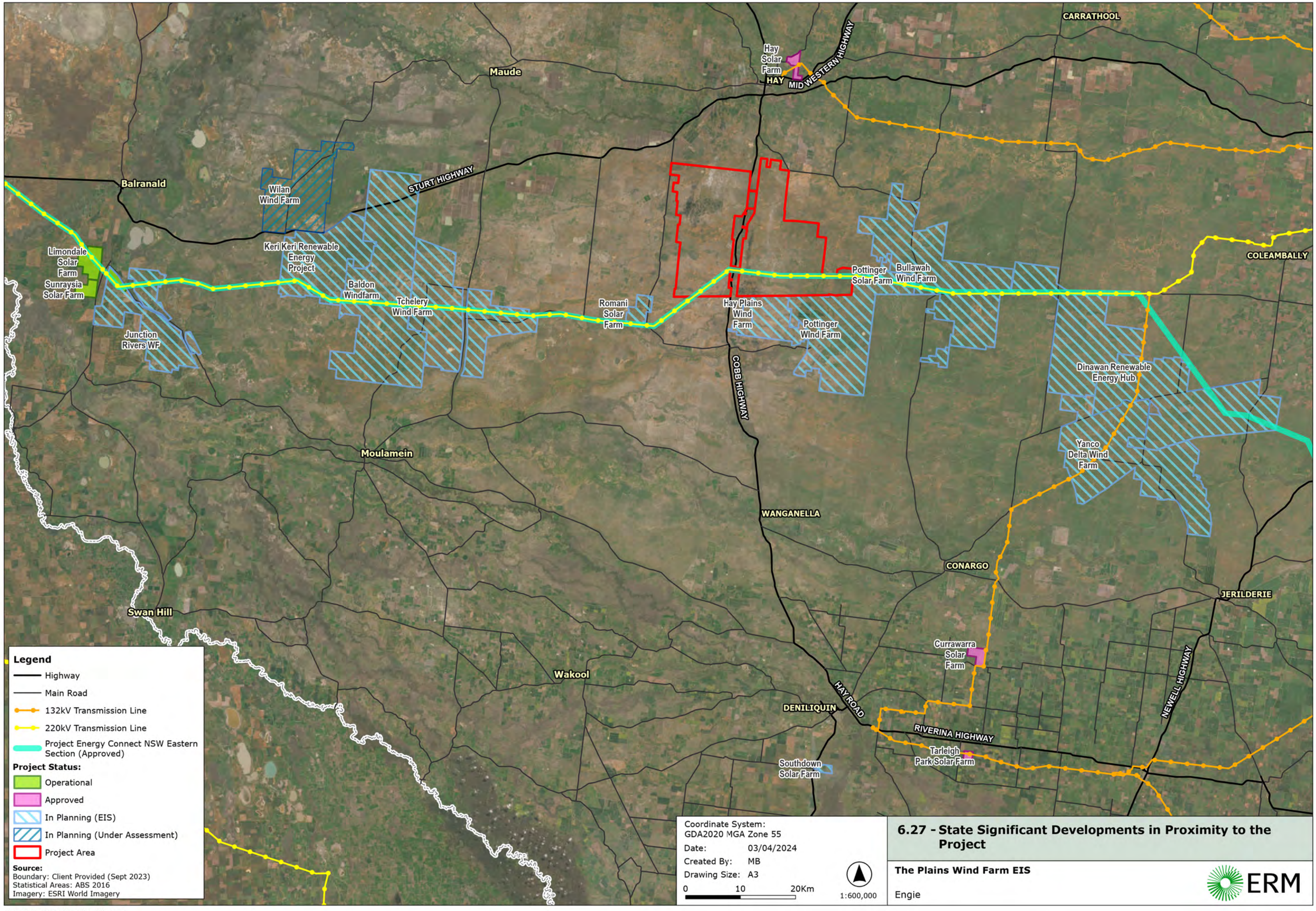
This section draws on the relevant aspect-specific assessments undertaken as part of the preparation of this EIS, which have identified and addressed potential cumulative impacts related to that aspect.

The CIA Guidelines state that the CIA is to focus on the key matters that could be materially affected by the cumulative impacts of the Project and other relevant future developments. As such, an assessment of the potential cumulative impacts to aspects including biodiversity, historic heritage, water, bushfire, air quality and waste has not been undertaken as it is considered that these potential impacts are primarily confined to the Project Area and are negligible in a broader context.

6.15.1 EXISTING ENVIRONMENT

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 Project will contribute to the overall development of the South West REZ. Relevant proposed, approved, under construction and operational SSDs known at the time of finalisation of this EIS and within and in the vicinity of the South West REZ are shown in **Figure 6-28** and summarised in **Table 6-89**. As shown, most of these developments are renewable energy projects.



6.27 - State Significant Developments in Proximity to the Project

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TABLE 6-89 PROXIMATE SSD WITH CUMULATIVE POTENTIAL

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
Wind Energy Developments								
Pottinger Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 750 MW. • Up to 108 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 450 FTE. • Operational workforce 40 FTE. • Temporary workers accommodation located within the Project Area or located offsite.	0 km east	• Construction estimated to commence 2025 or 2026. • Construction period about 24-months. • Commissioning expected 2027 or 2028.	• Potential for construction to overlap. • The traffic generated from both projects may interact along Cobb Highway.	• Plans to connect to the existing 220 kV (TransGrid) transmission line which is proposed to be upgraded to a 330 kV transmission line as part of Project EnergyConnect.	• Low risk of cumulative noise impacts.	• Likely that both projects would be visible in the same viewshed due to the topographic character of the region. • The distance between the projects would reduce visual impact	• Site currently used for grazing with small areas of dryland and irrigated crops. • No wind turbines are planned for cropped areas. • Small loss of area of agricultural production. • Cumulative impacts are expected to be minor.
Bullawah Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 1,000 MW. • Up to 170 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 400 FTE. • Operational workforce 40 FTE. • Temporary workers accommodation located within the Project Area.	4 km east	• Construction estimated to commence mid to late 2025. • Construction period about 24-months. • Commissioning expected 2027.	• Potential for construction to overlap. • The traffic generated from both projects may interact along Cobb Highway.	• Plans to connect to Project EnergyConnect.	• Low risk of cumulative noise impacts.	• Likely both projects visible in the same viewshed due to topographic character of the region. • The distance between the projects would reduce visual impacts.	• Site currently used for low intensity grazing. • Small loss of area of agricultural production. • Cumulative impact expected to be minor.
Tchelery Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 800 MW. • Up to 120 WTGs, ancillary infrastructure and future BESS. • Peak construction workforce 500 FTE. • Operational workforce: up to 20 FTE. • Temporary workforce accommodation to be investigated.	25 km west	• Construction expected to commence 2026. • Construction period about 30-months. • Commissioning expected late 2028 early 2029.	• Potential for construction of both projects to overlap.	• Plans to connect to the existing 220 kV (TransGrid) transmission line or Project EnergyConnect.	Nil	Nil	• Site mainly used for grazing with small areas of dryland and irrigated cropping. • Minimal impact to these activities once the project is in operation. • Cumulative impact expected to be minor.
Dinawan Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 1,500 MW. • Up to 250 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 800 FTE. • Operational workforce up to 50 FTE .	28 km southeast	• Construction expected to commence 2025. • Construction period about 36 months. • Commissioning expected 2028.	• Potential for construction of both projects to overlap.	• Plans to connect to the existing overhead 132 kV (TransGrid) transmission line.	Nil	Nil	• 28 km from the Project and is mainly used for sheep and cattle grazing plus with some areas of irrigated canola, cotton and cereal crops. • Small loss of agricultural production.

[9] *Indicative direct-line distances from the Project boundary.*

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
	• Workforce accommodation is expected to rely on available rental, motel and other accommodation in surrounding townships and regional centres.							• Cumulative impact is expected to be negligible to minor.
Yanco Delta Wind Farm *(Approved – December 2023)*	• Nominal generating capacity of 1,500 MW. • Up to 208 WTGs, BESS and ancillary infrastructure • Peak construction workforce 300 FTE. • Operational workforce up to 30 FTE . • Workforce accommodation is expected to rely on available rental, motel and other accommodation in surrounding townships and regional centres.	42 km southeast	• Construction expected to commence 2024-2025. • Construction period about 36 months. • Commissioning expected 2028.	• Potential for construction of both projects to overlap.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• 42 km from the Project and is mainly used for low intensity dryland sheep grazing with some mixed dryland grazing and cropping activities. • Small loss of agricultural production. • Cumulative impact expected to be negligible.
Baldon Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity 1,000 MW. • Up to 162 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 350 FTE. • Operational workforce 25 FTE. • Temporary workers accommodation will be established within Project Area.	45 km west	• Construction expected to commence Q4 2024. • Construction period about 23 to 27 months. • Commissioning expected Q4 2026.	• Potential for construction of both projects to overlap	• Plans to connect to existing Darlington Point-Balranald 220 kV Transmission line, or Project EnergyConnect.	Nil	Nil	• 45 km from the Project and currently used for sheep grazing. • Small loss of agricultural production. • Cumulative impact is expected to be negligible to minor.
Keri Keri Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 1,003 MW. • Up to 176 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 400 FTE. • Operational workforce up to 12-14 FTE. • Temporary workforce accommodation to be investigated.	55 km west	• Construction expected to commence in 2024-2025. • Construction period about 18-24 months. • Commissioning expected 2027.	• Potential for construction of both projects to overlap.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• 55 km from the Project and is currently used for low intensity grazing. • Grazing would continue on most of the site during operation. • Cumulative impact is expected to be negligible.
Wilan Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of up to 800 MW.	57 km west	• Construction expected to commence early 2025. • Construction period about 24 to 30 months.	• Potential for construction of both projects to overlap.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• 57 km from the Project and is mainly used for grazing with some areas

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
	• Up to 138 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 400 FTE. • Operational workforce 10-15 FTE. • Temporary workers accommodation will be established, location is subject to Project design and community consultation.		• Commissioning expected 2027-2028.					of dryland and irrigated crops. • Negligible impact to these activities once the project is in operation. • Cumulative impact expected to be negligible.
Argoon Wind Farm *(In Planning (Prepare EIS))*	• Installed generating capacity of up to 901 MW. • Up to 106 WTGs, BESS (460 MW/2300 MWh, up to 5-hour battery).and ancillary infrastructure. • Peak construction workforce 340 FTE. • Operational workforce between 6 and 12 FTE. • Temporary workforce accommodation will be included if required.	70 km southeast (estimate only)	• Construction estimated to commence within one year of project approval. • Construction period about 24-36 months.	• Not assessed	• Plans to connect to Project EnergyConnect.	Low risk of cumulative noise impacts.	Not assessed	• Site currently used for grazing with small areas of dryland and irrigated crops. • Small loss of area of agricultural production. • Cumulative impacts are expected to be minor.
Junction Rivers Wind Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity 750 MW. • Up to 107 WTGs, BESS and ancillary infrastructure. • Peak construction workforce 250 FTE. • Operational workforce 10-15 FTE. • Existing facilities in Balranald and other options in Kyalite and surrounding region will be utilised for construction staff accommodation.	86 km west	• No current information available regarding construction.	• Potential for construction of both projects to overlap.	• Plans to connect to either Project EnergyConnect or the existing TransGrid 220kV transmission line, both of which traverse the site	Nil	Nil	Nil
Solar Energy Developments								
The Plains Solar Farm *(In Planning (Prepare EIS))*	• Nominal generating capacity of 400 MW. • BESS with a capacity of up to 400 MW / 1.6 GWh. • Peak construction workforce: up to 150 FTE employees	0 km (overlaps with the Project Area)	• Construction estimated to commence in 2026. • Construction period approximately 18 months. • Commissioning expected 2028.	• Wind farm construction will be staggered to start after completion of solar farm. • Projects will use shared infrastructure,	• Plan to connect to existing 220 kV transmission line (TransGrid) or Project EnergyConnect.	• Construction may overlap. • Minor cumulative construction noise impacts associated with use of construction machinery, vehicle movements etc.	• Likely both projects visible in the same viewshed.	• Site mainly used for grazing plus some areas of dryland and irrigated crops. • A small loss of area of agricultural production across that area. • Given the vast areas of agricultural land

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
	• Operational workforce: up to 46 FTE employees • Temporary workers accommodation to be utilised from this Project.			resources, and transport routes.		• Cumulative operational noise sources include substation, BESS, wind turbines. • Cumulative noise impacts will be managed through staging and a construction management plan.		unimpacted by the project, the impacts on agriculture would be low. • Cumulative impact expected to be minor.
Pottinger Solar Farm *(In Planning (Prepare EIS))*	• Generating capacity 300 MW. • BESS and ancillary infrastructure. • Peak construction workforce of 220 FTE and operational workforce of at least 4 FTE. • Temporary workforce accommodation to be investigated.	5 km east	• Construction expected to commence in 2026. • Construction period is estimated to take 24 months including commissioning.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Cobb Highway.	• Plans to connect to the existing 220 kV (TransGrid) transmission line which is proposed to be upgraded to a 330 kV transmission line as part of Project EnergyConnect.	• Nil	• Likely that both projects would be visible in the same viewshed due to the topographic character of the region. • The distance between the projects would reduce visual impact	• Site currently used for low intensity grazing. • A small loss of area of agricultural production across that area. • Cumulative impact expected to be minor.
Hay Solar Farm *(Approved - December 2017)*	• Generating capacity 110 MW. • 300,000 panels. • Area across 660 ha. • Currently under construction. • 700 FTE during peak construction and between 2 and 5 FTE during operation.	15 km north	• Construction period of about 12-months. • No information available regarding construction commencement.	• No cumulative traffic impact is expected given construction is not anticipated to occur simultaneously.	• Plans to connect via 132 kV Essential Energy grid network.	Nil	Nil	• Site currently used for low intensity grazing. • Grazing would possibly continue on most of the site during operation. • A small loss of area of agricultural production across that area. • Cumulative impact expected to be minor.
Currawarra Solar Farm *(Approved -May 2018)*	• Generating capacity 195 MW. • Associated infrastructure. • Workforce of approximately 200 FTE during construction and 3-4 FTE during operations.	67 km south	• Construction period about 18 months. • Construction has not commenced.	• Potential for construction of both projects to overlap.	• Plans to connect via TransGrid 132 kV transmission line.	Nil	• Nil	• 67 km from the Project and is used for broad scale cropping activities. • Grazing would continue on most of the site during operation. • Cumulative impact is expected to be minor as the Project will have no impact on crop production.
Keri Keri Solar Farm *(In Planning (Prepare EIS))*	• Generating capacity 400 MW. • BESS and ancillary infrastructure. • Peak construction workforce of 300 FTE.	68 km west	• Construction expected to commence in 2024-2025. • Construction period about 18-24 months including commissioning.	• Potential for construction of both projects to overlap.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• Site currently used for low intensity grazing. • Small loss of area of agricultural production given grazing would continue during the operation.

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
	• Temporary workforce accommodation to be investigated.							• Cumulative impact expected to be minor.
Southdown Solar Farm *(In Planning (Prepare EIS))*	• Generating capacity 70 MW. • Associated infrastructure. • Workforce of up to 200 FTE during construction.	85 km south	• No current information available regarding construction commencement. Construction period about 15 months.	• Potential for construction of both projects to overlap.	• Plans to connect to 66kV transmission line, operated by Essential Energy.	Nil	Nil	• 85 km from the Project and is used for grazing and cropping. • Grazing would be considered during operation. • Cumulative impact is expected to be minor as the Project will have no impact on crop production.
Tarleigh Park Solar Farm *(Approved -May 2018)*	• Generating capacity 90 MW. • Associated infrastructure. • Workforce of approximately 700 FTE during construction and 3-4 FTE during operations.	85 km south	• Construction period about 15 months. • Construction has not commenced.	• Potential for construction of both projects to overlap.	• Plans to connect to TransGrid 132 kV transmission line.	Nil	Nil	• 85 km from the Project and is used for irrigated and dryland cropping. • Grazing would be considered during operation. • Cumulative impact is expected to be minor as the Project will have no impact on crop production.
Limondale Solar Farm *(Operational)*	• Generating capacity 250 MW. • BESS and ancillary infrastructure. • Peak construction workforce of 40 FTE and operational workforce of 20 FTE.	100 km west	• Currently operational. • Additional construction expected to commence between Q3 2022 and Q4 2024. • Construction period about 15 months.	• Nil	• Connects to the TransGrid 220 kV electricity distribution network that originates at the Balranald Substation.	Nil	Nil	• Nil
Sunraysia Solar Farm *(Operational)*	• Generating capacity 200 MW. • Ancillary infrastructure. • Peak construction workforce of 250 FTE and operational workforce of at least 2 FTE.	104 km west	• Currently operational.	Nil	• It is connected to the overhead 220 kV transmission line.	Nil	Nil	Nil
Other Developments								
Project EnergyConnect (NSW – Eastern Section) *(Approved - September 2022)*	• 330kV transmission line • 375 km of new transmission lines and associated infrastructure	0 km (within the Project Area	• Construction expected to commence late 2022. • Construction and remediation work expected to be completed in March 2025.	• Construction is anticipated to finish before the proposal's construction begins.	-	• Low risk of cumulative noise impacts relating to operational noise sources of substation and BESS. • Cumulative noise impacts are not anticipated relating	Nil	• Much of Project EnergyConnect is distant from the Project and would impact different parts of NSW. • Cumulative impact is expected to be minor.

Project	Description	Distance (km) [9]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
						to construction activities.		

6.15.2 STRATEGIC PLANNING FRAMEWORK

Section 2 of this EIS discusses the strategic context of the Project with reference to relevant strategic planning publications. In consideration of the Project and relevant future developments, most of those detailed in **Section 2** align with the relevant objectives of the:

- United Nations Sustainable Development Goals;
- UNFCCC COP28 and COP21;
- Australian Government's Renewable Energy target;
- Climate Change Act 2022; and
- NSW Government Commitments.

Most relevant future developments identified are renewable energy developments that will provide affordable, reliable and sustainable energy. These developments will assist Australia and NSW in meeting their respective emissions reduction targets. They will also assist NSW in the development of affordable, reliable and sustainable renewable energy generation, transmission and storage. The South West REZ will connect multiple generators and storage in the same area, to capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses in NSW.

The Project, as well as the relevant future developments have or are all progressing assessments required under their relevant planning approvals pathways, which will minimise impacts on the environment and their respective social localities. For example, most of the wind and solar farms would have had to undertake a visual impact assessment and implement either design modifications or management measures to avoid or minimise impacts. This process assists in preserving the rural landscape, which is a key objective of relevant local strategic planning statements and community strategic plans.

More broadly these developments will provide social and economic benefits to the region. They will encourage economic development within the region, by supporting both employment and economic growth. While all developments would endeavour to hire locally, it is inevitable that skilled labour from outside of the region would be also required; however, this will also benefit local business and the community through an increased in demand for local services, and diversification of communities.

6.15.3 CUMULATIVE IMPACT SUMMARY

Potential cumulative impacts associated with the Project have been addressed in relevant technical assessments and the relevant findings summarised in this EIS. A summary of the potential cumulative impact of key environmental aspects is provided below.

6.15.3.1 CUMULATIVE BIODIVERSITY IMPACTS

Of the projects detailed in **Table 6-89**, seven (7) have received consent. Of these, the EnergyConnect (Eastern) project (EnergyConnect) and Yanco Delta Wind Farm occur across similar vegetation communities and have direct impacts to similar listed species as the Project. A large portion of these projects are in the planning phase, and as such the level of direct impacts to native vegetation, TECs, and threatened and migratory listed species is unknown. It is considered likely that cumulative impacts will increase the loss of similar native vegetation

and threatened species habitat in the region. The expected loss as a result of all considered projects is presented in Section 8.4 of **Appendix G**.

Yanco Delta Wind Farm is situated within the Riverina IBRA region and Murrumbidgee IBRA Bioregion, as is the Project. The direct impact on native vegetation for Yanco Delta Wind Farm is calculated at 173.39 ha, with PCTs matching those with direct impact as a result of this Project (PCTs 13, 17, 28, and 44). EnergyConnect covers an area of the Murrumbidgee IBRA subregion, direct impacts to this region as a result of the development have been considered. Direct impacts for EnergyConnect (Murrumbidgee subregion) is associated with the removal of native vegetation, with PCTs matching all those impacted by this Project (PCTs 157, 153, 164, 17, 24, 44, 13, and 28).

Cumulative impacts to threatened species across Yanco Delta Wind Farm, EnergyConnect (Murrumbidgee subregion) and this Project will include those provided in **Table 6-90**.

TABLE 6-90 CUMULATIVE IMPACTS ACROSS YANCO WF, ENERGYCONNECT AND THE PROJECT

Threatened Species	***Impact area (ha)***			
	Yanco Delta Wind Farm	***Energy Connect (Murrumbidgee Subregion)***	***The Project***	***Total***
Swainsona Murrayana Slender-darling Pea	32.12	241.98	1,331.03	1605.13
Brachyscome Papillosa Mossgiel Daisy	23.60	132.19	1,376.57	1532.36
Calotis moorei A Burr Daisy	-	18.43	46.29	64.72
Cullen parvum Small Scurf-pea	35.29	23.79	72.81	131.89
Lepidium monoplocoides Winged Peppercress	-	59.86	367.42	427.28
Maireana Cheeli Chariot Wheels	12.92	144.71	1,036.75	1194.38
Pedionomus torquatus Plains-wanderer	1.78	0.37	5.35	7.5

The removal of habitat across the landscape for this Project will contribute to the cumulative loss of native vegetation.

6.15.3.2 CUMULATIVE ABORIGINAL IMPACTS

As the Project Area contains Aboriginal sites, there are cumulative impacts associated with any land uses which would result in impacts to these elements. This is particularly noteworthy due to the general lack of registered AHIMS within the region. It is acknowledged that continued development within the Riverina Murray Region has the potential to result in a cumulative

impact to the cultural values of the local area. However, agreed future changes to the Project design to avoid Aboriginal heritage sites where possible will result in a very minimal contribution to the cumulative impacts across the region.

6.15.3.3 CUMULATIVE NOISE IMPACTS

SSD projects within 20 km of the Project have been identified to determine where cumulative noise impacts might occur. The nearest noise-generating relevant future developments to the Project Area are The Plains Solar Farm and Project EnergyConnect (NSW – Eastern Section) located within the Project Area, as shown in **Figure 6-28**.

The key noise sources covered by the NPI are ancillary infrastructure such as the substations. The cumulative noise assessment considered:

- The Plains Solar Farm: The construction and operation noise associated with The Plains Solar Farm will be shared with the Project and as such have been considered as a part of the NIA; and
- Project EnergyConnect (NSW – Eastern Section): Project EnergyConnect is expected to have completed construction prior to the construction of the Project and as such, cumulative noise impacts are expected to be negligible.

The assessment of noise from the Project shows the highest predicted noise levels are more than 5 dB(A) below the criteria for both operation and construction. Assuming all other nearby SSD projects comply with the relevant criteria, the noise from the Project will not contribute to an exceedance of the relevant construction and operational noise criteria.

6.15.3.4 CUMULATIVE VISUAL IMPACTS

Cumulative landscape and visual effects result from additional changes to the landscape or visual amenity caused by the Project in conjunction with other SSDs (associated with or separate to it) or actions that occurred in the past, present or are likely to occur in the foreseeable future. Cumulative visual effects may also affect the way a landscape is experienced and can be positive or negative. Where they comprise benefits, they may be considered to form part of the mitigation measures.

Through the application of the Multiple Wind Turbine Tool undertaken in the LVIA (**Appendix K**), no dwellings or key public viewpoints were identified within 8 km of the Project or the nearby Plains Solar Farm, Pottinger Wind Farm, and Bullawah Wind Farm.

The application of the Multiple Wind Turbine Tool has considered a bare ground scenario without intervening elements such as s topography, vegetation and structures. The toll identified:

- One (1) associated dwelling (AD_3) was identified within 8 km of the Project and Bullawah Wind Farm. Given AD_3 is an associated dwelling, the Multiple Wind Turbine Tool was not applied at this dwelling;
- One (1) DA location (DAD_1, yet to be constructed) was identified within 8 km of the Project and within the boundary of the Pottinger Wind Farm. Turbines associated with both

projects are located in up to five (5) 60° sectors. As per the Major Projects website, the DA is an associated dwelling with the Pottinger Wind Farm project; and

- Three (3) non-associated dwellings (NAD_19, NAD_19B and NAD_19C) were identified within 8 km of the Bullawah Wind Farm and Pottinger Wind Farm. Turbines associated with both projects are located in up to four (4) 60° sectors. Based on the public information on the Major Projects website, these non-associated dwellings are likely to be associated with the Pottinger Wind Farm project. However, given these dwellings are located outside 8 km of the nearest Project-related WTG, these have not been assessed in further detail.

The potential cumulative visual impact of these projects is due to the topographic character of the region and scale of these SSD projects and their turbines. The remainder of the proposed, in operation or approved SSD projects are in excess of 30 km from the Project and they would therefore not have the potential to be viewed in combination with the Project.

6.15.3.5 CUMULATIVE AGRICULTURAL IMPACTS

The cumulative impact of the Project and other SSDs on agriculture for the region is considered low. All identified SSDs have relatively little impact on agricultural production, generally allowing agricultural activities to continue across most of their respective sites.

In combination, the cumulative impacts on agricultural land from relevant future projects is small in relation to the combined total agricultural land area of these projects. The impacts are less still when considering regional agricultural production. Consequently, the effect on regional agricultural production would be minor.

The regional solar farm projects by their nature impact greater areas of agricultural land compared to their total project area. The development of the solar farms considered in the cumulative impact assessment will lead to a loss of agricultural land, although most projects are proposing to continue grazing once the projects are operational. Regardless, the area potentially impacted by the solar farms considered is small compared to the total area of agricultural land in the region. Therefore, cumulative impacts are expected to be minor. Of the projects considered, none would impact cropped agricultural land, therefore there would be no cumulative impact on crop production.

Biosecurity risks are expected to be low once mitigation measures are implemented.

It is also worth noting the benefits the projects will bring to the region in terms of payments to host landowners which would augment their incomes during years of adverse climate. It is anticipated that the additional income would flow into the region in terms of increased expenditure in the agricultural sector (e.g., farm equipment upgrades), and beyond.

6.15.3.6 CUMULATIVE FLOODING IMPACTS

The construction of multiple projects in a catchment has the potential to adversely impact flood behaviour on a cumulative basis. A similar flooding investigation that has recently been completed by Lyall & Associates on behalf of ENGIE for The Plains Solar Farm has demonstrated that it would only have a very localised impact on both riverine and local catchment type flooding.

The Yanco Delta, Bullawah, Pottinger, Argoon and Dinawan wind/solar farms are generally located to the east of the project and also lie in the watershed of watercourses which drain to its south. As a result, any flood related impacts associated with these projects are independent of the project.

While the Tcherlery Wind Farm is located to the west of the project and partially lies within the watershed of the watercourses which run through the project area, provided appropriate mitigation and management measures are incorporated into both projects, then their cumulative impacts on flood behaviour

Provided both projects implement appropriate mitigation and management measures (refer **Section 6.10**), it is expected that their construction would not result in adverse flooding conditions within or outside the Project Area.

6.15.3.7 CUMULATIVE TRAFFIC IMPACTS

The TIA provides an assessment of the cumulative impacts of the Project along with other SSD projects within the surrounding area. The TIA identifies some projects expected to generate additional vehicle movements within Hay and Deniliquin areas (refer **Table 6-89**). However, these vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network.

The TIA review indicates that the Bullawah Wind Farm, Pottinger Wind Farm and Pottinger Solar Farm projects would have the potential to generate additional vehicle movements along Cobb Highway (refer **Appendix N**). These vehicle movements have been estimated based on the available information with the assumption that the peak construction periods coincide with the peak construction period of the Project, and all vehicles accessing the SSD projects are light vehicles occurring during the morning and afternoon peak hour. Allowance for the total grid capacity of approved projects within the South West REZ have been accounted for, with the overall capacity constraints considered likely to reduce the overall cumulative impact of approved developments.

The TIA concludes that the road network is expected to continue to operate with an acceptable level of service during construction. Therefore, the road network can accommodate the traffic generated by the development during the construction period.

It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application for the OSOM vehicles.

6.15.3.8 CUMULATIVE BUSHFIRE IMPACTS

The proximity of multiple construction and/or operational projects provides opportunity for potential cumulative impacts. The cumulative impacts related to bushfire mitigation are as follows:

- Volunteer fire-fighter workload – Response call outs should not significantly increase because the ignition risk will be very low. There will, however, be an ongoing requirement for briefing on the Emergency Management and Operations Plan;

- Construction stage transport and road use – The bushfire mitigation will add a small percentage to the total construction traffic and road use; and
- Ongoing operations – there would not be any cumulative operational impacts.

The proximity of multiple projects actively managing fire risk could assist in management responses and may create a positive cumulative impact, in comparison with existing conditions. In consultation with key stakeholders, the preparation of the Emergency Management and Operations Plan will consider the most current information available regarding fire risk from and to surrounding land uses.

6.15.3.9 CUMULATIVE ECONOMIC IMPACTS

The cumulative impacts of the Project together with other relevant future SSDs on the economic activity of the region and NSW include:

- Generating large demand for a suitably qualified construction workforce in the region and surrounds, which can help address the jobs growth imbalance between Australia's largest cities and regions;
- Providing employment opportunities for the existing and future regional workforces, attracting skilled workers and families to regional areas, reducing outmigration of the regional workforce, and increasing regional labour force participation;
- Potential to increase construction wages, attraction of workers from other relevant sub-sectors and sectors of the economy leading to labour shortages in these other areas of the economy (and associated shortages of goods and services), rising inflation as firms pass wage costs onto consumers; andiRaise costs for construction inputs, such as quarry materials and concrete, and potentially shortages for other uses.

These potential impacts will be more likely and larger as a result of cumulative SSDs across the region and the State, than from an individual development, however, the benefits outweigh the negatives.

6.15.3.10 CUMULATIVE SOCIAL IMPACTS

Wind farms can provide a significant economic boost to local communities, both during the construction and operational phases. The economic benefits provide flow-on social benefits, particularly in the provision of a range of employment opportunities for the region, increased economic tourism, upgrades to local infrastructure and a diversified income stream for rural landowners.

At a broader social level, the development of additional solar and wind farms and BESSs enhance the security and reliability of the electricity system, reduces the community's reliance on energy derived from fossil fuels, supports the community's growing desire for renewable energy sources and reduces greenhouse emissions.

The Project is located in a somewhat isolated cluster of proposed renewable projects to the east of the South West REZ, which is approximately 40 km east of the cluster near Balranald. The key cumulative impacts of concern to stakeholders identified during engagement activities included:

- Cumulative impacts to traffic and roads condition: A number of SSD projects are expected to generate additional vehicle movements within Hay and Deniliquin, particularly during the construction phase. However, these vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network. Further, Cobb Highway has sufficient capacity to meet the transport requirements of these SSDs and the Project;
- Potential cumulative increase in demand for short and long-term accommodation: Dependant on the construction timeframes, the cumulative non-local worker influx required by these SSD projects has the potential to place additional temporary pressure on the short and long-term accommodation within Hay and Deniliquin. The impact of this pressure will have varying degrees of impact upon these towns, including increased demand for community services (e.g., emergency services, recreational facilities, etc.), intensification of accommodation shortages and cost of living pressures, and disruptions to tourist accommodation options that may have subsequent implications for significant festivals and events (refer Table 5-10 of **Appendix T**); and
- Cumulative visual impact to the landscape and surrounding towns: Consideration will need to be given to impacted dwellings, public viewpoints, and how visual impacts can be appropriately managed. During stakeholder engagement there was concern about the cumulative visual impact to the landscape, as well as the cumulative visual impact of infrastructures that will be seen around the town due to the development of the REZ. As such, the Hay Structure Plan has been developed and prepared for the Hay Shire Council to investigate largely unconstrained land that may be developed in the future as predicted by the REZ. The Hay Structure Plan includes the preparation of relevant technical investigations where required, which may include is undergoing a separate assessment of the cumulative impacts which will cover potential visual impacts of the South West REZ.

The potential cumulative impacts associated with the Project of concern to stakeholders during engagement will be manageable through the Applicant's commitment to the development and implementation of strategies informed by the EIS, which include a WAMP, TMP, LEP, visual amenity mitigation measures as informed by the LVIA and a grievance mechanism.

6.16 MITIGATION AND MANAGEMENT SUMMARY

Appendix B provides a consolidated summary of all the Project's environmental management and monitoring measures, identifying all the commitments in the EIS. These measures will also minimise cumulative impacts. No specific mitigation measures to minimise cumulative impacts were identified.

7. PROJECT JUSTIFICATION

This section outlines a broad justification and evaluation of the Project with reference to its environmental, economic, and social impacts, and the principles of ecologically sustainable development. It evaluates how the relevant strategic factors and statutory requirements are satisfied. This section includes a review on how the community views about the Project have been addressed and how the uncertainties associated with the Project could be managed.

7.1 PROJECT DESIGN EVOLUTION

During the preparation of the EIS, the Project has been subject to an ongoing iterative design and siting process with the objective of developing an efficient Project that avoids and minimises environmental and social impacts. The final Project layout for which approval is sought has considered identified environmental risks and comments made in the comprehensive stakeholder engagement process.

A range of alternative Project designs were considered to avoid potential environmental impacts, as detailed in **Section 2.7.4**. The current layout of the Project Area and Development Footprint are a result of avoidance of identified impacts, including areas of high biodiversity value containing remnant woodland vegetation present across the broader PREP project boundary, TECs and Important Mapped Areas for the Plains-wanderer, Aboriginal sites including PADs and hearths, and higher flood impacted areas (based on a 1/100-year local catchment flood model) (refer **Section 2.7**).

In those instances where the potential for impacts could not be avoided, design principles were sought to minimise environmental impacts and/ or implement mitigation measures to manage the extent and severity of any residual impacts. The proposed mitigation and management measures that will be implemented for each environmental aspect assessed in this EIS are summarised in **Appendix B**.

Refinement of the Project since the scoping phase (refer The Plains Wind Farm Scoping Report (ERM, 2022) is shown in **Figure 2-5** and has included:

- A reduction of the Project Area from 58,786 ha to 53,894 ha, largely to avoid impacts to biodiversity values, including minimising impacts to Important Mapped Areas for the Plains-wanderer, using existing access tracks to reduce habitat clearing, largely avoiding areas of remnant woodland and TECs, and avoiding identified Little Eagle nest and remaining mapped resident raptor nests;
- A reduction in the Development Footprint from 2,959.7 ha (including reduction of WTGs from 240 to 188) to 1,996.9 ha, largely through the design changes mentioned above, but also through optimisation of the Project layout and improvement of the electrical reticulation design through considered use of overhead transmissions lines and collector substations;
- Previously disturbed land cleared or modified for agricultural purposes was preferable for sitting of Project elements as much as possible;
- Minimal vegetation clearing particularly within areas of high biodiversity value and native vegetation. Areas containing high and medium value vegetation, woodland areas and areas

of threatened ecological communities (TECs) were strategically avoided from the conception of the Project. As biodiversity surveys progressed, biodiversity values of the Project Area were determined, which assisted with further refinements of Project elements to minimise disturbance;

- Avoidance and protection of Aboriginal and historic heritage sites were considered through the identification and evaluation of heritage values present in the Project Area;
- Protection of agricultural activities by maintaining most of the Project Area available for ongoing grazing in parallel with wind energy generation. The iterative layout and design process for the Project has considered and addressed landowners feedback on land use and agricultural values. ENGIE's design objective was to maintain the existing agricultural activities, as far as practicable, with negotiated leases to offset forgone landowner income while providing diversified income stream for the duration of the Project;
- Minimal direct and indirect impacts on nearby landowners by designing Project elements to be located away from nearby dwellings and nearby properties, where possible; and
- Adoption of a flexible approach to layout and design to progressively responded to identified environmental and social aspects identified during preparation of this EIS.

During further detailed design and prior to construction, it is expected that the placement of infrastructure and extent of construction activities will be further refined to provide additional avoidance and minimisation of environmental impacts.

7.2 CONSISTENCY WITH STRATEGIC CONTEXT

Section 2.2 and **Section 2.3** presents an overview of the key regulatory commitments and strategic goals, as well as local and regional plans relevant to the Project. The Project is consistent with key regulation as it will:

- Provide an additional renewable energy generation source that will assist Australia in its transition from traditional fossil fuel energy production, which is linked to atmospheric pollution, water pollution, land pollution and human health impacts;
- Reduce net GHG emissions through replacement of traditional GHG emissions-intensive energy sources with renewable energy, which will assist to slow the effects of climate change, benefitting current and future generations in line with the principles of ecologically sustainable development;aImprove security and reliability of the electricity system in the NEM, by providing additional energy generation of approximately 1,350 MW and, providing increased reliability of energy supply at peak times;
- Contribute to the continued growth of renewable energy generation and storage capacity in the South West REZ and NSW;
- Generate employment, leading to local economic stimulus, including provision of approximately 700 FTE jobs during construction and up to 40 FTE onsite and offsite jobs during operations;
- Generate economic stimulus to the regional and NSW economy of:
    - During construction: Up to $328 million in direct and indirect wages to the regional economy and up to $599 million to NSW economy;

  - During operations: Up to $373 million in direct and indirect wages to the regional economy and up to $421 million to NSW economy;
- Provide ongoing benefit-sharing with the community through the CEF (VPA), proposed to be implemented for the life of the Project to provide continuing value to the Hay and regional community, by supporting local and meaningful community development or neig nProvide a diversified income stream for landowners (hosting Project infrastructure) through payments to host landowners and to neighbours within 10 km of the Project Area through the NBSP. The income provided can assist rural landowners make farms more resilient to the impacts of droughts, fires and commodity price fluctuations; and
- Ensure mitigation measures will be applied to avoid or minimise impacts.

7.3 COMPLIANCE WITH RELEVANT STATUTORY REQUIREMENTS

As discussed in **Section 2.2** of this EIS, the Project will support the Australian and State governments strategies, plans and polices to achieve their respective renewable energy and greenhouse gas emission reduction targets. Importantly, the Project will contribute to the continued growth of renewable energy generation and storage capacity in the South West REZ.

The Project is also consistent with several regional community goals, including those in the Hay CSP, Hay Structure Plan, Hay Shire Council's Sustainability Strategy, Workforce Management Plan, and Delivery Program as described in **Section 2.3**.

The permissibility of the Project has been described in **Section 4.2**, and the compliance of the Project with other approvals, as well as mandatory matters for consideration are outlined in **Sections 4.3** to **4.5**, **Section 6** and **Appendix C**. An assessment of the consistency of the Project with the objects of the EP&A Act pursuant to Section 1.3 is provided in **Appendix C.**

Through the adoption of management and mitigation measures described throughout **Section 6** and compiled in **Appendix B**, and appropriate design and site selection the Project complies with statutory requirements.

7.4 CONSISTENCY WITH COMMUNITY VIEWS

Engagement encompassed a range of stakeholders including NSW and Australian Government agencies, the nearby community and community groups, Aboriginal groups, proximate landowners and infrastructure owners (refer **Section 5**).

A significant number of engagement activities were conducted throughout the development of the EIS and scoping phase to discuss the Project with the community and to build an understanding of potential concerns, opportunities and mitigation strategies. These included community drop-in sessions, one-on-one meetings, phone and email interactions, community events, community survey, Project's website, newsletters, flyers, letters, factsheets, briefings, media releases, social media and site visits (refer **Section 5**).

Feedback from the community included both positive and negative views on a range of aspects of the Project. Overall, the Project is supported by a significant number of local community members in Hay and Edward River LGAs, who have recognised the benefits of the Project as a

source of employment opportunities, long-term support to community groups, events, and service providers and generation of clean energy.

During engagement activities, key issues raised included impacts of the Project on visual amenity, noise, biodiversity particularly fauna, traffic management during the construction phase, land use, and rehabilitation of the land at the end of the lifetime of the Project. The Applicant will continue to work with the community to address such issues (refer **Section 6**).

7.5 SCALE AND NATURE OF IMPACTS

The Project will primarily be developed on land which has been modified following a long history of clearing and grazing, with only isolated remnant patches of treed habitat identified. The Project layout has been designed to maximise the use of existing disturbed areas and to avoid and/or minimise impacts to identified biodiversity values, Aboriginal sites and surrounding receivers. Progressive design iterations for the wind farm and associated infrastructure have continued throughout the development of this EIS with key drivers being measures to avoid and minimise environmental and social impacts in line with the Avoid-Minimise-Mitigate-Offset design hierarchy.

7.5.1 ENVIRONMENTAL IMPACTS

This EIS and the accompanying relevant technical assessments have assessed the potential impacts of the Project to various environmental aspects, as summarised in **Table 7-1**.

As outlined in **Section 6**, the potential environmental impacts associated with the Project can be appropriately managed through the implementation of appropriate management, mitigation, and monitoring measures. These are compiled in **Appendix B**.

TABLE 7-1 ENVIRONMENTAL IMPACTS SUMMARY

Aspects	***Environmental Impacts***
Biodiversity	The Project layout and Development Footprint have been refined to avoid and minimise impacts to biodiversity to the greatest extent feasible. As identified in the BDAR (Appendix G) the Project will result in direct impact on native vegetation and the habitat of known and assumed Candidate threatened species as follows: • Plains-wanderer (Pedionomus torquatus) – 0.5.35 ha; • A Spear-grass (Austrostipa wakoolica) – 87.78 ha; • Winged Pepper-cress (Lepidium monoplocoides) – 367.42 ha; • Chariot Wheels (Maireana cheelii) – 1,036.75 ha; • Mossgiel Daisy (Brachyscome papillosa) – 1,376.57 ha; • A burr-daisy (Calotis moorei) – 46.29 ha; • Small Scurf-pea (Cullen parvum) – 72.81 ha; • Slender Darling Pea (Swainsona murrayana) – 1,331.03 ha; • Creeping Darling Pea (Swainsona viridis) – 0.53 ha. Three (3) of the above species; Plains-wanderer, A Burr-daisy, and Creeping Darling Pea, were assessed as SAII. The BDAR concluded that the Project would not contribute to an increase in decline of the species and the species would likely respond to management proposed. To compensate for unavoidable disturbance of native vegetation and species habitat, offsets are proposed.

Aspects		*Environmental Impacts*
Noise		During operations, the NIA predicted that the noise emissions from the Project will not exceed the PNTLs at any noise sensitive receiver. The NIA identified four stages for construction and one for decommissioning as part of the Project. The noise impact from each of these stages was assessed against the ICNG. The NIA has found no impact to noise sensitive receivers. Further, based on the low noise levels predicted for the Project, it is not considered that cumulative noise impact of the Project and nearby SSDs will result in any adverse noise impacts.
Visual		The LVIA identified three (3) non-associated dwellings within 3,500 m as having the potential for 'medium' visual impact, two (2) non-associated dwellings within 3,500 - 5,300 m with potential for 'low' visual impact, and three (3) non-associated dwellings within 5,300 – 8,000 m of a WTG with potential for 'low' visual impact. A total of 15 public viewpoints were identified at varying distances surrounding the Project Area. Photomontages were prepared for these viewpoints, which identified three (3) public viewpoints as having the potential for 'medium' visual impact, and the remaining 12 as 'low' visual impact. Additionally, a total of 28 lots with dwelling entitlements identified within 5 km have potential for views to the majority of the Project based on the topography alone. There is a potential cumulative visual impact of the project with other nearby SSDs, including Plains Solar Farm, Pottinger Solar Farm and Wind Farm, and Bullawah Wind Farm. This is due to the existing topographic character of the region and scale of these SSDs, and scale of the turbines.
Traffic		Four (4) site access points via Cobb Highway and West Burrabogie Road have been designed to allow access to the Project Area. BAR and BAL treatments will be applied to all four (4) access points to allow vehicles to safely enter and exit the road network. Overall, the road network can accommodate the traffic, loads and type of vehicle movements generated by the Project during construction and operation, and in consideration of the cumulative traffic movements generated by other major projects. Therefore, no impact from the Project on the road network is expected.
Hazards and Risks	Aviation	The Aviation Impact Assessment determined the Project is predicted to have an impact on the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) of Hay Airport and six (6) air routes within 7 nm surrounding the Project Area, for which mitigation measure have been developed as detailed in **Section 6.6.1.3**. A procedure will be developed in consultation with relevant aerial agricultural and firefighting operators which shall detail operational management to reduce impacts. The Project will maintain an acceptable level of safety to aircraft. Therefore, no obstacle lighting is required.
	Bushfire	Although the Project is not located within a bushfire prone landscape and there is a minimal risk of wind farms to cause a fire, fires within grasslands and arid shrublands should not be underestimated and can start and spread quickly. For this reason, it has been considered as a bushfire hazard.

Aspects		***Environmental Impacts***
	Blade Throw	The likelihood of a blade throw event occurring a very small, and also the likelihood of it being a significant distance very small. For a full blade throw under normal operating conditions of 70 m/s blade tip speed, the maximum distance is less than 200 m. Given the distance of WTGs from non-associated dwellings and infrastructure, the likelihood of damage to human life or property from a blade throw incident is extremely small. It is acknowledged that in the unlikely event of a blade throw, the consequence could be significant (e.g., damage to human life or property).
	Preliminary Hazards	The qualitative review of the potential incidents of the Project indicates that there are no hazardous risks associated with the Project.
	Telecomm-unications	The Telco Assessment raised the potential for WTGs at the Project to cause interference to one point-to-point links crossing the Project Area; however the WTGs pose a negligible risk to the link owner. Notwithstanding, the link owner NSW Government Telecommunications Authority has been informed of the Project.
	Health and EMF	The Electromagnetic Field (EMF) and Human Health Assessment determined that the magnetic fields emitted by the proposed electrical power infrastructure of the Project is estimated to be, in the worst-case scenarios, two to ten times lower than the safe upper limit for general public exposure. To meet electric field strength exposure requirements under the INCIRP guidelines, the 330 kV transmission line conductors would be installed more than 12 m above the ground in areas where the general public could walk directly below the transmission lines.
Aboriginal Cultural Heritage		Avoidance of Aboriginal cultural heritage values have been considered in the Project refinement process. The AHIMS search identified a total of 134 valid sites within the Project Area, and seven (7) additional sites recorded within the eastern portion that have been destroyed or partly destroyed. The survey programs undertaken in April 2023 and August 2023 as part of the ACHAR (**Appendix H**) identified 93 new sites which have been registered on AHIMS. Based on the Development Footprint, potential harm to 36 of these Aboriginal sites was identified.
Historic Heritage		There are no items listed on the National and Commonwealth Heritage Listing, State Heritage Register, Hay LEP and/or Section 170 Heritage Register within 5 km of the Project Area. No new historic heritage sites or values were identified within the Project Area during surveys and therefore the Project will not impact any historic heritage sites.
Soils and Agriculture		Agricultural activities will be maintained within the Project Area (as much as possible) for the duration of the construction and operational phases of the Project. The AIA identified the potential loss of gross grazing income is approximately $534,794 over the estimated 36-month construction period and during operations it is approximately $116,122 per annum considering full grazing. Given the small fraction it represents of the total agricultural land in the Hay Shire LGA, the impacts of the Project at a regional scale would be minimal. Additionally, the cumulative impact on agriculture for the region is considered low, as the changes to agricultural land use and

Aspects	*Environmental Impacts*
	agricultural productivity are anticipated to be minor from the Project and each SSD.
Water Resources, Hydrology and Flooding	Key impacts on water resources from the Project are related to the increased risk of erosion and sedimentation as a result of construction activities and the disturbance to the Project Area. The flooding assessment determined that the greatest potential construction related flood risk is associated with the construction of WTG hardstands and the erection of the internal transmission line towers which are located within the inbank area of Abercrombie and Curtains Creeks, and access tracks proposed to be built across waterways. During operations, the impact are limited to the impact that floodwater would have on transmission towers. Nevertheless, as the Project does not propose to alter the landform of the floodplain, there would be no measurable changes in flood levels or flood behaviour as a result of the Project construction and operation.
Air Quality	The impacts of the Project on air quality are concentrated during the construction activities, such as earthworks, land clearing, and movement of vehicles along unpaved roads. Overall, the Project will provide benefit impacts as it will improve air quality through the displacement of emissions that would otherwise be generated through the burning of fossil fuels used to generate electricity from traditional coal fired power stations.
Waste	Waste generated during construction, operation and decommissioning of the Project can be minimised in accordance with statutory requirements. A WMP will describe the measures to be implemented to manage, reuse, recycle and safely dispose of waste.

7.5.2 ECONOMIC IMPACTS

The Project is justified economically due to the economic stimulus and benefits it will provide to the region, which includes the LGAs of Hay, Balranald, Edward River, Murrumbidgee, and Griffith and, more broadly, NSW.

During construction (approx. 40-months), the Project will generate around 700 FTE jobs during peak construction and the impact on the regional economy is estimated at up to:

- $200M in direct output and $128M in indirect output.
- $80M in direct value added and $40M in indirect value-added.
- $42M in direct household income and$18M in indirect household income.
- 550 direct jobs and 298 indirect jobs.

The annual construction impacts of the Project on the NSW economy are estimated at up to:

- $200M in direct output and $399M in indirect output.
- $80M in direct value added and $176M in indirect value-added.
- $59M in direct household income and $105M in indirect household income.
- 550 direct jobs and 1,177 indirect jobs.

The Project will create demand for regional labour resources and regional inputs to production. No significant impacts of the Project on wages or price increases are anticipated.

During operations, the Project will create a total annual contribution to the regional economy of:

- $354M in direct output and $20M in indirect output.
- $324M in direct value added and $9M in indirect value-added.
- $2M in direct household income and $3M in indirect household income.
- 40 direct jobs and 41 indirect jobs.

The Project operation is estimated to make up to the following total annual contribution to the NSW economy:

- $354M in direct output and $67M in indirect output.
- $324M in direct value added and $35M in indirect value-added.
- $3M in direct household income and $18M in indirect household income.
- 40 direct jobs and 186 indirect jobs.

Demand for regional labour resources and regional inputs to production will be created in smaller rates during operations. Consequently, the Project will not impact wage or price increases or production shortages.

The Project would require inputs during its construction and operations for maintenance activities, and products and services required by the Project's workforce. Businesses that can provide the inputs would directly benefit from the Project by way of an increased economic activity. However, because of the inter-linkages between sectors, many indirect businesses will also economically benefit from the Project.

The employment and economic opportunities created by the Project have been supported by the community during engagement and consultation activities (refer **Section 5**).

The potential cumulative impacts of the Project and nearby SSDs on the economy activity are generally positive. These are associated with the demand for construction workforce, as described in **Section 6.15.3.9**.

7.5.3 SOCIAL IMPACTS

The Project will provide a diversified income stream for rural landowners through lease payments to host and neighbouring landowners. The income provided to landowners hosting Project's infrastructure or landowners that may be impacted by the Project can help make farms more resilient to the impacts of droughts, fires and commodity price fluctuations.

A CEF is proposed by the Applicant wherein eligible community initiatives could be funded through annual contributions to the fund. The Applicant has been undertaken ongoing consultation with Hay Shire Council since 2022 regarding the CEF to fulfil the requirements of a VPA, and formally planning to submit its proposal to Hay Shire Council in Q2 2024. Funds will be awarded to local projects and programs that are successful in the applications/proposal

process (refer to **Section 2.6**). ENGIE and Hay Shire Council are still in negotiations on the VPA.

While the Project has the potential to generate environmental impacts, it is considered that these can be appropriately managed with the implementation of the mitigation and management measures, as summarised in **Appendix B**. These measures will also address the community concerns and associated social impacts identified during the stakeholder engagement process (refer **Section 5**).

Further, during construction, the Applicant will work with contractors, local communities, neighbours and local council, to plan and manage construction to minimise disturbance. Construction management will include:

- Regular and ongoing communication with the community;
- Working during standard construction hours, or as defined in **Section 3.4.2**;
- Implementation of traffic safety measures and a CTMP to ensure safety to other road users;
- Accommodation arrangement for the construction workforce;
- A rigorous safety culture; and
- Environmental monitoring.

Given the net benefit and commitment from the Applicant to appropriately manage the potential environmental impacts associated with the Project, it is considered the Project would result in a net benefit to the Hay locality, Riverina Murray Region and broader NSW community.

7.6 COMPLIANCE AND MONITORING

An EMS will be developed to provide the overall framework for environmental management during the construction, operation, decommissioning and rehabilitation of the Project to ensure that appropriate measures and processes are in place to manage identified environmental risks and provide for ongoing continual improvement. The EMS will incorporate mitigation measures that have been identified throughout this EIS and associated technical assessments and will include relevant management plans.

Appendix B provides a summary of the environmental management commitments of the Project which will be implemented to avoid, minimise and where necessary, offset the potential environmental impacts associated with the Project.

Prior to the commencement of construction, detailed design and layout plans will be finalised and submitted to DPHI. Environmental mitigation and management measures outlined in the EMS and the associated environmental management plans will be prepared and submitted as required by the conditions of development consent.

7.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

7.7.1 THE PRECAUTIONARY PRINCIPLE

The environmental impacts of the Project have been carefully evaluated in this EIS and where practicable have been avoided, mitigated, managed or offset. Various options have been considered for the WTGs, ancillary infrastructure and the transmission lines corridor having regard to environmental risks. Ultimately, options with lower environmental impacts and risks have been selected to avoid and minimise potential biodiversity and heritage impacts.

The site suitability and Project alternatives selection process, as detailed in **Section 2.7** of this EIS, have thoroughly considered and sought to minimise the likely impacts to the local environment. Where uncertainty exists, measures have been suggested to address the uncertainty.

Management measures have been proposed for all significant environmental impacts. As such, is no threat of serious or irreversible damage to the environment.

7.7.2 INTER-GENERATIONAL EQUITY

The 'State of the Climate' (BoM & CSIRO, 2022) draws on the latest monitoring, science and projection information to describe variability and changes in Australia's climate. The following statement on climate change is highlighted in the report:

> "Observations, reconstructions of past climate and climate modelling continue to provide a consistent picture of ongoing, long-term climate change interacting with underlying natural variability. Associated changes in weather and climate extremes—such as extreme heat, heavy rainfall and coastal inundation, fire weather and drought—have a large impact on the health and wellbeing of our communities and ecosystems."

At the local context, the 'The Community and Settlement Sustainability Strategy – Hay LGA' (Hay Shire Council, 2012) has made the following statement about climate change:

> "There is a significant focus on biodiversity and water conservation particularly in view of the predicted impacts associated with climate change and the need to plan for the sustainability of national resources."

Additionally, the Sustainability Strategy recognises that:

> "… for Hay LGA to be sustainable in the future, planning strategies and corporate governance needs a balanced investment in economic prosperity, ecological integrity and community capacity. This will build community resilience, mitigate risk and promote future community sustainability."

The Project is consistent with the principles of inter-generational equity as it involves a new renewable energy resource which will abate an estimated 3.6 million CO_2^{e-} of GHG annually, which is an action against climate change that will benefit future generations.

The coexistence of wind turbines and agriculture offers promising economic benefits, as the Project will support existing regional and rural communities and industries by maintaining and

promoting agricultural diversity that builds resilience in their economies and helps rural communities thrive. In addition to that, its coexistence also provides the potential for climate-change resilience by creating a more favourable groundcover growing environment and curbing some of those extreme climate conditions (e.g., drought). Further, the additional income provided to landowners through the host landowner agreement and NBSP will help farm become more resilient to the impacts of climate change.

Following decommissioning, the Project Area will be rehabilitated and made suitable for continued agricultural activities, or renewable energy generation, both of which would provide benefits for future generations.

7.7.3 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

Conservation of biodiversity has been a fundamental consideration throughout Project development. Extensive desktop and field assessment has been undertaken to understand the anticipated biodiversity impacts. The findings of the biodiversity assessment have informed an ongoing iterative design for the layout of the Project and siting of solar panels and other key infrastructure.

Impacts to biodiversity will be avoided, mitigated and offset where necessary to ensure that there is no net loss in biological diversity and that ecological integrity is maintained (refer **Section 6.2**).

7.7.4 IMPROVED VALUATION, PRICING AND INCENTIVE MECHANISMS

The Project enables the utilisation of a valuable resource, wind energy, which is otherwise lost if the Project does not proceed. The Project further contributes to the transition from fossil fuel generation sources. The Project will reduce air, water and land pollution from coal-fired power stations, which currently bear none of the external costs of such pollution.

The environmental consequences of the Project and mitigation measures with potential for adverse impacts have been considered and identified in this EIS (refer **Section 6**). Implementing the mitigation measures will impose an economic cost on the Applicant, which increases the costs of the Project.

Project benefits are considered to outweigh the costs. The Project will generate up to 700 FTE jobs during peak construction and up to 40 FTE onsite and offsite jobs during operations and will provide economic benefits to the local community. It will also provide tangible and durable financial benefits to the community through the NBSP, CEF and VPA.

7.8 CONCLUSION

The Project involves the construction, operation and where relevant decommissioning of a 188 WTG wind farm with a capacity of up to 1,350 MW and associated infrastructure. The Project will contribute significantly to reducing carbon emissions and human induced climate change as part of the necessary and ongoing clean energy transition from fossil fuels.

The Project has been carefully designed and sited to minimise environmental impacts in consultation with the local community and relevant stakeholders. The residual environmental

and social impacts identified throughout the EIS and technical assessments will be managed through the mitigation and management measures summarised in **Section 6** and **Appendix B**.

The Project will not result in significant impacts on the environment, or the local community and these impacts will be significantly outweighed by the strong strategic and economic benefits which the Project will deliver. The Project will:

- Assist the Federal and NSW Governments to fulfil their targets and policies to increase renewable energy supply and reduce carbon emissions;
- Assist in meeting energy demand as part of the market transition from traditional energy sources; and
- Deliver economic benefits to regional and local communities.

The Project represents a positive addition to the local and wider NSW economy and the NEM. Through the implementation of proposed mitigation and management measures, it is considered that this Project is consistent with the objects of the EP&A Act and is in the public interest.

8. ABBREVIATIONS AND TERMINOLOGIES

Name	***Description***
Terminologies	
Applicant	Engie Australia Pty Ltd (ENGIE)
Application	Application for Development Consent under Part 4, Division 4.7 of EP&A Act and Sections 18 and 18A of EPBC Act.
Assessment Area	Ecology only – as Guidelines require some specific terms. Includes all land within a 1,500 m buffer of the Project Area, as appropriate for non-linear developments under the BAM, for which landscape features such as native vegetation cover, bioregions, waterways and other features are described.
Associated	Affected residence where an agreement is in place between an applicant and a landholder/s, as per Large-Scale Solar Energy Guideline (DPE, 2022a).
Disturbance Footprint	The area of land that is directly impacted by the Project including: all temporary and permanent disturbance areas; and all areas where vegetation may be removed during project construction and operations (as utilised in the BDAR).
Host Landholder	Landholder where physical project elements are to be located on their land.
Permanent Disturbance	The area of land that will be subject to permanent alteration as a result of construction and operation of the Project's infrastructure until decommissioning.
Project	The development to which the Application applies generally as described in Section 1.3 of the EIS.
Project Area	Red boundary to which the Application applies as shown in Figure 1-2.
Proposed Action	Upgrade works that is required along the transport route.
Proposed Area	Area along the transport route where upgrades will occur.
Study Area	The area which applies to specific technical studies and includes Disturbance Footprint (within which all Project disturbance will occur unless otherwise stipulated in the Project Description).
Subject Land	Ecology only – as Guidelines require some specific terms. The Subject land is the area in which Stage 1 of the BAM has been applied to assess the biodiversity values of the land where direct and indirect impacts may occur.
Temporary Disturbance	The area of land that will be temporarily disturbed during construction of the Project, and later rehabilitated.
Transport Route DF	The disturbance area associated with required road upgrades for the delivery of WTG components
Applicant	Engie Australia Pty Ltd
Application	Application for Development Consent under Part 4, Division 4.7 of EP&A Act and Sections 18 and 18A of EPBC Act.
Acts	
ALR Act	New South Wales Aboriginal Land Rights Act 1983

Name	***Description***
BC Act	Biodiversity Conservation Act 2016
CrLM Act	Crown Land Management Act 2016
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FM Act	Fisheries Management Act 1994
NP&W Act	National Parks and Wildlife Act 1974
NT Act	Native Title Act 1993
POEO Act	Protection of the Environment Operations Act 1997
Roads Act	Roads Act 1993
WARR Act	Waste Avoidance and Resource Recovery Act 2001
WM Act	Water Management Act 2000
Management Plans	
ACHMP	Aboriginal Cultural Heritage Management Plan
BBAMP	Bird and Bat Adaptive Management Plan
BFRMP	Bush Fire Risk Management Plan
CEMP	Construction Environmental Management Plan
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan
EMOP	Emergency Management and Operations Plan
ESCP	Erosion and Sediment Control Plan
LEMP	Local Employment Plan
OEMP	Operational Environmental Management Plan
SEP	Stakeholder Engagement Plan
SWMP	Soil and Water Management Plan
WAMP	Workforce Accommodation Management Plan
WMP	Waste Management Plan
Guidelines, Manuals and Policies	
Applying SEPP 33	Hazardous and Offensive Development Application Guidelines: Applying SEPP 33
ARR	Australian Rainfall and Runoff: A guide to flood estimation
ARRB Guide	Australian Road Research Board Best Practice Guide for Unsealed Roads 2
Austroads Guide	Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections

Name	Description
AVTG	Assessing Vibration: A Technical Guideline
BAM 2020	Biodiversity Assessment Method 2020
BAM-C	BAM Caculator
BPESC	Best Practice Erosion and Sediment Control
Burra Charter	The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance
CASR	Civil Aviation Safety Regulations 1998
CIA Guidelines	Cumulative Impact Assessment Guidelines for State Significant Projects 2021
Consultation Requirements	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010
Draft National Guidelines	Draft National Wind Farm Development Guideline 2023
Engagement Guidelines	Undertaking Engagement Guidelines for State Significant Projects 2022
FRMM	Flood Risk Management Manual
ICNG	Interim Construction Noise Guidelines
ICNIRP	International Commission on Non-Ionizing Radiation Projection Guidelines 2010
ISO 9613-2:1996	Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation
LUCRA Guide	Land Use Conflict Risk Assessment Guide
MOS 173	Manual Standards 173 Standards Applicable to Instrument Flight Procedure Design
Noise Bulletin	Wind Energy: Noise Assessment Bulletin (2016)
NPI	Noise Policy for Industry (2017)
PBP 2019	Planning for Bushfire Protection 2019
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RNP	Road Noise Policy 2011
Roadmap	NSW Electricity Infrastructure Roadmap
SIA Guideline	Social Impact Assessment Guideline for State Significant Projects 2023
SIA Technical Supplement	Technical Supplement: Social Impact Assessment Guideline for State Significant Projects 2023
SRLUP	Strategic Regional Land Use Policy 2011
T&I SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021

Name	***Description***
The Blue Book	Managing Urban Stormwater: Soils and Construction- Volume 1 (Landcom, 2004)
Visual Bulletin	Wind Energy: Visual Bulletin
WARR Strategy	NSW EPA Waste Avoidance and Resource Recovery Strategy 2014-2021
WHS Regulation	Work Health and Safety Regulation 2017
Abbreviations	
<	less than
>	more than
°C	Celsius degrees
AAAA	Aerial Application Association of Australia
AADT	Annual Average Daily Traffic
ABGK	Above Ground Level
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACMA	Australia Communication and Media Authority
AD	Associated Development
AEMO	Australian Energy Market Operator's
AEP	Annual Exceedance Probability
AFAC	Australasian Fire Authorities Council
AGL	Above Ground Level
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AIA	Agricultural Impact Assessment
ALA	Aircraft Landing Area
ALARP	as low as reasonably practicable
AM	Amplitude Modulation
AMSL	Above Mean Sea Level
ANZSIC	Australian and New Zealand Industry Classification
APZ	Asset Protection Zone
AQI	Air Quality Index
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency

Name	Description
AS	Australian Standard
ASC	Australian Soil Classification
AV	Articulated Vehicle
AVIA	Aviation Impact Assessment
BAL	Basic Left Turn
BAM	Biodiversity Assessment Method
BAM Plots	Vegetation Integrity Plots
BAR	Basic Right Turn
BCS	Biodiversity and Conservation Division
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BFMC	Bushfire Management Committee
BOM	Bureau of Meteorology
BOS	NSW Biodiversity Offset Scheme
BSAL	Biophysical Strategic Agricultural Land
BUS	Bird Utilisation Surveys
CASA	Civil Aviation Safety Authority
CCC	Community Consultative Committee
CDEGS	Current Distribution Electromagnetic Fields, Ground and Soil Structure Analysis
CEC	Clean Energy Council
CEF	Community Enhancement Fund
CIA	Cumulative Impact Assessment
CO2	carbon dioxide
COP28	UNFCCC Conference of Parties 28
CPI	Consumer Price Index
CRM	Collision Risk Modelling
DAB	Digital Radio
DAD	Development Application Dwelling
dB	Decibel
dB(A)	A-weighted Decibels
dB(C)	C-weighted Decibels

Name	Description
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plan
DGs	Dangerous Goods
DGV	Default Guideline Values
DIDO	Drive-in drive-out
DP	Deposited Plan
DPE	Department of Planning and Environment (formerly Department of Planning, Industry and Environment, DPIE)
DPHI	Department of Housing and Infrastructure (previously Department of Planning and Environment (DPE))
DSE	Dry Sheep Equivalent
DTV	Digital Television
EDC	Estimated Development Cost
EEC	Endagered Ecological Community
EIS	Environmental Impact Statement
EL	Exploration Licence
ELF	Extremely Low Frequency
EMF	Electro-magnetic Field
EMS	Environmental Management Strategy
EPA	Environmental Protection Agency
EPC	Engineering, procurement and construction
EPI	Environmental Planning Instrument
EPL	Environmental Protection Licence
ERM	Environmental Resources Management Australia Pty Ltd
ESD	Ecologically Sustainable Development
ESS	Energy Storage System
FAQs	Frequently Asked Questions
FBI	Fire Behavious Index
FIFO	fly-in fly-out
FM	Frequency Modulation
FPL	Flood Planning Level
FRNSW	Fire and Rescue NSW
FTE	Full Time Equivalent

Name	Description
GDE	Groundwater Dependent Ecosystems
GHG	Greenhouse Gas
GNSS	Global Navigation Satellite Systems
GRP	Gross Regional Product
GW	Gigawatt
GWh	Gigawatt hours
ha	Hectares
HAWP	Hay Aboriginal Working Party
Hay CSP	Hay Shire Council Community Strategic Plan 2022-2032
Hay LALC	Hay Local Aboriginal Land Council
Hay LEP	Hay Local Environmental Plan 2011
Hay Sustainability Strategy	The Community and Settlement Sustainability Strategy – Hay LGA
HBESS	Hazelwood Battery Energy Storage System
HRV	Heavy Rigid Trucks
Hub	Community Information Hub
Hz	Hertz
IAP2	International Association for Public Participation 2
IBRA	Interim Biogeographic Regionalism for Australia
ICNG	Interim Construction Noise Guidelines
IEC	International Electrotechnical Commission
IFR	Instrument Flight Rules
IO	Input-output
ISO	International Organisation for Standardisation
ISP	Draft 2024 Integrated System Plan
kg	kilograms
kL	kilolitres
km	Kilometre
km/hr	kilometres per hour
km2	square kilometres
kV	Kilovolt
L	litres

Name	Description
LAeq, 10 min	predicted equivalent noise level
LALC	Local Aboriginal Land Council
LCU	Land Categorisation Unit
Leq,15min	level of noise from the source measured over a 15-minute period
LFP	Lithium-Ion phosphate
LGA	Local Government Area
LGCs	Large-scale Generation Certificates
LiPF6	lithium hexafluorophosphate
LLS	Local Land Services
Lmax	the highest sound level measured during a single noise event
LoS	Level of Service
LRET	Large-scale Renewable Energy Target
LSALT	Lowest Safe Altitudes
LSC	Land and Soil Capability
LSC Scheme	Land and Soil Capability Assessment Scheme
LSPS	Hay Local Strategic Planning Statement
LVIA	Landscape Visual Impact Assessment
m	Metres
m/s	metres per second
m3	cubic metres
MEG	Mining, Exploration and Geoscience
mG	Milligauss
ML	megalitre
ML/year	megalitre per year
mm	millimetres
MNES	Matters of National Environmental Significance
MOC	Minimum Obstacle Clearance
MRV	Medium Rigid Trucks
MSA	Minimum Sector Altitude
MW	Megawatt
MWh	Megawatt hour
MWn	Megawatt nominal

Name	Description
NAD	Non-associated Development
NASF	National Airports Safeguarding Framework
NBSP	Neighbour Benefit Sharing Program
NEM	National Electricity Market
NHMRC	National Health and Medical Research Council
NIA	Noise Impact Assessment
nm	Nautical Miles
NML	Noise Management Levels
NNTT	National Native Title Tribunal
NPI	Noise Policy for Industry
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NSW RFS	NSW Rural Fire Service
NTS Corp	Native Title Services Corporation
NVIA	Noise and Vibration Impact Assessment
NVR	Draft Native Vegetation Regulatory Map
O&M	Operations and Maintenance
O&M	Operation and Maintenance
OLS	Obstacle Limitation Surface
OSOM	Oversize and Overmass
PAD	Potential Archaeological Deposits
PANL	Project Amenity Noise Level
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PCT	Plant Community Type
PCU	Power Conditioning Unit
PHA	Preliminary Hazard Analysis
PINL	Project Intrusiveness Noise Level
PMF	Probable Maximum Flood
PNTL	Project Noise Trigger Level
PP	Pinch Point
PREP	Plains Renewable Energy Project
RAMJO	Riverina & Murray Joint Organization

Name	Description
RAP	Registered Aboriginal Party
RAV	Restricted Access Vehicles
RBL	Rating Background Level
REAP	NSW Renewable Energy Action Plan
Regional Plan	Riverina Murray Regional Plan 2041
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RIV	Riverina IBRA Bioregion
RIV02	Murrrumbidgee IBRA subregion
SA	South Australia
SAII	Serious and Irreversible Impacts
SCADA	Supervisory Control and Data Acquisition
SDG	Sustainable Development Goals
SEARs	Secretary's Environmental Assessment Requirements
SEED	Sharing and Enabling Environmental Data
SEPP	State Environmental Planning Policy
SIA	Social Impact Assessment
SISD	Safe Intersection Sight Distance
SPV	Special Purpose Vehicle
SSAL	State Significant Agricultural Land
SSD	State Significant Development
t	tonnes
t-CO2-e pa	tonnes CO2 equivalent per annum
TEC	Threatened Ecological Communities
Telco Assessment	Telecommunications Impact Assessment
TfNSW	Transport for NSW
TIA	Traffic Impact Assessment
TSR	Travelling Stock Reserve
TUFLOW	Two separate hydraulic model
UCL	Urban Centres and Localities
UNFCCC	United Nations Framework Convention on Climate Change
VFR	Visual Flight Rules

Name	Description
Vic	Victoria
VIZ	Visual Influence Zone
VP	View Point
VPA	Voluntary Planning Agreement
vpd	Vehicles Per Day
vph	Vehicles per hour
VRE	Variable Renewable Energy
VZ	Vegetation Zone
WAL	Water Access Licence
WF	Wind Farm
WQO	Water Quality Objective
WSP	Water Sharing Plans
WTG	Wind Turbine Generator
YDLQ	Deniliquin Airport
YGTH	Griffith Airport
YHAY	Hay Airport
YNBS	North Bundy Station
YRWH	Ravensworth Aerodrome
ZVI	Zone of Visual Influence
t	tonnes
t-CO2-e pa	tonnes CO2 equivalent per annum
TEC	Threatened Ecological Communities
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APPENDIX A REGULATORY REQUIREMENTS AND WHERE ADDRESSED

TABLE A-1 SEARS (SSD - 50629707) AND WHERE ADDRESSED

Issues	***Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)***	***Where Addressed***
General Requirements	The environmental impact statement (EIS) must meet the minimum form and content requirements as prescribed by Part 8, Division 5 of the 'Environmental Planning and Assessment Regulation 2021' (EP&A Regulation) and must have regard to the 'State Significant Development Guidelines' and the 'NSW Wind Energy Framework'.	Entire EIS
	The EIS must include a stand-alone executive summary;	Executive Summary
	A full description of the development, including: • Details of construction, operation and decommissioning, including any proposed staging of the development or refurbishing of turbines over time; • All infrastructure and facilities, such as substations, transmission lines, construction compounds, concrete batching plants, internal access roads, and road upgrades (including any infrastructure that would be required for the development, but the subject of a separate approvals process); • Plans for any buildings;	**Section 3**
	High-quality site plans and maps at an adequate scale with dimensions showing: • The location and dimensions of all project components including coordinates in latitude / longitude and maximum AHD heights of the turbines; • Existing infrastructure, land use, and environmental features in the vicinity of the development, including nearby residences and approved residential developments or subdivisions within 6 km of a proposed turbine, and any other existing, approved or proposed wind farms in the region; • The development corridor that has been assessed, including any allowance for micro-siting of turbines and identification of the key environmental constraints that have been considered in the design of the development; • Consolidated list and GIS data of coordinates of wind turbines, project infrastructure and relevant receivers and distances to potentially impacted receivers; and • Details of the progressive rehabilitation of the site;	**Appendix F**
	A list of any approvals that must be obtained before the development may commence;	**Section 4**, **Appendix B** and **Appendix C**

Issues	*Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)*	*Where Addressed*
	The terms of any proposed voluntary planning agreement with the relevant local council;	**Section 2.6.3**
	An assessment of the likely impacts of the development on the environment, focusing on the specific issues identified below, including: • A description of the existing environment likely to be affected by the development using sufficient baseline data; • An assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), including any cumulative impacts of the site and existing or proposed developments in the region, in accordance with the 'Cumulative Impact Assessment Guideline' (DPIE, 2021), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice and including the 'NSW Wind Energy Guidelines for State Significant Wind Energy Development' (2016); • A description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development, including details of consultation with any affected non-associated landowners in relation to the development of mitigation measures and any negotiated agreements with these landowners), and draft management plans for specific issues as identified below; and • A description of the measures that would be implemented to monitor and report on the environmental performance of the development, including adaptive management strategies and contingency measures to address residual impact;	**Section 6**, **Appendix B** and **Appendix G** to **Appendix T**
	A consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; and	**Appendix B**
	A detailed evaluation of the merits of the project as a whole having regard to: • The requirements in Section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development; • The environmental, economic and social costs and benefits of the development, having regard to the predicted electricity demand in 'NSW and the National Electricity Market', 'NSW's Climate Change Policy Framework, NSW's Net Zero Plan Stage 1: 2020 – 2030' and the greenhouse gas savings of the development; • Feasible alternatives to the development and its key components (including opportunities for shared infrastructure with proposed developments in the region), including the consequences of not carrying out the development; and	**Section 4** and **Appendix B**

Issues	***Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)***	***Where Addressed***
	• The suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses, including rural villages, rural dwellings, subdivisions, land of high scenic value, conservation areas (including National Parks, State Parks and Reserves), state forests, mineral and coal resources, triangulation stations, tourism facilities, existing or proposed wind farms, and the capacity of the existing electricity transmission network to accommodate the development; and	
	• A detailed consideration of the capability of the project to the security and reliability of the electricity system in the 'National Electricity Market', having regard to local system conditions and the Department's guidance on the matter.	**Section 2**
	Capital Investment Value and Employment: • Provide a detailed calculation of the capital investment value (CIV) of the development, prepared by an AIQS Certified Quantity Surveyor or RICS Chartered Quantity Surveyor in accordance with 'Planning Circular PS 21-020: Calculation of Capital Investment Value'. The calculation of the estimated CIV is to be accurate at the date of application and include details of all components and assumptions from which it is derived.	**Appendix E**
	Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided.	**Appendix S**
	THE DEVELOPMENT APPLICATION MUST BE ACCOMPANIED BY: • The consent of the owner/s of the land (as required in Section 23(1) of the EP&A Regulation); and	Provided via major project portal
	• A declaration from a Registered Environmental Assessment Practitioner that the EIS includes the information specified in the Department's Registered Environmental Assessment Practitioner Guidelines.	REAP Declaration
Landscape and Visual	The EIS must address the following specific issues for the wind farm and associated infrastructure: • A detailed assessment of the visual impacts of all components of the project (including turbines, transmission lines, substations, and any other ancillary infrastructure in accordance with the 'NSW Wind Energy: Visual Assessment Bulletin' (DPE, 2016), including detailed consideration of potential visual impacts on local residences (including approved developments, lodged development applications and dwelling entitlements), scenic or significant vistas and road corridors in the public domain.	**Section 6.4** and **Appendix K**
Noise and Vibration	The EIS must include the following: • An assessment of the wind turbine noise in accordance with the 'NSW Wind Energy: Noise Assessment Bulletin' (EPA/DPE, 2016);	**Section 6.3** and **Appendix J**

Issues	*Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)*	*Where Addressed*
	• An assessment of the noise generated by ancillary infrastructure in accordance with the NSW Noise Policy for Industry (EPA, 2017); • An assessment of the construction noise under the 'Interim Construction Noise Guideline' (DECC, 2009) and a draft noise management plan if the assessment shows construction noise is likely to exceed applicable criteria); • An assessment of the traffic noise under the 'NSW Road Noise Policy' (DECCW, 2011); • An assessment of vibration under the 'Assessing Vibration: A Technical Guideline' (DECC, 2006); and • An assessment of the cumulative noise impacts (considering other developments in the area).	
Biodiversity	The EIS must include the following: • An assessment of the biodiversity values and the likely biodiversity impacts of the project, including impacts associated with transport route road upgrades in accordance the *Biodiversity Conservation Act 2016* (NSW), the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR), including a detailed description of the proposed regime for avoiding, minimising, managing and reporting on the biodiversity impacts (including on grasslands) of the development over time, and a strategy to offset any residual impacts of the development in accordance with the BC Act; • An assessment of the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the Fisheries Management Act 1994, and a description of the measures to minimise and rehabilitate impacts, including impacts to the Murrumbidgee River, Abercrombie Creek, Curtains Creek and Telegraph Creek; • An assessment of the impacts of the development on birds and bats, including blade strike, low air pressure zones at the blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity; • A cumulative impact assessment of biodiversity values in the region from nearby developments; and • If an offset is required, include details of the measures proposed to address the offset obligation.	**Section 6.2** and **Appendix G**
Heritage	The EIS must include the following: • An assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the 'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW' (OEH, 2011) and the 'Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW' (DECCW, 2010), including results of archaeological test excavations (if required); • Evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the 'Aboriginal Cultural Heritage Consultation Requirements for Proponents' (DECCW, 2010); and	**Section 6.7**, **Section 6.8** and **Appendix H**

Issues	*Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)*	*Where Addressed*
	• An assessment of the impacts to historic heritage having regard to the 'NSW Heritage Manual'.	
Transport	The EIS must include: • An assessment of the construction, operational and decommissioning traffic impacts of the development on the local and State road network;	**Section 6.5** and **Appendix N**
	• Provide details of the peak and average traffic volumes (including light, heavy and over-mass and over-dimensional vehicles / heavy vehicles requiring escort and construction worker transportation) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel);	
	• An assessment of the potential traffic impacts of the project on road network function including intersection performance, site access arrangements, site access and transport routes, and road safety, including school bus routes and school zones;	
	• An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-mass / over-dimensional transport routes from port) during construction, operation and decommissioning;	
	• An assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land (including existing Travelling Stock Route network) particularly in relation to the capacity and conditions of the roads and use of rail level crossings (and rail safety assessment if required), and impacts to rail underbridges and overbridges;	
	• A cumulative impact assessment of traffic from nearby developments; and	
	• Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from over mass / over dimensional transport routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and / or rail authority.	
	The EIS must include the following:	**Section 6.10**

Issues	***Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)***	***Where Addressed***
Water and Soils	• A site water balance for the development, quantify water demand, identify water sources (surface and groundwater), including any licensing requirements, and determine whether an adequate and secure water supply is available for the development; • An assessment of the likely impacts of the development (including flooding and flood modelling) on surface water and groundwater resources traversing the site and surrounding watercourses (including their Strahler Stream Order), irrigation and drainage channels, wetlands, riparian land, farm dams, groundwater dependent ecosystems and acid sulfate soils, related infrastructure, adjacent licensed water users and basic landholder rights, and measures proposed to monitor, reduce and mitigate these impacts; • Where the project involves works within 40 metres of the high bank of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the DPI 'Guidelines for Controlled Activities on Waterfront Land' (2018) and (if necessary) 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (DPI 2003); and 'Policy & Guidelines for Fish Habitat Conservation & Management' (DPI, 2013); • A description of the measures to minimise surface and groundwater impacts, including how works on erodible soil types would be managed and any contingency requirements to address residual impacts in accordance with the 'Managing Urban Stormwater: Soils and Construction' series of guidelines;	
	An assessment of risks of dust generation and propose mitigation measures designed in accordance with the 'Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales' (DECC, 2005).	**Section 6.11**
Land	The EIS must include the following: • A detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, permissibility, strategic context and existing site constraints;	**Section 2**, **Section 4**, **Section 6.9**, **Section 6.10**, **Section 6.15** and **Appendix L**
	An assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: • A consideration of agricultural land, biosecurity, travelling stock routes, flood prone land, Crown lands, irrigation areas, mining, quarries, mineral or petroleum rights; • A soil survey to determine the soil characteristics and consider the potential for erosion to occur; and • A cumulative impact assessment of other developments.	

Issues	*Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)*	*Where Addressed*
	An assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including • Consideration of the zoning provisions applying to the land, including subdivision (if required); • Completion of a Land Use Conflict Risk Assessment in accordance with the Department of Industry's 'Land Use Conflict Risk Assessment Guide'; and • Assessment of impact on agricultural resources and agricultural production on the site and region.	
Hazards and Risks	The EIS must include an assessment of the following: Aviation Safety: • Assess the impact of the development under the 'National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft'; • Provide associated height and co-ordinates for each turbine assessed; • Assess potential impacts on aviation safety, including cumulative effects of wind farms in the vicinity, potential wake / turbulence issues, the need for aviation hazard lighting and marking, including of wind monitoring • masts, considering, defined air traffic routes, aircraft operating heights, approach / departure procedures, radar interference, communication systems, navigation aids, and use of emergency helicopter access; • Identify aerodromes within 30 km of the turbines and consider the impact to nearby aerodromes and aircraft landing areas; • Address impacts on obstacle limitation surfaces; and • Assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line;	**Section 6.6** and **Appendix G**
	Telecommunications: • Identify possible effects on telecommunications systems, assess impacts and mitigation measures including undertaking a detailed assessment to examine the potential impacts as well as analysis and agreement on the implementation of suitable options to avoid potential disruptions to radio communication services, which may include the installation and maintenance of alternative sites;	**Section 6.6.5** and **Appendix P**
	Health: • Consider and document any health issues having regard to the latest advice of the National Health and Medical Research Council, and identify potential hazards and risks associated with electric and magnetic fields (EMF) and demonstrate the application of the principles of prudent avoidance, including an assessment against the 'International	**Section 6.6.6**

Issues	***Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)***	***Where Addressed***
	• Commission on Non-Ionizing Radiation Protection' (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields';	
	Bushfire: • Identify potential hazards and risks associated with bushfires / use of bushfire prone land, including the risks that a wind farm would cause bush fire and any potential impacts on the aerial fighting of bushfires and demonstrate compliance with 'Planning for Bush Fire Protection 2019'; and	**Section 6.6.2** and **Appendix R**
	Dangerous Goods: • A preliminary risk screening completed in accordance with the 'State Environmental Planning Policy (Resilience and Hazards) 2021' and 'Applying SEPP 33' (DoP, 2011); and • Where required by SEPP (Resilience and Hazards) 2021, provide a Preliminary Hazard Analysis prepared in accordance with 'Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis and Multi-Level Risk Assessment'.	**Section 6.6.4**
	Blade Throw: • Assess blade throw risks including consideration of battery energy storage facilities in nearby proposed developments.	**Section 6.6.3**
Social Impact	The EIS must include an assessment of the social impacts in accordance with 'Social Impact Assessment Guideline' (DPIE, Nov 2021) and consideration of construction workforce accommodation.	**Section 6.14** and **Appendix T**
Economic	The EIS must include an assessment of the economic impacts or benefits of the project for the region and the State as a whole including consideration of any increase in demand for community infrastructure services, and details of how the construction workforce will be managed to minimise local impacts, including a consideration of the construction workforce accommodation; and	**Section 6.13** and **Appendix S**
Waste	The EIS must identify, quantify and classify the likely waste streams to be generated throughout all stages of the project, and describe the measures to be implemented to reduce waste generation, manage, reuse, recycle and safely dispose of this waste.	**Section 6.12**
Plans and Documents	The EIS must include all relevant plans, diagrams and relevant documentation required under Part 3 of the EP&A Regulation. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include high quality files of maps and figures of the subject site, proposal, and proposed road upgrades.	**Appendix F**

Issues	***Secretary's Environmental Assessment Requirements (SSD-50629707, dated 16 December 2022)***	***Where Addressed***
Legislation, Policies & Guidelines	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. A list of some of the legislation, policies and guidelines that may be relevant to the assessment of the project can be found at: • https://www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework/Improving-assessment-guidance • https://www.planningportal.nsw.gov.au/major-projects/assessment/policiesand-guidelines; and • http://www.environment.gov.au/epbc/publications#assessments	This EIS and supporting Appendices
Engagement	During the preparation of the EIS, you must: • Consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups, and affected landowners;	**Section 5** and **Appendix D**
	The EIS must: • Detail how engagement undertaken was consistent with the 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, Nov 2021); and • Describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	
Expiry Date	If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, your SEARs will expire. If an extension to these SEARs will be required, please consult with the Planning Secretary 3 months prior to the expiry date.	Noted

TABLE A-2 AGENCY CONTRIBUTIONS TO SEARS AND WHERE ADDRESSED

Issues	*Requirements*	*Where Addressed*
Attachment A – Biodiversity, Conservation and Science Directorate of the NSW Environmental Assessment Requirements (SSD-50629707)		
Biodiversity	Biodiversity impacts related to the proposed development are to be assessed in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 using the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form	**Section 6.2** and **Appendix G**

Issues	*Requirements*	*Where Addressed*
	detailed in the Biodiversity Conservation Act 2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and the BAM, unless DPE determines that the proposed development is not likely to have any significant impact on biodiversity values.	
	The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect, uncertain and prescribed impacts in accordance with the BAM.	
	The BDAR must include details of the measures proposed to address the offset obligation as follows; • The total number and classes of biodiversity credits required to be retired for the development/project; • The number and classes of like-for-like biodiversity credits proposed to be retired; • The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules; • Any proposal to fund a biodiversity conservation action; • Any proposal to make a payment to the Biodiversity Conservation Fund. If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.	
	The BDAR must be submitted with all digital spatial data associated with the survey and assessment as per Appendix K of the BAM.	
	The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the *Biodiversity Conservation Act 2016.*	
	The EIS must address the impact of wind turbine strikes on protected animals including: • Predict the likelihood of impact on aerial species resident in, or likely to fly over, the project area, including but not limited to bat/bird strike and barotrauma. • Predict the rate of impact per turbine per year for species likely to be affected. • Justify predictions of likelihood of impact and rates of impact with reference to relevant literature and other published sources of information. • Predict the consequences of impacts for the persistence of bioregional populations, with reference to relevant literature and other published sources of information. • Predict and map the likely zone of disturbance around wind turbines for aerial species resident in, or likely to fly over, the project area, with reference to relevant literature and other published sources of information.	

Issues	*Requirements*	*Where Addressed*
	• Map significant landscape and habitat features within the zone of disturbance for species likely to be affected, including but not limited to hollow bearing trees, nest trees, microbat habitat and important habitat for migratory species. • Predict the likelihood and describe the nature of indirect impacts on aerial species resident in, or likely to fly over, the project area including but not limited to barriers to migratory pathways and breeding, feeding and resting resources. • For migratory species, predict the impact of avoidance behaviour relative to migration distances and the availability of suitable habitat for breeding, feeding and resting over the migration route, with reference to relevant literature and other sources of published information. • Justify prediction of likelihood and nature of impact, with reference to relevant literature and other published sources of information. • Predict the cumulative impact of the project together with existing wind farms with respect to movement patterns and the use of adjacent habitat and provide justification for these predictions. The number and classes of biodiversity credits proposed to be retired in accordance.	
Flooding	The EIS must map the following features relevant to flooding as describes in the Floodplain Development Manual 2005 (NSW Government 2005) including: • Flood prone land. • Flood planning area, the area below the flood planning level. • Hydraulic categorisation (floodways and flood storage areas). • Flood hazard.	**Section 6.10** and **Appendix M**
	The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 5% Annual Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.	
	The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios: • Current flood behaviour for a range of design events as identified in above. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.	
	The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:	

Issues	*Requirements*	*Where Addressed*
	• Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies. • The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood. • Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories. • Relevant provisions of the 'NSW Floodplain Development Manual 2005'.	
	The EIS must assess the impacts on the proposed development on flood behaviour, including: • Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure. • Consistency with Council Floodplain Risk Management Plans. • Consistency with any Rural Floodplain Management Plans. • Compatibility with the flood hazard of the land. • Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land. • Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site. • Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses. • Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the SES and Council. • Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council. • Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES. • Any impacts the development may have on the social and economic costs to the community as consequence of flooding.	
General Requirements	The EIS needs to consider alternative selection of ancillary infrastructure to avoid clearing native vegetation and impacts to Plains-wanderer habitat or fully justify it.	**Section 2**, **Section 6.2** and **Appendix G**

Issues	*Requirements*	*Where Addressed*
	Due to the nature of the development the project must document commitments to mitigation measures proposed to manage impacts, including impacts which are uncertain, in accordance with Section 8.4 of the BAM 2020.	**Section 6.2**, **Appendix B** and **Appendix G**
	Given the location of the proposal in relation to the South West Renewable Energy Zone, the cumulative impact of electricity generation in the surrounding region should be assessed through application of the 'Cumulative Impact Assessment Guidelines for State Significant Projects'.	**Section 6.15**
	The EIS should identify any relevant Matters of National Environmental Significance, and whether the proposal has been referred to the Australian Government or already determined to be a controlled action under the EPBC Act.	**Section 6.2** and **Appendix G**
	The EIS should specifically address the attached requirements for flooding and conduct quantitative flood modelling for the purposes of appropriately locating infrastructure and for assessing impacts, including on waterway crossings for site access.	**Section 6.10** and **Appendix M**
DPI - Agriculture		
Consideration for impacts to agricultural resources and land	Although there is no BSAL, an area of draft State Significant Agricultural Land (https://nswdpi.mysocialpinpoint.com/ssal) based on irrigated lands have been identified and construction of wind turbines and associated infrastructure should be avoided on these lands.	**Section 6.9** and **Appendix L**
	Constraint mapping provided should also show appropriate buffers and separation distances for constraints such as host dwellings, non-host dwellings, irrigation areas and infrastructure, airstrips, and TSRs, not just environmental and cultural assets.	
	Decommissioning Management Plan should include, but not limited to, describing the potential design criteria of the final land use and landform, indicators which may be used to guide the return of the land back to possible agricultural production, along with the expected timeline for the rehabilitation program. This should also include the commitment to remove all infrastructure above and below ground, to a depth of 500mm.	
	Rehabilitation plans at all turbine and infrastructure sites during and post construction should detail appropriate groundcover management using locally native species to limit dust and other land use conflict issues.	

Issues	*Requirements*	*Where Addressed*
	A Land Use Conflict Risk Assessment (LUCRA) should be undertaken in relation to land management issues during and post construction, as well as specific justification for the proposed worker accommodation site. DPI Ag does not support the development of extra dwellings on RU1 Primary Production zoned lands remote from towns or villages due to the potential for land use conflicts. Benefits to the local community would be enhanced by providing such accommodation in or adjacent to town or village centres with suitable infrastructure and utilities.	
Biosecurity	Biosecurity management issues during and post construction must be assessed in relation to potential agricultural impacts (pests, weeds, and emergency animal diseases such as Japanese Encephalitis and Foot and Mouth Disease) including a risk assessment outlining the likely plant, animal, and community risks.	**Section 6.9** and **Appendix L**
Fire and Rescue (NSW)		
Bushfire	FRNSW requests to be consulted and given the opportunity to review and provide comment regarding the proposed fire and life safety systems at the preliminary and final design phases of the project.	**Section 5**, **Appendix D**, **Section 6.6.2** and **Appendix R**
NSW Rural Fire Service		
Bushfire	The NSW Rural Fire Service advises that any SEARs for the proposed development should incorporate a bush fire hazard assessment undertaken by a suitably qualified consultant to address the aims and objectives of Planning for Bush Fire Protection 2019. At a minimum, the report should address the following considerations: • Suitable access for fire fighting vehicles, including access around structures on the site; • Suitable SWS including access for fire fighting vehicles; • Appropriate APZs and BALs for structures, where appropriate; • Preparation of a Bush Fire Emergency Management and Evacuation Plan in accordance with Table 6.8d of Planning for Bush Fire Protection 2019 and be consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan	**Appendix R**
	Provision of a Fire Management Plan that at minimum includes; • Ongoing bush fire fuel management within the site;	

Issues	*Requirements*	*Where Addressed*
	• Site infrastructure plan; ○ Site access and internal road plan; • APZs and their continued maintenance; • Location of hazards (physical, chemical etc) that may impact on fire fighting operations; and • Any such additional matters as may be required by the NSW RFS District Office for the MIA. (Phone 02 6966 7800).	
TransGrid		
Grid connection	• The Environmental Assessments team request that we review the Customer's EIS once available to confirm whether the grid connection works are adequately covered. Costs for the preparation of planning advice can be provided once requested. • Property have no further comment and will provide the relevant Property advice to Lumea as part of the project.	Noted
DPE Water and the Natural Resources Access Regulator (NRAR) Attachment A		
Water Resources	A detailed and consolidated water balance.	**Section 6.10** and **Appendix M**
	Description of all works/activities that may intercept, extract, use, divert or receive surface water and/or groundwater. This includes the description of any development, activities or structures that will intercept, interfere with or remove groundwater, both temporary and permanent.	
	Details of all water take for the life of the project and post closure where applicable. This is to include water taken directly and indirectly, and the relevant water source where water entitlements are required to account for the water take. If the water is to be taken from an alternative source confirmation should be provided by the supplier that the appropriate volumes can be obtained.	
	Details of Water Access Licences (WALs) held to account for any take of water where required, or demonstration that WALs can be obtained prior to take of water occurring. This should include an assessment of the current market depth where water entitlement is required to be purchased. Any exemptions or exclusions to requiring approvals or licenses under the Water Management Act 2000 should be detailed by the proponent.	
	A description of groundwater conditions that provides an understanding of groundwater level across the site under a range of wet and dry conditions.	

Issues	*Requirements*	*Where Addressed*
	Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, groundwater dependent ecosystems, and ground water levels; including measures proposed to reduce and mitigate these impacts.	
	Proposed surface and groundwater monitoring activities and methodologies.	
Regulatory Context	Identification and impact assessment of all works/activities located on waterfront land including an assessment against 'Guidelines for Controlled Activities on Waterfront Land' (NRAR 2018).	**Section 4** and **Appendix C**
	Assessment of project against relevant policies and guidelines	
Edward River Council		
Impact on Road Infrastructure	• Provide specific detail on the source location of the construction materials and proposed transport routes, noting that this may impact on the local roads through affected Local Government Areas (LGAs). • Where impact is identified details of any proposed upgrade and maintenance works agreements.	**Section 6.5** and **Appendix N**
Construction Compound and Accommodation Camp	Provide information regarding the commissioning and decommissioning of the Construction Compound and Accommodation Camp sites. Additional information is required to understand the scale of the sites, servicing arrangements and the proposed actions for returning the sites back to pre-development conditions, at the completion of works.	**Section 3.4.4.1** and **Section 3.6**
Bushfire	Bushfire risks associated with the construction and operation of the development need to be carefully considered in the EIS. Noting that the portion of the site within Edward River Council area is Bushfire Prone Land . Of specific concern is the large expanses of grassland and the remoteness of this areas. Adequate resources would be required to protect these areas in the event of fire outbreak as there are extended response times and limited access to adequate resources for fire defence.	**Section 6.6.2** and **Appendix R**
Biodiversity and Cultural Heritage	A detailed assessment of the likely biodiversity impacts and cultural heritage items of the project particularly relating to proposed earthworks, construction and roadworks. As identified in the scoping report there are potential impacts on endangered species throughout the project site.	
DPI - Fisheries		

Issues	*Requirements*	*Where Addressed*
Impacts to Waterways	The EA should specifically address impacts on the aquatic ecology of waterways or any Key Fish Habitats. All Strahler System 3rd order and above waterways are considered to be key fish habitat. At the proposal site this includes Abercrombie Creek, Curtains Creek and Telegraph Creek.	**Section 6.2** and **Appendix G**
	The EIS must specifically address: • A clear description of the location of works, including identification of the waterways present and all relevant plans. • Identification and classification of key fish habitat in the area, according to section 3.2 of DPI Policy.	**Section 3**, **Section 6.2**, **Appendix G**, **Section 6.10** and **Appendix M**
	A clear description of the works to be undertaken, including timing and duration of the works and all relevant plans. This includes detail on the: • Location and design of any proposed or upgraded waterway crossings over key fish habitat. • The methodology (e.g., trenching or underboring) for any underground cabling or transmission lines that pass through key fish habitat.	**Section 3** and **Appendix F**
	Description of aquatic and riparian vegetation and instream aquatic vegetation in the vicinity of the development, particularly the extent and condition of riparian vegetation and instream aquatic vegetation, water depth, permanence of water flow and snags (large woody debris) within the footprint of the proposal area.	**Section 6.2** and **Appendix G**
	Details on the location and design of proposed or upgraded waterway crossings of key fish habitat.	**Section 3** and **Appendix F**
	An assessment of all potential impacts to key fish habitat and riparian zones. The extent of aquatic habitat removal and riparian vegetation removal, modification or improvement that may result from the development is to be clearly defined. Potential impacts to water quality and fish passage must be clearly defined.	**Section 6.10**
	An assessment of significance for any threatened species matters listed under the *FM Act*.	**Section 6.2** and **Appendix G**
	A clear description of all proposed safeguards to mitigate impacts on aquatic habitats, water quality and riparian buffer zones. This can include, but not be limited to: • A clear map showing the riparian buffer zone width. • A description of any riparian buffer zone revegetation or erosion control works.	**Section 6.10**

Issues	*Requirements*	*Where Addressed*
	• Details regarding how fish passage will be provided for. • A description of proposed erosion and sediment control techniques to be used during construction. • Detail on any onsite design measures to mitigate water quality and flow impacts to within and downstream of the site.	
Waterway crossings	Fish passage must be provided for in the design of waterway crossings and any cable crossing of waterways. The design and construction of key fish habitat watercourse crossing on the site should be undertaken in accordance with the Department's 'Policy and Guidelines for Fish Habitat Conservation and Management' (Update 2013) and 'Why Do fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (2003). Any temporary waterway crossings must be removed immediately upon completion of the various stages of construction.	
Water quality	DPI Fisheries recommends the use of best practice sediment and erosion control, and water quality and stormwater management provisions to safeguard and mitigate impacts on water quality at the site and downstream.	
Riparian Buffer Zones	Use terrestrial buffer zones as per section 6.1.4 of the 'Policy and Guidelines for Fish Habitat Conservation and Management' (Update 2013) in order to maintain the riparian buffer zone and limit disturbance and susceptibility to bed or bank erosion.	
Threatened Species	The proposal should include a threatened aquatic species assessment (as per part 7A *Fisheries Management Act 1994*) to address whether there are likely to be any significant impacts on listed threatened species, populations or ecological communities listed under the *Fisheries Management Act 1994*. It should be noted that Abercrombie Creek is considered indicative habitat for Flathead galaxias, and all native fish and aquatic invertebrates in natural creeks within the site form part of the Endangered Ecological Community of the Murray River.	**Section 6.2** and **Appendix G**
Air Services Australia		
Regulatory Context	An Aviation Impact Statement (AIS) is required to be submitted along with the application. The Proponent must follow the guideline and submit the information to the Airport Developments mailbox airport.developments@airservicesaustralia.com, together with any supporting documents, spreadsheet, drawings and CAD files which will assist with the assessment.	**Appendix Q**
DPE – Crown Lands		

Issues	*Requirements*	*Where Addressed*
Crown land	Crown Lands notes that there are a number of Crown roads within the project area. These roads may provide legal access to the development but may not provide practical access. The Department advises that these roads should not be relied upon for practical access to the project site. It is also proposed that internal cabling, transmission lines and possibly turbines may also be placed on or over Crown roads or land. The Department will need to be referenced, prior to any use or occupation of any Crown roads or land, during the assessment phase. Authority to use, traverse, access or build infrastructure on Crown land and roads is required under the *Crown Land Management Act 2016* and/or the *Roads Act 1993*. It is recommended that the proponent contact Crown Lands as early as possible to discuss and initiate the processes required to authorise the use of and/or access to Crown land and roads.	**Section 5** and **Appendix D**
	If infrastructure needs to be built on Crown land or roads, the consent of the Minister for Water, Property and Housing must be obtained, via Crown Lands, and constructed roads may need to be transferred to Council.	**Section 4** and **Appendix C**
	Any Crown road required for access to the development/proposal, will need to be transferred to Council, or application made to close and purchase the roads. As authority to access or use Crown roads is required prior to the commencement of any works or access, and to avoid any delays for the proposal, a tenure may be required in the interim.	
	If lineal infrastructure (such as pipelines and/or electricity transmission lines) are expected to traverse Crown land, roads and/or waterways, an easement over said Crown land, roads and/or waterways will be required for protection of the infrastructure.	
	In order for transmission lines to traverse Crown land and/or roads, the proponent will need to apply for easements. Information regarding the easement process is available at the following link: https://www.industry.nsw.gov.au/lands/use/easements.	
	As the easement process may be lengthy, it is also recommended that the proponent apply for a licence for each Crown road and Crown land lot as soon as possible. A licence will temporarily authorise use and access for the infrastructure to traverse Crown roads and Crown land whilst the easement applications are being processed. Details on how to apply for a licence are available at the below link: https://www.industry.nsw.gov.au/lands/use/licences.	
	The western access road passes through Lot 7304 DP 1149704 and the eastern access road passes through Lots 7303 & 7304 DP1149704 both are Travelling Stock Reserves. These are managed by Riverina Local Land Services and is currently the subject of an undetermined Aboriginal Land Claim (ALC). As such, concurrence	

Issues	*Requirements*	*Where Addressed*
	with the NSW Aboriginal Land Council (NSWALC) would be required. Additionally, a tenure will be required to authorise any use of and/or access to this lot, which may be subject to Native Title. This will need to occur prior to the commencement of any works. Further information regarding Aboriginal Land Claims can be found at the following link: https://www.industry.nsw.gov.au/lands/what-we-do/our-work/aboriginal-land-claims.	
Water NSW		
Water resources	The subject land is located within the Murrumbidgee Regulated Valley. Two active water quality monitoring sites are located close to the subject site: • GW030435 – located on the Cobb Highway between the East and West sections of the Energy Park; and • GW030438 – located on the Cobb Highway between the East and West sections of the Energy Park. WaterNSW require ongoing access to these sites during construction and operation, and measures must be identified in the EIS for the protection of the monitoring instrumentation from any potential impacts resulting from development of the wind farm.	**Section 6.10**
Transport for NSW		
Traffic and Transport	To ensure that TfNSW's key interests are addressed, TfNSW requests that any future application be submitted with an Environmental Impact Assessment (EIA) containing a Traffic Impact Assessment (TIA), prepared by a suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, Australian Standards and any complementary TfNSW Supplements, and Roads and Maritime Guide to Traffic Generating Developments. The TIA should contain information listed in Attachment A: Traffic Impact Assessment (TIA).	**Appendix N**
	In addition to the requested TIA, due to the significant scope of the transport logistics for OSOM transit, a concept level route analysis is required to be provided with the SSD application based on high-level 3D swept path analysis to generally indicate locations where civil works are likely to be required. The route analysis is to include at a minimum the following: • Identify the OSOM route to be utilised and any indicative pinch points within the network vertically, horizontally and laterally and the potential civil works required to accommodate the OSOM vehicles. • The logistics assessment is to highlight each at-risk road structures that the transport route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads. • Pull-over bay locations for the design vehicle or identification of any long haulage segments of the route where overtaking cannot be achieved.	

Issues	*Requirements*	*Where Addressed*
	• The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g., Autodesk Vehicle Tracking or Transoft AutoTURN).	
	Provide the following measurements parameters of the OSOM components / materials to be moved: • Identify all the types of OSOM vehicles proposed to be used for the project. • Overall combination length, width, height and mass • Maximum component length (e.g., blade length, blade overhang length, etc.) • Maximum component widths (e.g., turbine tower, battery component, pipes, etc.) • Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation), • Wheelbase dimensions, • Maximum trailer articulation angle(s), • Minimum overhang heights above the road surface, • Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology). • Provide GPS coordinates of the route and pinch points.	

TABLE A-3 WIND ENERGY GUIDELINE 2016 AND WHERE ADDRESSED

Issues	*Requirements*	*Where Addressed*
Assessment Issues and Requirements		
Planning Pathway	Permissibility of wind energy development is determined by the relevant environmental planning instruments, including State Environmental Planning Policies (SEPPs) and local environmental plans (LEPs). The EP&A Act and the Environmental Planning and Assessment Regulation 2000 (EP&A Reg), along with these planning instruments, also establish the assessment and approval pathways and other development controls. Key reference points include: The zoning and land use provisions of the relevant LEP; Part 3 Division 4 of State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP); and Part 4, and Schedule 1 clause 20, of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP).	**Section 2** and **Appendix C**

Issues		*Where Addressed*
	Where wind energy development is permitted with consent, the proponent can lawfully lodge a development application (DA) for determination by the relevant consent authority. If the Proponent is not the owner of the land to which the DA relates (or is not the only owner), the proponent must provide evidence that all the relevant landowners consent to the application. It should be noted that the consent of a landowner to lodge an application is for assessment purposes only and does not bind the landowner to the eventual outcome. In the case that the land is owned by the Crown, the Proponent must obtain landowners consent and lease arrangements from the Department of Primary Industries (Crown Lands).	
	Not all aspects of a wind energy proposal will need development consent. For example: In circumstances where a wind monitoring tower is used to investigate the feasibility of wind energy, the tower may be installed as 'exempt development' under clause 39(2) of the Infrastructure SEPP without planning approval, if it complies with specified requirements. Electricity transmission and distribution lines might also be assessed separately	
	Once permissibility has been established, a proponent needs to determine the appropriate assessment pathway for its wind energy project. The development assessment process varies according to factors such as the 'capital investment value' (which is defined in the EP&A Reg) and electrical power output of the project. The majority of wind energy development in NSW will be SSD, which requires approval from the Minister for Planning under the EP&A Act.	
	In practice, the independent Planning Assessment Commission determines applications under its delegation where: There have been 25 or more objections to the application; or The local council has objected; or There has been a disclosure of a reportable political donation or gift, made in connection with the application or a previous related application. This is consistent with the process for other SSD projects. Under limited circumstances, senior officers of the Department may have the delegated authority to determine an application	
Transmission Line Approvals	The transmission and distribution lines connecting a wind energy generating facility to the grid can be considered as a separate development from the generating facility given both the linear nature of transmission lines and the fact that they are usually owned and operated by an electricity transmission operator or distributor under the Electricity Supply Act 1995, or an	**Section 2**, **Appendix C**, **Section 5** and **Appendix D**

Issues		*Where Addressed*
	'authorised network operator' under the Electricity Network Assets (Authorised Transactions) Act 2015, rather than the wind energy generation operator. The Proponent should provide the Department with information in its Environmental Impact Statement (EIS) about: The delivery of transmission lines (such as timing of decision-making and stakeholder roles) The timeline for assessment, approval and construction of the wind energy project; Consult with the electricity provider to enable concurrent timeline for assessment and construction of the transmission lines. Proponents should consult with the relevant Network Operator and the Department early in the project planning process to clarify responsibilities and the applicable planning pathways for transmission and distribution infrastructure, and to discuss connection to the relevant electricity grid, if required	
	If the transmission and distribution lines are not being developed by or on behalf of an electricity supply authority, public authority or authorised network operator, and are sufficiently related to the wind energy generating facility, they should form part of the associated SSD wind energy project and are governed by Part 4 of the EP&A Act, and subsequently, this Guideline. Proponents should consult with the relevant Network Operator and the Department early in the project planning process to clarify responsibilities and the applicable planning pathways for transmission and distribution infrastructure, and to discuss connection to the relevant electricity grid, if required.	
Other Legislation	The Proponent is required to obtain an environment protection licence (EPL), issued by the Environmental Protection Authority (EPA) under the Protection of the Environment Operations Act 1997 (POEO Act) for wind energy projects which are SSD or designated development. The requirements of an EPL regulate the construction and operation of a wind energy projects for issues which the POEO Act covers, including noise pollution. The requirements of an EPL must be consistent with the development consent for the project	**Section 2** and **Appendix C**
	Some wind energy projects also have the potential to impact on 'matters of national environmental significance' under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and may require a separate approval under that legislation. The Commonwealth and NSW Governments have signed a Bilateral Agreement under the EPBC Act relating to environmental assessment. The Bilateral Agreement accredits NSW to conduct a single environmental assessment process for SSD proposals that impact on certain matters of national	**Section 4** and **Appendix C**

Issues		*Where Addressed*
	environmental significance under the EPBC Act, by removing the need for separate assessment by the Commonwealth. However, the final decision on whether to approve the impacts on matters of national environmental significance is still made by the Commonwealth.	
	The Proponent is encouraged to make a referral to the Commonwealth Department of the Environment and Energy early in the assessment process to understand if Commonwealth approval is required and to be assessed under the Bilateral Agreement.	
Planning Framework		
Strategic Context	The consent authority will give consideration as to whether the project is consistent with the objectives of the NSW Government's climate change policy and how the project contributes to the Renewable Energy Target.	**Section 2**
Biodiversity	The extent to which impacts of the wind energy project on biodiversity values have been avoided, minimised or offset to an acceptable level, in accordance with: The NSW Biodiversity Offsets Policy for Major Projects; and having regard to the advice of NSW Office of Environment & Heritage for terrestrial biodiversity or the Department of Primary Industries (Fisheries) for aquatic biodiversity. A key biodiversity issue for wind energy development is bird and bat strike and whether suitable measures are proposed to manage potential bird and bat strike fatalities resulting from either direct collision or through barotrauma (rapid changes in air pressures associated with the movement of the blades).	**Section 2**, **Section 6.2** and **Appendix G**
Visual Impacts	The height, scale and mechanical character of wind turbines creates an unavoidable level of visibility and contrast with the natural environments in which they are situated. This can alter the character of the landscape and people's enjoyment of the landscape. Multiple wind energy projects in close proximity may create cumulative impacts on a particular landscape.	**Section 6.4** and **Appendix K**
	Assessment of these impacts is a complex endeavour. In recognition of these challenges the Department has prepared an Assessment Bulletin which is designed to bring greater transparency, consistency and objectivity in visual impact assessments for wind energy development. The consent authority will give consideration to the acceptability of impacts on landscape values and the amenity of landholders and communities, and the adequacy of the measures which are proposed to avoid, reduce or otherwise manage these impacts, having regard to the Visual Assessment Bulletin	

Issues		*Where Addressed*
Noise Impacts	The rotation of wind turbines generates both aerodynamic and mechanical noise. When assessing the potential annoyance from a noise source, both the level and character of the noise need to be taken into consideration.	**Section 6.3** and **Appendix J**
	To ensure an adequate assessment of potential noise impacts, the Department has developed a Noise Assessment Bulletin. This Bulletin identifies the noise assessment requirements for SSD wind farm projects and includes a noise limit of 35 dB(A) or the prevailing background noise plus 5 dB(A), whichever is the greater for each operational wind speed. The consent authority will give consideration to whether the predicted noise levels comply with the noise criteria, having regard to the advice of the EPA and the adequacy of measures which are proposed to avoid, reduce or otherwise manage these impacts. With regards to concerns over the potential health impacts of wind energy, the NSW Government's position is informed by the scientific findings of the National Health and Medical Research Council (NHMRC) and the advice of NSW Health. The NSW Government will continue to monitor contemporary scientific research outcomes to ensure its position reflects robust evidence on any health effects, including any advice released from the National Wind Farm Commissioner and the Independent Scientific Committee on Wind Turbines;	
Traffic and Transport	The consent authority will give consideration to the extent to which the local and classified road network can accommodate the type and volume of traffic generated by the wind energy project, including the adequacy of any proposed road upgrades and maintenance commitments, having regard to the advice of relevant road authorities;	**Section 6.5** and **Appendix N**
Hazards and Risks	Whether hazards or risks associated with the wind energy project can be suitably managed, having regard to the advice of relevant government authorities, with particular hazards and risk including:	**Section 6**
	Aviation Safety: Wind energy projects need to consider potential safety hazards for aircraft through intrusion of the wind turbines into the airspace; and potential effects on navigation instruments;	**Section 6.6.1** and **Appendix Q**
	Bushfire Safety: Consider potential hazards and risks associated with bushfires and the adequacy of measures to manage this risk.	**Section 6.6.2** and **Appendix R**
	Health:	**Section 6.6.6** and

Issues		*Where Addressed*
	Consider any health issues having regard to the latest advice of the NHMRC and consider potential hazards and risks associated with electric and magnetic fields and demonstrate the application of the principles of prudent avoidance;	**Appendix O**
	Telecommunications: The consent authority will give consideration to the risk of electromagnetic interference with telecommunication services in the area, and the adequacy of the measures proposed to ensure the level of service is maintained;	**Section 6.6.5** and **Appendix P**
	Blade Throw: Consider blade throw risks.	**Section 6.6.3**
Decommissioning	Consideration will be given as to whether suitable arrangements for decommissioning and rehabilitation of the site are in place;	**Section 3.6**
Cumulative Impacts	The consent authority will give consideration as to whether any other proposed, approved or operating wind energy projects in the vicinity are likely to increase the impacts of the wind energy project the subject of the DA, especially in regard to landscape, noise, biodiversity and traffic impacts.	**Section 6** and **Appendix G** to **Appendix T**
Other	Other issues, such as economic and social impacts, historic and Aboriginal cultural heritage, and water will continue to be dealt with through existing policies and practices which apply to all SSD proposals.	**Section 6.7**, **Section 6.8**, **Appendix H**, **Section 6.10**, **Appendix M**, **Section 6.13**, **Appendix S**, **Section 6.14** and **Appendix T**
	The Department has developed standard requirements (known as SEARs) which contain guidance on assessing the relevant potential impacts of wind energy projects. The standard SEARs may be supplemented by project-specific SEARs to incorporate additional assessment requirements, if required.	This Appendix
Assessment Process		

Issues		*Where Addressed*
Scoping and Pre-Lodgement	The people and groups affected by a proposed wind energy project will depend on the project context, including the different linkages and networks that connect people and groups. Respectful, inclusive and meaningful engagement with potentially affected people, groups, and other interested parties forms a critical part of all phases of the impact assessment process. It should be undertaken to make the public aware of the proposal, provide opportunities for early input and establish relationships	**Section 5** and **Appendix D**
	Early consultation with the community should not be limited to one aspect of a project. Consultation with a range of potentially affected stakeholders could be undertaken to identify the constraints and opportunities of the project area. Consultation could involve engagement on the values the wider community place on those attributes, in order to inform project siting and design. For example, consultation could be undertaken with local councils, heritage groups, farming groups, environmental groups and business chambers. This may include inviting stakeholders to rank or value attributes such as access to the site, surrounding land uses, landscape values, geology, hydrology, soils, biodiversity, and wind resource location. Such consultation should occur before the project siting and design is finalised so that it informs the siting and design process. Setting a broad design framework and seeking the views of affected landowners at the scoping stage will result in a more responsive wind energy development, and can minimise or avoid issues arising during the assessment process.	
	Proponents must go through this iterative design process in order to identify the most appropriate locations for the final siting of specific turbines in a project, based on the quality of the wind resource and the results of their consultation. Proponents are required to articulate and describe this process and relevant learnings in the EIS.	**Section 2**, **Section 6** and **Section 7**
	Scoping these details upfront also enables the Department to prepare SEARs that are appropriately targeted but also provide sufficient flexibility to vary and refine the proposal through the assessment process.	Project Scoping Report
SEARs and Preliminary Environmental Assessment	SEARs will specify the matters to be addressed by proponents in the EIS for the project.	This Appendix
	A request for SEARs should be accompanied by a Preliminary Environmental Assessment (PEA) that:	

Issues		*Where Addressed*
	Describes the proposed wind energy project and its location in context (for example, it should identify the preliminary turbine layout, nearby dwellings, key public viewpoints and other key landscape features) - proponents should demonstrate the suitability of their chosen location and the viability of wind resources in that area;	
	Describes: The steps taken to assist potentially affected people and groups in understanding the proposed development and what it could mean for them; and The proposed overall approach to stakeholder consultation for the EIS development process.	
	Identifies the key issues for the particular project;	
	Includes the results of the early consultation, including in relation to landscape values, and assesses the preliminary turbine layout against the preliminary assessment tools contained in the Visual Assessment Bulletin, including negotiations with landholders;	
	Provides a high level assessment of the environmental impacts of the project (focusing on those key issues);	
	Reports on the progress of community consultation.	
	The Secretary of the Department is required to issue SEARs for all SSD applications including wind energy projects. The assessment and consultation requirements are mandated in the SEARs for each DA. The Secretary is also required to consult with relevant government agencies in preparing the SEARs. SEARs for an SSD wind energy project will be based on standardised requirements which the Department has developed, but will be adapted to suit the particular project for which they are issued.	
	The proponent must address all SEARs issued for a project in the project's EIS.	
Project Design	As part of preparing an EIS, proponents must include a full description of their project, including: All development activities that may be undertaken as part of the project, including ancillary infrastructure which could include concrete batching plants, substations and access to construction materials, as well as access tracks and roads, and any transmission lines associated with the project.	**Section 3**

Issues		*Where Addressed*
	The timing of each key phase of the project. Information regarding any ancillary developments that are not being proposed as part of the DA, but are necessary to support the project (such as transmission lines not covered by the DA), should also be provided. The project should be defined to an extent whereby a proponent is able to justify the location and placement of turbines including how they have balanced the relevant social, economic and environmental impacts. The project description should include a narrative describing the design process for the project. This should focus on the iterative process for identifying the final siting of specific turbines, including the justification for decisions to move, remove, or locate turbines in a specific location. This will require the proponent to articulate learnings about matters such as landscape values and other environmental considerations identified through community consultation and studies undertaken in the scoping and pre-lodgement stage. The description should also reference the outcomes from the application of the preliminary assessment tools required by the Visual Assessment Bulletin undertaken through the development of the project.	
Impacts and Mitigation Options	The EIS for an SSD wind energy project should also include: An analysis of the likely impacts of the project; Completed technical studies, including an accurate noise impact assessment for relevant dwellings undertaken consistent with the requirements of the Noise Assessment Bulletin; A visual assessment of the project in accordance with the Visual Assessment Bulletin, and, in particular, an analysis of the project against the performance objectives as well as photomontages showing the impacts at highly affected dwellings (subject to access considerations); Details of community consultation undertaken, including any steps taken to check that the views and input of potentially affected people and groups have been faithfully and accurately captured and considered, and / or explain how their views and inputs have been taken into account; Consultation with landowners with regards to impacts and mitigation, including negotiated agreements (subject to confidentiality considerations); and Description of the measures that will be used to avoid, minimise, mitigate or otherwise manage impacts associated with the project – this should include an assessment of the effectiveness and reliability of the measures and any residual impacts and their acceptability after these measures are implemented.	**Section 6.2** to **Section 6.15** and **Appendix B**

Issues		*Where Addressed*
Micro-sitting and Environmental Envelopes	For technical reasons (for example, geotechnical or access issues arising from detailed terrain surveying, or the discovery of matters of biodiversity or historic and / or Aboriginal cultural heritage importance), there may be the need to relocate wind turbines on site during construction. This is known as 'micro-siting'.	**Section 3.3.5Appendix B**
	Proponents must consider whether micro-siting is required for the proposed wind energy project and address any proposal for variability in the siting of turbines in the EIS preparation.	
	Micro-siting may be permitted provided it does not materially increase environmental impacts. Micro-siting that results in revised wind turbine and ancillary infrastructure locations must be consistent with the conditions of the development consent. The Department will consider granting consent which allows siting of turbines within a development 'envelope'. If a proponent wishes to obtain consent in this format, it must assess the effect of this (including the proposed parameters of the envelope) based on the highest impact scenario in the EIS.	
Refurbishment and Decommissioning	Once installed, wind turbines typically have an expected operating life of around 20 to 25 years, at which point they are usually refurbished or decommissioned. Some turbines may be decommissioned or refurbished earlier. Depending on their nature, the refurbishment of turbines may form part of a proposal for wind energy development and may be considered in the assessment and determination of that project. In some instances, the refurbishment or decommissioning of a wind tu bine will not require a new DA or a modification of the existing consent, as the terms of the existing consent may authorise the refurbishment or decommissioning. The need for a modification or a new DA should be considered by the proponent in each instance by reference to what is proposed for the refurbishment or decommissioning. The NSW Government's policy is that a wind energy project owner or operator, and not the 'host' landholder, should be responsible for decommissioning and rehabilitation at the end of life of a wind energy project or a particular turbine. Proponents must identify and address all relevant issues for decommissioning and rehabilitation in their project EIS, and include a commitment that the operator will be responsible for decommissioning and rehabilitation.	**Section 3.6**
	Both proponents and host landowners should consider refurbishment, decommissioning and rehabilitation when negotiating landowner agreements.	

Issues		*Where Addressed*
Noise and Health	While the health impacts of any project are a relevant consideration in the assessment process, the level of assessment will be proportionate to the level of risk. The NSW Government's position on potential health impacts of wind energy projects continues to be informed by the scientific findings of the NHMRC.	**Section 6.3** and **Appendix J**
	In the most recent Statement "Evidence on Wind Farms and Human Health" (February 2015), the NHMRC concludes that there is currently no consistent evidence supporting a link between wind energy projects and adverse health outcomes in humans relating to infrasound. However, the NSW Government will continue to monitor contemporary scientific research outcomes to ensure its position reflects robust evidence on any health effects, including any advice released from the National Wind Farm Commissioner and the Independent Scientific Committee.	
Assessment	As with all SSD proposals, the consent authority will undertake a comprehensive assessment of the specific impact of each proposed wind energy project on its merits, as required by Section 79C of the EP&A Act.	**Section 2** and **Appendix C**
	Matters that a consent authority will consider when determining a wind energy project DA include, for example: Suitability of the site for the wind energy project; Submissions made by the local community, stakeholders and government authorities; The likely environmental, social and economic impacts of the construction, operation and decommissioning of the wind energy project in the locality; The relevant provisions of any environmental planning instrument (for example, LEP, SEPP) which regulates the permissibility of types of development in certain areas or provides other legally binding development requirements; The public interest which includes consideration of the objects of the EP&A Act and, in particular, the principles of ecologically sustainable development; The strategic context and alignment with relevant Government policies	
	Consideration will be given to the public interest in increasing the supply of renewable energy.	
	The Department and the consent authority will consider the following in the assessment and determination of wind energy projects: existing development in the vicinity of the wind energy project, including dwellings;	

Issues		*Where Addressed*
	Approved development within the vicinity of the wind energy project, including dwellings, that are approved but yet to be constructed or are under construction; Development within the vicinity of a wind energy project for which a development application has been lodged, including with councils, but a determination is yet to be made; Existing dwelling entitlements on land within the vicinity of the wind energy project.	
Determination and Conditions of Consent	Following assessment of a wind energy development application, the consent authority will determine whether the project should be approved on its merits. This will include consideration of whether the project could be approved subject to conditions that will mitigate impacts to an acceptable level.	**Section 2**, **Section 3** and **Appendix B**
	If consent is granted, it will be subject to a range of conditions for managing the impacts of the project. The conditions may require, for example: • Obligations to meet a performance outcome or objective; • Obligations to implement specific mitigation measures; • Obligations to monitor actual versus predicted impacts; • Obligations to monitor the effectiveness and outcomes of any mitigation strategies in accordance with agreed performance indicators and implement adaptive management strategies where required; • Reporting and auditing requirements, including by requiring reporting of data.	
	Adaptive management frameworks can be implemented through conditions so as to require proponents to report to the Department, and publicly, against outcomes. If strategies are not meeting the required outcomes, adaptive management conditions can require proponents to propose new strategies to meet the outcomes.	
	The conditions may also require additional mitigation measures to be implemented, amendments to the project (such as deletion or re-siting of turbines), and / or as a last resort 'voluntary acquisition' for significantly affected landholders. Any voluntary acquisition process can only be initiated by the land owner and not the proponent.	
	Development consent conditions relating to acquisition requirements will only be imposed where all other reasonable and feasible mitigation measures have been considered, and the consent authority is satisfied that the economic, social and environmental benefits of the project outweigh its adverse impacts	

Issues		*Where Addressed*
	Alternatively, the consent authority may conclude that the benefits of the project do not outweigh its impacts, and the project will be refused.	
Community and Stakeholder Consultation	Early, meaningful and innovative community consultation, demonstrating an ongoing commitment to providing clear information and ensuring opportunities for genuine input, is important to delivering good planning outcomes	**Section 5** and **Appendix D**
	The Department routinely requires early consultation for a range of SSD projects. Earlier and better consultation has a range of benefits for communities and proponents, including: Informing the community about the project and the strategic context; Gathering valuable knowledge from the community; Establishing relationships between the proponent and the community. It also enables communities to be engaged when there are real opportunities to influence projects and decisions, such as at the siting and design stage.	
	Proponents should undertake a comprehensive, detailed and genuine community consultation process throughout the assessment process, including at the siting and pre-lodgement stage. The process should ensure there is active engagement with communities potentially affected by a wind energy project as early as possible, so that they are sufficiently informed regarding possible impacts and given reasonable opportunities to provide their views on the proposal.	
	Consultation should be aimed at identifying and considering options for eliminating, reducing or otherwise managing impacts, not merely informing communities on the proposed layout. Proponents should seek, as far as practicable, to address landowner issues before lodging a DA for an SSD wind energy project. This should include agreements in relation to land access and appropriate responses to the concerns and impacts on other potentially affected landowners.	
	Proponents should engage in consultation at all stages of wind energy project development, including: • Siting and design; • Planning and EIS, • Construction and operation phases; • Decommissioning and rehabilitation phases. The nature and extent of consultation that is appropriate will depend on the circumstances of the project and the stage of development which the wind energy project has reached. It is important	

Issues		*Where Addressed*
	that when identifying affected people and groups, that an inclusive approach is taken that recognises that different perspectives may exist within a community (for example differences in ages, gender, income, etc).	
	The principles of ecologically sustainable development also require that the impacts of a project on future generations to be considered.	**Section 2**
	Overall, the level and types of engagement required will depend on the project context, including: • The size of the locality likely to be affected; • How diverse the potentially affected people and groups are; • The range and types of issues involved; • The needs of particular audiences (for example, cultural appropriateness, capacity to participate)	**Section 5** and **Appendix D**
	Community and other stakeholders who should be consulted may include: • The community, in relation to landscape values, as required by the Visual Assessment Bulletin; • Owners and occupiers of land proposed to host wind turbines or related infrastructure, owners and occupiers of land required for access during construction and/or maintenance, or landowners who have reached a financial or in-kind agreement in relation to the proposal (associated properties); • Landowners who have not reached a financial or in-kind agreement in relation to the proposal (non-associated properties); • Organisations representing local, regional, State, national and international interests regarding business, community, indigenous and environmental issues; • Relevant local council(s), including neighbouring councils where proposals are located in or affect more than one local government area; • Stakeholders of other significant infrastructure near the proposed wind energy site.	
	The standard SEARs for SSD wind energy projects outline the minimum consultation requirements for SSD wind energy projects during the assessment process. However, there is significant value in proponents engaging in innovative ways with affected communities and other stakeholders in the initial stages of the project, including before SEARs are requested	This Appendix
Benefit Sharing Schemes	The Department recognises that proponents and landholders should be free to discuss matters which are relevant to their circumstances. The Department considers that agreements with landholders and local communities provide opportunities for them to share in some benefits from	**Section 2.6**, **Section 5** and **Appendix D**

Issues		*Where Addressed*
	the location of the wind energy project and for the proponent to enhance the community support for its project.	
	'Benefit sharing' aims to distribute benefits generated by a project between the proponent and the community through mutually agreed opportunities. Whilst this is not required under the NSW planning system there are a number of different mechanisms for creating and utilising benefit sharing opportunities, and priority should be given to initiatives that deliver public benefit, particularly in areas in the vicinity of the project.	
	Community enhancement funds are often set up and administered by developers for various types of industrial developments in rural locations. The preferred means of administering community enhancement funds is under a voluntary planning agreement with the relevant local council/s, and proponents for wind energy projects could consider similar initiatives in the context of their projects. Governance arrangements for the voluntary planning agreement could be administered under section 355 of the Local Government Act 1993.	
	Where impacts are more specific to identifiable landholders, it may be appropriate for proponents and landholders to negotiate agreements regarding the management of those impacts. It is up to proponents and landholders to agree what is appropriate to manage impacts (including at different stages of the project's life) in their particular circumstances	
	The consent authority will carry out an assessment of all relevant issues for a wind energy project. A landholder arrangement may provide a useful way of managing one or more of these issues for the landholder's property	
Post Approval Regulation	The regulation of SSD wind energy project construction, operation, decommissioning and rehabilitation is primarily coordinated by: • The Department, to ensure compliance with development consent conditions; and • The EPA, to ensure compliance with EPL conditions.	**Section 2**, **Section 4** and **Appendix C**
	If development consent is granted for a SSD wind energy project, the conditions of consent will continue to apply to the project and the land on which it is located throughout its life. The responsibility for compliance with the conditions of consent under the EP&A Act falls to the person carrying out the development.	
	Development consent conditions will likely include matters such as:	

Issues		*Where Addressed*
	• Visual impact mitigation, such as screening at affected dwellings;	
	• Operational noise limits; • A Noise Compliance Report to demonstrate compliance with the noise limits following commissioning;	
	• Road upgrades and maintenance requirements; • Traffic management plan including designated transport routes for over-sized vehicles;	
	• Implementation of a biodiversity offsets strategy;	
	• An Aboriginal Heritage Management Plan to be prepared and implemented in consultation with the local Aboriginal community;	
	• Measures to prevent water pollution;	
	• Obligations to manage risks associated with aviation, bushfire, and telecommunications, in consultation with the relevant authorities;	
	• Adaptive management strategies;	
	• Decommissioning and rehabilitation of the site;	
	• Establish and operate a CCC for the project;	
	• Requirements for regular monitoring and reporting of the environmental performance of the project over time.	
Compliance	The Department's regional compliance teams are responsible for monitoring compliance with the conditions of consent for approved wind energy projects, including following up suspected breaches reported by members of the public The compliance team also undertakes periodic audits of approved or operating wind farms	**Section 4** and **Appendix C**
	Proponents are also required to establish and operate a complaints handling system which is required through a condition of consent as part of the approval of a project.	

APPENDIX B MITIGATION AND MANAGEMENT SUMMARY

MITIGATION AND MANAGEMENT MEASURES

ID	***Mitigation Measure***
Biodiversity	
Bio1	Offsets: Residual impacts on habitat will be offset through the Biodiversity Offset Scheme.
Bio2	Vegetation clearing protocol: There is limited treed habitat present within the Subject Land, however where vegetation is to be removed it will be undertaken in accordance with specifications provided in a vegetation clearing protocol, detailed within the CEMP.
Bio3	Plain wire instead of barbed used on perimeter fence and stock fencing: Plain wire perimeter fencing (opposed to barbed-wire fencing) will be used to avoid potential entrapment of fauna on fences.
Bio4	Chemical Protocols: Protocols for the use of spraying exclusion zones around Plains-wanderers and their habitat to be implemented
Bio5	Delineation of clearing areas: To avoid unnecessary removal or damage to retained vegetation, the limit of clearing will be clearly demarcated with temporary fencing and signed as 'Environmental Sensitive No-Go Zones' prior to the commencement of clearing. This will be detailed within the CEMP, including measures: • Vehicles or machinery will not be permitted to park within or drive through areas of retained vegetation. • Construction materials will not be stockpiled or stored within areas of retained vegetation. • Ancillary facilities, such as site compounds and construction zones, will not be located beyond the limits of clearing. • Temporary fencing and signage will be maintained throughout construction. Site inductions will be given by the civil contractor to all personnel and visitors to ensure all site workers and visitors are aware of any No-Go Zones.
Bio6	Daily/seasonal timing of construction activities to reduce impact of noise and light spill: The CEMP will include measures to avoid light encroachment on adjacent habitats such as restricting construction works to daylight hours and incorporating sensitive lighting arrays that shield the adjoining native vegetation and habitat from stray light, with low-level lighting installed for all required external lighting.
Bio7	Adaptive dust monitoring programs to control air quality: The Applicant will implement daily monitoring programs to monitor the generation of dust during construction activities. All activities relating to the Project would be undertaken with the objective of preventing visible dust emissions from the development footprint.
Bio8	Weed management: To minimise the spread of weeds throughout the Subject Land and surrounding patches, appropriate weed control activities will be undertaken in accordance with all state and regional weed management plans as part of the CEMP for the Subject Land: • Initial weed treatment - Including eliminating woody species and targeting infestations of exotic herbs. In particular, High Threat Exotic weed species occurring within the subject land will be managed in order to prevent further spread. Prior to any vegetation clearance, High Threat Exotic weeds should be demarcated in order for these to be disposed of separately from native material. • Containment – Follow-up monitoring and maintenance should be undertaken in areas of the development site that have received past primary weeding treatments in the following months, to contain any re-emergence of weed species.

ID	Mitigation Measure
	• Minimisation – Minimisation of weed species that cannot be effectively controlled on the site, such as exotic grasses, will be prevented from further spread through construction and operational phase site hygiene procedures The CEMP will include provisions for elevated non-native vegetation (i.e Lycium ferocissimum) with potential to provide perches for known predators of the Plains-wanderer, this non-native vegetation is to be removed within 300 m of suitable habitat for the species.
Bio9	Pathogen management: A pathogen management protocol will be implemented. Infection of native plants by Phytophthora cinnamomic is listed as a key threatening process under the BC Act and EPBC Act. P. cinnamomic is known to occur within the Riverina IBRA Bioregion can lead to death of trees and shrubs, resulting in devastation of native ecosystems. The risk of spreading pathogens and the mitigation measures required on site will be regularly communicated to staff and contractors e.g. during inductions and toolbox talks.
Bio10	Pest management programs: Feral pest management programs will be developed and implemented for the Project, with focus on Feral Cats and European Foxes. All control methods will be completed in accordance with relevant legislation / standard operating procedures.
Bio11	Erosion and sediment control plan (ESCP): A site-specific Erosion and Sediment Control Plan will be developed and implemented to minimise erosion and sediment control risks. The Plan will include arrangements for managing wet weather events, and working with high surface water levels, including monitoring of potential high-risk events and specific controls and follow-up measures to be applied in the event of wet weather to avoid adverse impacts to hydrological processes and Curtains Creek.
Bio12	A Bird and Bat Adaptive Management Plan will be developed in accordance with the Draft Wind Farm Assessment Guidance for the SW REZ, released by DPE in July 2023.
Noise	
N1	A complaints management system for construction works and site operations will be established.
N2	Following finalisation of equipment selection, the noise modelling will be revised.
N3	An operational noise management plan will be implemented. It will include post construction testing at sensitive land uses or at a representative location, to confirm that the noise levels achieve compliance.
Landscape and Visual	
LV1	The following principles have been and will continue to be considered in the design process of the Project (as applicable): • The lines of WTGs will reflect the contours of the natural landscape as best as possible; and • Where possible, turbines will be evenly spaced to give a regular pattern creating a better balance within the landscape.
LV2	The turbines will have a matte white finish and consist of three blades. The following factors will also be considered in the Project design to achieve a visual consistency through the landscape: • Uniformity in the colour, design, height, and rotor diameter;

ID	Mitigation Measure
	• The use of simple muted colours and non-reflective materials to reduce distant visibility and avoid drawing the eye; • Blades, nacelle, and tower to appear as the same colour; and • Avoidance of unnecessary lighting, signage, logos.
LV3	Tree planting will be undertaken in consultation with the relevant landowners to ensure that desirable views are not inadvertently eroded or lost in the effort to mitigate views of the turbines (refer Appendix E of **Appendix K**). These include: • Provision of screen planting at non-associated dwellings NAD_26 and NAD_26A; and • Provision of supplementary planting at non-associated dwellings NAD_12, NAD_13 and NAD_14.
LV4	When planning for landscaping and visual screening the following will be adhered by the Project: • In consultation with the landowner, planting will occur post construction, where possible; • Planting will remain in keeping with existing landscape character; • Species selection will be typical of the area; • Planting layout will avoid screening views of the broader landscape, where possible; • Clearing of existing vegetation will be avoided; • Where appropriate, any lost vegetation will be reinstated; and • Where possible, over any areas of disturbance, natural vegetation will be allowed to regrow.
Traffic	
TT1	Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) will be prepared in consultation with TfNSW and Hay Shire Council. The CTMP would provide additional information regarding the traffic volumes and distribution as described in Section 9 of the TIA. At a minimum, the CTMP will include the following commitments and traffic management measures which are to be implemented during the construction of the Project: • A pre-condition survey of the relevant sections of the existing road network will be undertaken in consultation with Council prior to construction; • During construction the sections of the road network used by the Project will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm would be rectified; • At the end of construction, a post-condition survey will be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction; • Neighbours of the Project will be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access; • Movements of the OSOM vehicles will be timed to not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application; • Heavy vehicles are to avoid peak school bus times to limit the interaction of large vehicles and vulnerable road users; • Development of OSOM protocols to be implemented during operation and in the event of a breakdown; • Development and implementation of a carpooling program to support sharing of vehicles travelling to and from site; • Development of four emergency access points for emergency services; • Implementation of a community information and awareness program to assist in managing traffic impacts. This will be initiated to ensure that local residents are aware of construction traffic accessing the Project;

ID	Mitigation Measure
	• Specific warning signs will be placed on approaches to and from the transport routes on Council roads, as required, which will advise of the changed traffic operations and heavy vehicle movements; • Onsite mitigation measures will be implemented, which may include speed restrictions, dust suppression measures, internal access tracks maintenance program, loading, unloading and storage will occur within the Project Area only, and the provision of car parking; and • Establishment of a Drivers Code of Conduct.
TT2	Road upgrades will be provided as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades includes: • Widen port access (gate) in southwestern corner of intersection at Port of Adeliade; • Relocate light pole and traffic signals at intersection (if required) on southern side of Eastern Parade and Port River Expressway; • Temporary removal of W-beam barriers along Port Wakefield Highway median, or replacement with removable bollards, and installation of approximately 900 m2 hard stand to be installed on median strips; • Relocation or removal of one (1) traffic sign, and two (2) signs checked for tip clearance on Angle Vale Road southwestern corner (at Angle Vale Road and North-South Motorway); • Relocation of two (2) traffic signs and a light pole and installation of approximately 420 m2 total hardstand near the intersection at Sturt Highway and Horrocks Highway; • Minor tree trimming of overhanging branches along Horrocks Highway; • Relocation of two (2) traffic signs (or signs made removable) and installation of approximately 550 m2 of hardstand near the intersection of Barrier Highway and Copperhouse Road; and • Tree trimming and removal on Copperhouse Street and approximately 150 m2 hardstand to be laid down; • Construction of new temporary gravel bypass track to Gaffney St (approx. 5.5km) (to be wind farm specification of minimum 5.5m width, suitable for min 14 tons per axle loading) on Barrier Highway at Barrier Highway (2.4 km form Broken Hill); • Construction of new temporary gravel bypass track to Gaffney St (approx. 3.7km). A new intersection off Barrier Highway (2.4 km from Broken Hill) will be required and one (1) sign will need to be made removable; • Construction of temporary gravel track through private land (to wind farm specification) and one (1) sign to be made removable at the intersection of Crystal Street and Barrier Highway; • Construction of temporary gravel track private land (to wind farm specification) and an egress gate installed in Barrier Highway; • Construction of temporary gravel track through private land (to wind farm specification). Remove trees, relocate one (1) power pole and installation pf approximately 550 m2 of temporary hardstand and fence realignment at the intersection of Sturt/Chettle Street and Barrier Highway; • Relocation of three (3) traffic signs and three (3) light poles on Cobb Highway and Sturt Highway in Hay, NSW. Installation of approximately 300 m2 total hardstand in southern corner; • Basic Right Turn (BAR) and Basic Left Turn (BAL) treatments at the intersection of Cobb Highway and West Burrabogie Road as shown in Appendix F of the TIA (refer **Appendix N**); and • BAR and BAL treatments at Site Access A, Site Access B and Site Access D along Cobb Highway as shown in Appendix G, Appendix H and Appendix I, respectfully of the TIA (refer **Appendix N**).

ID	Mitigation Measure
Aviation	
AS1	Designed air routes (to accommodate the WTGs at 270 m AGL): • Air route Q60 LSALT will be increased by 500 ft, from 1,700 ft to 2,200 ft AMSL. • Air route H247 LSALT will be increased by 200 ft, from 2,000 ft to 2,200 ft AMSL. • Air route H466 LSALT will be increased by 100 ft, from 2,100 ft to 2,200 ft AMSL.
AS2	Notification and reporting: • Details of 'constructed' WTGs including coordinates and elevations will be provided to Airservices Australia; • Details of 'constructed' WTGs and WMT exceeding 100 m AGL will be reported to CASA as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with CASR Part 139.165(1)(2); • Any obstacles above 100 m AGL (including temporary construction equipment) will be reported to Airservices Australia NOTAM office until they are incorporated in published operational documents; • Details of the Project will be provided to local and regional aircraft operators prior to construction in order for them to consider the potential impact of the wind farm on their operations. Specifically, details will be provided to the NSW Regional Airspace and Procedures Advisory Committee for consideration by its members in relation to VFR transit routes in the vicinity of the Project; and • Details of the Project (including location and height information of WTGs, met masts and overhead transmission lines) will be provided to landowners within Project Area to facilitate the flight planning of aerial application operators.
AS3	Marking of turbines: • The rotor blades, nacelle and the supporting tower of the WTGs will be painted white, typical of most WTGs operational in Australia. No additional marking measures are required for WTGs.
AS4	Marking of wind monitoring towers: • Marking of the temporary and permanent wind monitoring towers according to the requirements set out in MOS 139 Section 8.10 will be considered by the Applicant
AS5	Lighting of wind monitoring towers: • The Applicant will consider the characteristics for medium-intensity obstacle lighting contained in MOS 139, Section 9.33 for the lighting of temporary wind monitoring towers installed prior to WTG installation and permanent wind monitoring towers that are not in close proximity to a WTG with medium intensity steady red obstacle lighting at the top of the WMT mast.
AS6	Micro-siting: • Micro-siting of the WTGs and met masts within 100 m of assessed location, if required
AS7	Overhead transmission line: • Overhead transmission lines and/or supporting poles that are located where they could adversely affect aerial application operations will be identified in consultation with local aerial application operators and marked in accordance with Part 139 MOS 2019 Chapter 8 Division 10 section 8.110 (7) and section 8.110 (8).
AS8	Review of risk assessment undertaken in the AVIA as follows: • Prior to construction to ensure the regulatory framework has not changed; • Following any significant changes to the context in which the assessment was prepared, including the regulatory framework; and

ID	Mitigation Measure
	• Following any near miss, incident or accident associated with operations considered in the AVIA risk assessment.
Bushfire	
BR1	Asset Protection zones: • A *minimum* 10 m APZ is to be established on all sides of the WTG, substations, switching station and O&M Buildings. • A *minimum* 24 m APZ is to be established on all sides of the accommodation compounds. • All APZ are to be managed as an inner protection zone (IPA) as outlined within Appendix 4 of PBP 2019, and NSW RFS 'Standards for Asset Protection Zones'. APZ will not extend beyond the property boundary or rely on actions being undertaken by adjacent landowners.
BR2	The following measures are to be implemented during the entire period of construction: • The access road will be constructed prior to the installation of any WTG or related infrastructure (in advance of each development stage); • Ensure appropriate bunding in areas where there is potential for flammable fuels and oils to leak and create bushfires or other environmental risks; • Install appropriate signs to assist emergency response crews determine track names, and location of infrastructure; • Ensure that appropriate permits have been issued for work during the Fire Danger Period, and that any conditions on permits are adhered to; • Adhere to restrictions on Total Fire Ban or days of high fire danger; • Suitable firefighting equipment (specific requirements to be confirmed in consultation with NSW RFS) is present onsite; • Carry fire extinguishers or firefighting equipment in vehicles; • Carry emergency communications equipment; • Where practicable, site vehicles during the construction phase will have diesel engines and/or will use the site access roads (if available) to minimise the likelihood of igniting dry grass; • Restrict smoking to prescribed areas, and provide suitable ash and butt disposal facilities; • All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g., vegetation); and • On days when Very High fire danger or worse is forecast, the "fires near me' app is to be checked hourly for the occurrence of any fires likely to threaten the Project Area.
BR3	The following measures will be implemented during the operation of the wind farm: • The Project will be controlled by a remote supervisory control and data acquisition from a control room located within the permanent site operations and maintenance facility. The Supervisory Control and Data Acquisition (SCADA) system will allow remote operation of all WTGs with the ability to shut-down individual or all WTGs if required. • NSW RFS and CASA will be provided with maps and GPS coordinates of the final wind turbine layout and identification information for individual wind turbine sites for their internal response planning. • Liaise with local aerial agricultural and aerial firefighting operators to develop procedures for their safe operation within the Project site. • Safe working and emergency response procedures for all work tasks will be developed and implemented. • The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels. • Vegetation fuels throughout the wind farm are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required.

ID	Mitigation Measure
BR4	Fire preparedness and response: prior to construction, an Emergency Management and Operations Plan (EMOP) will be prepared for the wind farm that provides the following: • A site plan showing infrastructure, site access and the internal road layout; • Blades should be stopped in the 'Y' or 'rabbit ear' position; • Control and coordination arrangements for emergency response and who has the authority to direct turbine shut-down procedures; • Hazard reduction strategies; • Fire suppression equipment details; • Location of all fire control advantages and APZ; • Flammable materials storage requirements; • Minimum evacuation zone distances • Fire reporting and response to formal Emergency alerts; and • Any other risk control measures required to be followed by firefighters.
BR5	Reticulated water supply is not provided to the site. The volume and location of static water tanks will be confirmed in consultation with the NSW RFS, although it is likely to require minimum 50,000 litre tanks, based on refilling six tanker units (4,000 litres) twice each. The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels.
Blade Throw	
BT1	Inspection and Testing Procedures will be initiated and audited during the construction and commissioning phase. Once testing finds all WTG components including the blades are passed, the WTG will be commissioned for operation.
BT2	A high quality, comprehensive and robust operations and maintenance program will be implemented to ensure that WTG faults are prevented or detected and rectified quickly, minimising the risk of occurrence of a serious or dangerous problem. This will include inspecting blades for micro-cracks using current best practices. If any cracks above engineering thresholds are detected, the WTG will be immobilised until a replacement blade can be installed.
BT3	The industry is constantly developing measures to limit the cost of blade damages. Once available, the use of new technology developed to mitigate blade throw risks such as sensors that identify blade weaknesses and enable early maintenance and management measures will be implemented.
BT4	The International Electrotechnical Commission (IEC) standards for WTGs will be used for the design and construction of the Project to reinforce the confidence that blade throw will present a very low risk.
Telecommunications	
TC1	Should reduction in signal of mobile network services occur in the immediate vicinity of WTGs, mobile phone receiver will be relocated in the order of tens of metres.
TC2	To ascertain whether satellite services are, or will be, used at dwellings within 1 km of a WTG, the Applicant will engage with dwelling owners. Should any dwellings use satellite services, where possible, the Applicant will consider either relocate wind turbines or come to an agreement with the dwelling owner regarding impacted satellite service.
TC3	Should survey marks not be avoided during construction works, the Applicant will seek assistance from a registered surveyor to move or remove survey marks and in consultation with the NSW Government.

ID	Mitigation Measure
TC4	If issues are encountered with television reception, impacts will be mitigated by readjusting the receptor to capture signal from an alternative transmitter.
Health	
H1	The 330 kV transmission line conductors will be installed at a minimum height of 12 m above the ground in areas where the general public could walk directly below the transmission lines to achieve compliance with public exposure limits.
Aboriginal Cultural Heritage	
AH1	Preservation and management of Aboriginal sites and heritage values will be a key objective of environmental and social management proposed for the Project. Consultation between ENGIE and Hay LALC in August 2023 resulted in agreed future changes to the Project design to avoid impacting Aboriginal sites. A buffer of 200 m will be provided to recorded PADs, a buffer of 100 m to recorded hearths and a buffer of at least 50 m will be provided to recorded Culturally Modified Trees (CMTs). This would affect the following sites: • PREP SU A 01: Artefact, PAD; • PREP SU B 01: Artefact, PAD; • PREP SU C 01: Hearth; • PREP SU C 03: Artefact, Hearth, PAD; • PREP SU C 08: Artefact, Hearth, PAD; • PREP SU C 12: Artefact, PAD; • PREP SU C 13: Artefact, Hearth, PAD; • PREP SU C 16: Artefact, Hearth, PAD; • PREP SU D 01: PAD; • PREP SU D 04: Artefact, Hearth, PAD; • PREP SU D 08: Artefact, PAD; • PREP SU D 09: Artefact, Hearth; • PREP SU E 06: Artefact, PAD; • PREP SU E 07: Artefact, Hearth; • PREP SU E 10: Artefact, Hearth; • PREP SU E 11: Artefact, PAD; • PREP SU E 14: Artefact, Hearth, PAD; • PREP SU F 01: Artefact, Hearth; • PREP SU F 04: Artefact, PAD; • PREP SU F 06: Artefact, Hearth, PAD; • PREP SU F 08: Artefact, PAD; • PREP SU F 11: Artefact, PAD; • PREP SU F 12: Artefact, Hearth, PAD; • PREP SU F 15: Artefact, Hearth; • PREP SU F 16: Artefact, PAD; • PREP SU F 17: Hearth; • PREP SU F 18: Artefact, Hearth; • PREP SU F 25: Artefact, Hearth, PAD; • PREP SU G 01: Hearth; • PREP SU G 07: Artefact, PAD; • PREP SU H 03: Artefact, Hearth; • PREP SU I 03: Artefact, Hearth; • PREP SOLAR 03: Artefact, Hearth; • PREP SOLAR 04: Artefact, PAD; • PREP SOLAR 07: Artefact, PAD; and • PREP SU E 15: CMT.
AH2	An ACHMP will be developed to record and describe the processes and procedures required to be implemented regarding Aboriginal cultural heritage prior to and during the construction and operational phases of the Project.

ID	Mitigation Measure
	The ACHMP will be developed in partnership with the Traditional Owners and should at a minimum include: • Any required archaeological test or salvage excavations for the 54 sites which would be harmed within the current development footprint; • Measures to manage archaeological material that needs to be relocated away from development activities; • Measures to protect and conserve archaeological material that will not be impacted by development activities; • The requirements regarding heritage training and inductions for employees and contractors; • Any requirements regarding monitoring of ground disturbance activities by Traditional Owners; • The development and provision of cultural awareness training by Traditional Owners; and • An Unexpected Finds Protocol.
AH3	Areas of the earth mounds, burials or PADs which may be subject to harm as part of clearing of the development footprint will be subject to archaeological test/and or salvage excavation. During the consultation phase of the ACHAR Hay LALC requested that all test excavation be carried out as part of the post approval stage of the project. This is to minimise unnecessary impacts to Aboriginal cultural sites. Therefore the final design for the Project should be informed by the results of the test excavation. If determined significant, micro-siting of project elements should occur to avoid impacts to these sites.
AH4	The Applicant will liaise between the landowners and the Traditional Owners to develop appropriate stock management strategies to limit the further disturbance and damage to Aboriginal heritage sites.
AH5	The Applicant will consider the appointment and training of a Traditional Owner liaison/s to coordinate appropriately informed access for staff and contractors to culturally sensitive areas and provide cultural awareness training.
Historic Heritage	
HH1	If relics (defined by the *Heritage Act 1977* as 'any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance') are unexpectedly recovered during the proposed works, all works will be ceased immediately, and an Unexpected Finds Protocol will be implemented.
HH2	If unexpected heritage items are identified during the proposed works, the following steps will be adopted: • Where a potential historic heritage item is found during works, all works within the vicinity of the item, or with the potential to impact the item will be ceased and a temporary exclusion zone established; • An appropriately qualified heritage consultant will examine the item to assess its significance and further archaeological potential; • Where a relic is found, the NSW Heritage Council will be notified (in accordance with Section 146 of the *Heritage Act 1977*) and approval will likely be required prior to the continuation of works. Other archaeological deposits will be recorded and assessed for significance and potential salvage by an appropriately qualified heritage consultant; and • Additional assessment and approval under the *Heritage Act 1977* will be undertaken, as required, prior to the recommencement of excavation in the affected area.

ID	Mitigation Measure
HH3	Prior to the commencement of works, all contractors will be briefed on the Unexpected Finds Protocol.
HH4	Along the transport route, extensive ground disturbance for the installation of the hardstand and the removal of the tree should be avoided. If the proposed works extend outside of the area under assessment in this report, additional assessment may be required.
HH5	Lodgement of both HIS should lodged as part of an 'application for development' with the applicable regional council.
HH6	Consultation with the regional council and key stakeholders for the replacement of vegetation removed as part of the assessment to maintain landscape values to items of historical heritage.
Soils and Agriculture	
SA1	Permanent and temporary structures will be located to avoid or minimise impacts (where possible), or as agreed with the affected landowner.
SA2	Host landowners will be consulted regarding: • Property infrastructure works and timing, particularly where some restriction on vehicular or stock movements would be necessary; • Management of infrastructure such as gates; • Repair of any damage to infrastructure caused by construction.
SA3	Use of existing roads, tracks and other existing disturbed areas will be prioritised.
SA4	To ensure minimum damage to the surface, vehicular or equipment movement will be confined to one route, where possible.
SA5	The placement of infrastructure such as fencing will be determined in consultation with landowners.
SA6	Any damage caused by the Applicant during maintenance activities will be repaired promptly.
SA7	A bushfire plan will be prepared for the Project, which will include mitigation measures applicable to construction and operation activities, particularly during the bushfire danger period.
SA8	Following completion of construction, disturbed areas will be stabilised and rehabilitated in line with approval conditions and contractual agreements with landowners.
SA9	Procedures will be implemented to manage potential impacts on livestock (as described in **Table 6-59**), and in consultation with affected landowners
SA10	Temporary fencing can be used as an exclusion barrier will be installed around facilities such as construction compound, concrete batching plants, materials storage and laydown areas.
SA11	Biosecurity protocols will be implemented, including recording of all persons entering the Project Area.
SA12	All project vehicles will be washed down prior to entering any agricultural areas.
SA13	All vehicles will be washed down when moving between paddocks with known weed infestations.

ID	Mitigation Measure
SA14	Infestations (existing or new) of any priority weed species will be reported to the relevant authority.
SA15	Weeds will be managed in accordance with the *Biosecurity Act 2015* and the relevant regional strategic weed management plans and in consultation with landowners.
SA16	The land around transmission line structures and other project infrastructure will be monitored for the spread of weeds.
SA17	The Project Area will be monitored for pest fauna species. Should any pest fauna species be identified as present on the Project Area, appropriate control measures will be implemented.
SA18	The Project Area will be rehabilitated the condition agreed with the landowners and as specified in contractual agreements.
SA19	Underground infrastructure (such as cables and footings) will be removed where practical to a depth of 0.3 m below ground surface.
SA20	Any contamination or waste will be removed or managed in consultation with the landowners and according to regulations and weed infestations will be controlled during the decommissioning process, as necessary.
Water Resources, Hydrology and Flooding	
WHF1	Water Resources: Should additional groundwater bores or water from other sources covered under the relevant water sharing plan be required, the Applicant will seek to obtain a WAL, and other relevant approvals, subject to availability.
WHF2	Water Resources: A Soil and Water Management Plan (SWMP) will be prepared and will: • Incorporate best practice principles for stormwater and sediment control during all phases of the Project, as described in the BPESC; and • Be prepared by a suitably qualified person in accordance with the Blue Book, particularly Volumes 2A and 2C.
WHF3	Water Resources: A progressive erosion and sediment control plan (ESCP) will be prepared to address specific high-risk areas identified during detailed design. ESC measures will include site stabilisation measures such as sediment fences and sediment basins.
WHF4	Water Resources: A CEMP will be prepared and include measures to minimise the risk of contamination from chemical spills in waterways.
WHF5	Water Resources: Design and construction of Project infrastructure crossing watercourses will be in accordance with the 'Guidelines for Controlled Activities on Waterfront Land' (DPI, 2018).
WHF6	Water Resources: Detailed design of any scour protection at potential creek crossing points will consider the 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (DPI, 2003) to ensure that fish passage is not impeded.
WHF7	Flooding: Procedures and measures will be recorded to manage the risk of flooding to the Project and the potential for adverse impacts on existing flood behaviour within the vicinity of the Project.

ID	Mitigation Measure
WHF8	Flooding: Design standards will be identified for managing the flood risk and implementing stormwater management controls during the construction and operational phases of the Project.
WHF9	Flooding: Procedures aimed at reducing the flooding threat to human safety and infrastructure will be prepared.
WHF10	Flooding: Controls to mitigate the impact of the Project (during construction and operation) on flood behaviour will be prepared.
WHF11	Flooding: The impact of the Project on flood behaviour in consideration of future climate change will be confirmed during detailed design.
WHF12	Flooding: The Project will be designed to minimise adverse flood related impacts in Telegraph Creek, Abercrombie Creek, Curtains Creek and Nyangay Creek.
WHF13	Flooding: Access tracks will be designed to have a minimum hydrologic standard of 10 % AEP.
WHF14	Flooding: Access track connections will be designed to ensure that the existing level of flood immunity of the Cobb Highway is maintained and increases in flood depths and hazards along the road network are minimised.
WHF15	Flooding: Construction compounds will be located outside high flood hazard areas based on a 1% AEP flood.
WHF16	Flooding: Consider flood risk at construction sites and support facilities during construction planning. Including the review of construction site layouts and staging construction activities, and implementing measures to mitigate alterations to local runoff conditions.
WHF17	Flooding: Construction spoil stockpiles will be located in areas not subject to frequent inundation by floodwater, ideally outside the 10% AEP flood extent.
WHF18	Flooding: Incorporate a construction flood emergency management measures into relevant environmental and/or safety management documentation.
WHF19	Flooding: Scour protection and energy dissipation measures will be provided to mitigate localised increases in flow velocities at drainage outlets and waterway crossings.
Air Quality	
AQ1	Dust suppression measures (watering roadways) or preparing roadways with coarse gravel or other road coverings will be implemented where required to minimise wheel-generated offsite dust emissions.
AQ2	Material loads which may generate dust, such as aggregates, will be covered and/or stabilised during transport into and within the construction site where practicable.
AQ3	Soil stockpiles will be managed through stabilisation, light watering or the use of covers.
AQ4	Where practicable, vegetation clearance will be minimised, undertaken in stages, and cleared areas will be stabilised.
AQ5	Vehicle speed will be managed when travelling on unsealed roads.
AQ6	Speed of dumping from tip trucks will be controlled.
AQ7	Vehicle movements will be minimised, where practicable.

ID	Mitigation Measure
AQ8	Vehicles, plant and equipment will be cleaned and washed.
AQ9	Disturbance areas no longer required for construction will be progressive revegetated and stabilised.
AQ10	All vehicles, plant and equipment will be regularly inspected and maintained to ensure operational efficiency.
AQ11	Environmental conditions will be regularly monitored during construction, such as wind, that may result in dust generation and implementation of control measures as specified above.
AQ12	As part of the detailed design, the Applicant will continue to investigate options to further avoid and minimise impacts, including but not limited, the use of light vehicle fleet and potentially some heavy construction vehicles be electric.
Waste	
WM1	Adopt protocols to identify opportunities to follow the waste hierarchy, to encourage the most efficient use of resources, as well as reduce costs and environmental harm in accordance with the principles of ESD.
WM2	Adopt purchasing protocols in the selection of all components of the Project, in order to reduce the likelihood of equipment failure and minimise the potential for waste.
WM3	Select solar panels manufacturers as recommended by Clean Energy Council, that will meet a range of higher standards in addition to relevant Australian and International Standards.
WM4	Engage with Tamworth Regional Council to discuss the options for disposal and reuse of the identified waste streams likely to be generated, in order to ensure that any use of local waste management facilities does not exhaust available capacity, nor disadvantage the local community.
WM5	Classify wastes in accordance with the NSW EPA Waste Classification Guidelines – Part 1: classifying waste (NSW EPA, 2014a) and Addendum (NSW EPA, 2016).
WM6	Provide waste storage locations within assigned area, with sufficient space for separation and storage of different waste.
WM7	Store and dispose of waste lawfully at a licensed waste facility, including fuels, oils and hazardous substances used onsite.
WM8	Separate recyclable and non-recyclable materials onsite prior to being transported to waste facility.
WM9	Investigate opportunities for recycling of wastes prior to sending to landfill.
WM10	Waste receptacles will be collected on a regular basis by licensed contractors or Council collection service and transported for offsite disposal at an appropriately licensed landfill or recycling facility.
WM11	Provide toilet facilities for onsite workers and how sullage would be disposed of (e.g., pump out to local sewage treatment plant).
WM12	Provisions protocol for the packaging, transportation of spent lithium-ion batteries to collection and recycling facilities.
WM13	Green waste: Onsite reuse where possible or reused offsite in accordance with the 'Mulch Resource Recovery Order and Exemption' (NSW EPA, 2016).

ID	Mitigation Measure
WM14	Spoil: Onsite reuse; or reused offsite as Virgin Excavated Natural Material or the Excavated Natural Material Resource Recovery Order and Exemption' (NSW EPA, 2014b) (as applicable).
WM15	Concrete: Source separated and stored in separate receptacles/ storage areas. Reused onsite where feasible; reused offsite in accordance with the 'Recovered Aggregate Resource Recovery Order and Exemption' (NSW EPA, 2014c); or transported off site for recycling
WM16	Timber: Where practicable procurement of surplus pallets will be avoided. Delivery of material on pallets will be limited where practicable; however, if materials have to be delivered on pallets, these will be returned to the supplier at time of delivery (where practicable). Pallets will be reused where possible, through product stewardship arrangements sought by the Applicant prior to construction. Damaged pallets will be sold for wood chip where practicable (e.g., if untreated and uncontaminated). Wood pallets not suitable for reuse or recycling would be stored in designated waste storage areas for collection by an authorised contractor for offsite drop-off.
WM17	Plastic packaging: Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM18	PET: Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM19	Cardboard packaging/ paper waste: Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM20	Glass: Source separated and stored in separate receptacles/ storage areas. Offsite transport for recycling.
WM21	Empty chemical drums: Reused onsite, recycled via contractor or returned to supplier.
WM22	Paint: Transported from site and disposed of in accordance with the 'Waste Classification Guidelines' (NSW EPA, 2014a).
WM23	Oil spill clean-up material: Collected oily rags and spill clean-up material will be collected in regulated waste bins and transported by a licensed regulated waste contractor to a licenced regulated waste receiver for disposal.
WM24	Waste oils, lubricants and liquids: Stored separately and transported by a licensed regulated waste contractor to a licensed regulated waste receiver for disposal.
WM25	Metals (ferrous and non-ferrous): Scrap metal will be stored in for periodic transportation offsite to applicable recycling facilities.
WM26	Solar panels: Damaged and end-of-life solar panels and associated infrastructure will be transported by a licensed regulated waste contractor to a licenced regulated waste receiver for disposal. As technology allows waste management providers that specialise in recycling of solar panels will be investigated.

ID	Mitigation Measure
WM27	Electronics and electrical infrastructure: Stored in dedicated areas prior to offsite transport. As far as possible, all materials and components will be reused, sold as scrap, recycled or re-purposed to the maximum amount economically practicable. Where not practicable, transported from site and disposed of in accordance with the 'Waste Classification Guidelines' (NSW EPA, 2014a)
WM28	Recyclable domestic waste: Stored in dedicated recyclable bins for periodic transportation offsite to applicable recycling facilities.
WM29	Septic tank waste: Collected waste will be transported by a licenced regulated waste contractor to a licenced regulated waste receiver for disposal.
WM30	Domestic wastes: Transported from site and disposed of in accordance with the Waste Classification Guidelines (NSW EPA, 2014a).
Economic	
EC1	The Applicant will work in partnership with the relevant Council in the Study Area, and the local community so that the projected economic benefits of the Project are maximised, and the impacts minimised.
EC2	Regional residents where they have the required skills, experience, and commitment will be employed for the Project.
EC3	Participate, as appropriate, in business groups, events or programs in the regional community.
EC4	Non-labour inputs to production will be locally sourced where local producers can be cost and quality competitive.
EC5	A benefit sharing program will be established to fund community projects and supporting a range of benefit sharing initiatives.
EC6	Lease payments will be provided to host landowners that provide an alternative drought proof income with potential flow-on benefits to the regional economy.
EC7	Payments will be provided to neighbours within 10 km of the Project to share economic benefits.
EC8	Agricultural activities will continue during the operational phase of the Project and following Project decommissioning, agricultural production will be fully reinstated as per pre-project.
EC9	Drive-in drive-out (DIDO)/ fly-in fly-out (FIFO) will be used for the Project and workforce accommodation will be provided to reduce impacts on the regional labour market (wage increases and labour shortages) and accommodation market (price/rent increases).
Social	
SO1	A Stakeholder Engagement Plan (SEP) will be developed and implemented.
SO2	A Grievance Mechanism will be developed and implemented.
SO3	Job awareness opportunities will be investigated and created amongst the community (in partnership with the relevant Councils and other partner organisations).
SO4	A Local Employment Plan (LEMP) will be developed and implemented.

ID	Mitigation Measure
SO5	The Applicant will work with the Engineering, Procurement and Construction (EPC) Contractor to minimise social impacts.
SO6	Skills shortages within the region will be monitored and taken into consideration with EPC recruitment objectives.
SO7	A Construction Traffic Management Plan (CTMP) will be developed and implemented.
SO8	A Construction Environmental Management Plan (CEMP) will be developed and implemented.
SO9	A Workforce Accommodation Management Plan (WAMP) will be developed and implemented.
SO10	An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed and implemented.
SO11	An Operational Environmental Management Plan (OEMP) will be developed and implemented.
SO12	A CEF will be developed and implemented in consultation with key stakeholders and potential partner and publish to the wider community.
SO13	Mitigation and management measures outlined in the Noise and Vibration Impact Assessment (NVIA) will be developed and implemented.
SO14	A Legacy Fund will be developed and implemented, which will be administered by independent community groups following cessation of the Project.
SO15	Impacts to accommodation availability and cost inflation attributable to Project workforce accommodation arrangements will be monitored.
SO16	Accessibility impacts to local services attributable to increased service demand from the Project workforce will be monitored.
SO17	Local content initiatives which include local procurement goals for the operation phase will be developed and implemented.
SO18	Host and near neighbour landowner agreements will be enacted as agreed.
SO19	To understand land devaluation concerns, open communication with surrounding landowners will be fostered.
SO20	Community benefits will be considered to be extended to surrounding landowners (the community typically views these as an “offset”), for the perceived devaluation of land through Neighbour Agreements.
SO21	Project developer will undertake localised visual impact assessment where merited (including properties that may have previously declined a visual impact assessment) and communicate the outcomes of the visual impact assessment.
SO22	Development and implementation of a Community Engagement Strategy (CES)

APPENDIX C STATUTORY COMPLIANCE

TABLE C-1 2MANDATORY CONSIDERATIONS

Statutory Reference	*Mandatory Consideration*	*Project Response*	*Where Addressed*	*Compliant*
Considerations under the EP&A Act and Regulation				
Section 1.3 - Objects of the Act *Pursuant to Section 1.3 of the EP&A Act, the Objects of the Act are:*	(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,	The Project will generate additional employment within the region which will assist in sustaining the socio-economic viability of the region while contributing to alternative sources of power generation to reduce the region's carbon footprint.	Entire EIS	✓
	(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	The Project is consistent with the principles of ESD. The Project has considered stakeholder engagement, environmental assessments, a number of design and layout alternatives, and management measures to address the impacts that are likely to occur from Project.	**Section 7.7**	✓
	(c) to promote the orderly and economic use and development of land,	This EIS has assessed the potential impacts of the Project in accordance with the requirements of relevant policy and guidelines, and will provide an ongoing regional economic stimulus for the operational life of the Project through employment, sourcing of local materials, plant and equipment, and the establishment of a host landowner agreement, NBSP, CEF, and VPA.	**Section 6**	✓
	(d) to promote the delivery and maintenance of affordable housing,	Not applicable.	-	-
	(e) to protect the environment, including the conservation of threatened and other species of	The Project design has been prepared and refined to avoid impacts on the environment and high value biodiversity, and where impacts	**Section 6.2** and **Appendix G**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	native animals and plants, ecological communities and their habitats,	could not be avoided, mitigation measures have been provided.		
	(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),	The Project design has been prepared to avoid impacts on both Aboriginal and Historic Heritage, and where impacts could not be avoided, mitigation measures have been provided to preserve heritage sites.	**Section 6.7**, **Section 6.8** and **Appendix H**	✓
	(g) to promote good design and amenity of the built environment,	The Project has been designed in accordance with relevant standard, considered visual and landscape impacts and has avoided or minimised these through design refinements or mitigation measures.	**Section 6.4** and **Appendix K**	✓
	(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,	The Project has considered all relevant aspects in the design of buildings associated with the Project, including the health and safety of proposed occupants of buildings.	**Section 3.5.2**	✓
	(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,	This EIS has been prepared to accompany a DA for SSD, which will be assessed by the DPE. The Project SEARs has been prepared with input from relevant regulatory agencies. This EIS has engaged with all government levels through the development of the Project to date.	**Section 5**	✓
	(j) to provide increased opportunity for community participation in environmental planning and assessment.	This EIS has considered the outcomes of community participation, which has supported the Project design and identification of mitigation measures date.	**Section 5**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
Section 4.15 – Evaluation *Pursuant to Section 4.15 of the EP&A Act, the consent authority is required to take matters into consideration in determining an Application*	a) the provisions of – (i) any environmental planning instrument.	The provisions of relevant environmental planning instruments (EPIs) relating to the Project are addressed below.	This table	✓
	a) the provisions of – (ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved).	There are no draft environmental planning instruments relevant to the Project	-	-
	a) the provisions of – (iii) any development control plan.	Development control plans do not apply to SSD under the provisions of Clause 2.10 of SEPP (Planning Systems) 2021.	**Section 2.3.3**	✓
	a) the provisions of – (iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4.	A CEF will be managed through a Voluntary Planning Agreement (VPA) with Hay Shire Council, and governed by Subdivision 2, of Division 7.1 of Part 7 of the EP&A Act.	**Section 2.6**	✓
	a) the provisions of – (iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph).	The provisions of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) and its relevance to the Project are addressed.	Table C-3	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
		Clause 61 of the EP&A Regulation provides additional matters that consent authority must consider. None of these matters are relevant to the Project.		
	(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.	Assessment of the key environmental and social impacts relating to the Project have been addressed in this EIS.	**Section 6**	✓
	(c) the suitability of the site for the development	A number of key factors were assessed to determine site suitability, including wind resources, grid connection, planning requirements and likely environmental impacts.	**Section 2**	✓
	(d) any submissions made in accordance with the Act or the regulations.	This EIS has been prepared considering the SEARs requirements and agency input. The EIS will be placed on exhibition by DPE for a minimum period of to 28 days and submissions will be considered by the consent authority.	-	-
	(e) the public interest.	The Project offers a number of strategic and long-term benefits that are of local and regional community interest. It includes: • The supply of renewable energy, that together with the provision of a storage capacity, is expected to result in lower cost of energy in the NEM; • The provision of jobs during construction and operation phases and an economic boost to the local economy, through local goods and services and community benefit programs;	**Section 2** and **Section 7**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
		• The Project will also assist in achieving International, Australian Government, and State Government policies strategic goals. The principles of sustainable development are key to decision-making processes concerning the development of new energy resources. A key principle underlying the notion of sustainable development is the concept of intergenerational equity. Intergenerational equity is premised on the idea that "the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations". Intergenerational equality relating to energy production has two requirements: • Sustainable mining and use of fossil fuels; and • Increasingly substitute energy sources that result in less greenhouse gas emissions for energy sources that result in more greenhouse gas emissions. As a result, the Project is in the public interest.		
Considerations under other legislation				
Biodiversity Conservation Act 2016 – *Section 7.14*	The Minister for Planning and Homes is required to take into account the impact of the Project on biodiversity. The Minister may (but is not required to) further consider under the EP&A Act the likely impact of the Project on biodiversity values.	A BDAR pursuant to section 7.14 of the BC Act has been undertaken for the Project.	**Section 6.2** and **Appendix G**	✓
Considerations under relevant EPIs				

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
State Environmental Planning Policy (Resilience *and* Hazards) 2021 *(Resilience and Hazards SEPP)* Chapter 3 Hazardous and offensive development Chapter 4 Remediation of Land	Chapter 3 of Resilience and Hazards SEPP assesses the potential hazards associated with the Project by providing definitions and guidelines for hazardous industry, offensive industry, hazardous storage establishments, and offensive storage establishments. Chapter 4 of Resilience and Hazards SEPP promotes the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.	In accordance with Clause 3.7, this EIS has considered current circulars or guidelines published by the Department relating to hazardous or offensive development including: • *Hazardous Industry Planning Advisory Paper No 4* – Risk Criteria for Land Use Safety Planning (HIPAP No. 4) (DPIE, 2011b); • *Hazardous Industry Planning Advisory Paper No 6*– Guidelines for Hazard Analysis (HIPAP No. 6) (DPIE, 2011a); and • Multi-level Risk Assessment (DoP, 2011c). A Preliminary Hazard Analysis (PHA) has been prepared for the Project. Under Clause 4.6, a consent authority is required to consider whether a proposed development site is affected by soil or other contaminants before granting consent. An Agricultural Impact Assessment provides a further discussion on the potential impacts on soil and agriculture resources associated with the Project.	**Section 6.6.4** **Section 6.9** and **Appendix L**	✓
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP)	Chapter 4 Koala Habitat Protection 2021 of the Biodiversity and Conservation SEPP provides a framework for councils to prepare a strategic koala plan of management that would apply to the whole or part of an LGA.	State Environmental Planning Policy (Koala Habitat Protection) 2021 (Koala SEPP 2021) applies to identified LGAs in areas not zoned as RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry. Within zones RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry, the former State Environmental Planning Policy (Koala Habitat Protection) 2020 (Koala SEPP 2020) continues to apply. Both SEPPs only apply to development applications whereby Council is the consenting authority, which is not the case for the Project	**Section 6.2** and **Appendix G**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
		since it is designated as SSD. Therefore, neither SEPP is applicable to the Project. Notwithstanding, Koalas have been considered during the preparation of this EIS, BDAR and EPBC Act Referral.		
State Environmental Planning Policy (Primary Production) 2021 *(Primary Production SEPP)*	The Primary Production SEPP contains planning provisions to manage primary production and rural development, including supporting sustainable agriculture for the protection of prime agricultural land of state and regional significance, as well as regionally significant mining and extractive resources.	The Project will not impede agricultural use of the land.	-	-
State Environmental Planning Policy (Transport and Infrastructure) 2021 *(T&I SEPP)*	T&I SEPP provides greater consistency and flexibility in the development of key transport and infrastructure works. Relevantly, Section 2.36(1) provides that the development of electricity generating works may be carried out with consent in a prescribed rural zone, which includes the *RU1 – Primary Production* Zone.	The Project is located on land zoned RU1, therefore, the Project is permissible with consent under the provisions of Clause 2.36 of T&I SEPP.	**Section 4.2.1**	✓
State Environmental Planning Policy (Planning Systems) 2021	The Primary Production SEPP classifies a project as SSD if it requires development consent and is a development for the purpose of electricity generating works that has a	The Project has met the relevant criteria under the provisions of the Planning System SEPP for it to be classified SSD.	**Section 4.1**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
(Planning Systems SEPP)	capital investment value of more than $30 million.			
Hay Local Environmental Plan 2011 (Hay LEP) and	The EIS will address relevant components of the Hay LEP, including Clause 1.2 – Aims of Plan and the Land Use Table, Zone RU1 (Primary Production).	The Project meets the aims of the Hay as the proposed layout has been designed to avoid or minimise impact to identified biodiversity, amenity visual and noise, Aboriginal cultural heritage values, and land of significance for agricultural purposes. Progressive design iterations for the WTGs, ancillary infrastructure, and the transmission line easement have continued with key drivers being measures to minimise and avoid environmental and social impacts in line with the Avoid-Minimise-Mitigate-Offset design hierarchy. The Project meets the principles of ESD as justified in this EIS. The Project will allow for ongoing agricultural activity through planned continued use of the Project Area for grazing, preventing fragmentation of agricultural land. Further, the Project will create a range of social and economic benefits which will contribute to substantial capital investment in the broader Riverina Murray region. The Applicant also commits to implementing a NBSP for the life of the Project, which will provide investment in buildings and social infrastructure in the local community.	**Section 2.3.2**, **Section 6** and **Section 7**	✓
	Objectives of the RU1 – Primary Production relevant to the Project (Land Use Table):	The Project has undertaken technical studies to identify, avoid and mitigate impacts associated with the development of Project. Appropriate	**Section 2.3.2** and **Section 6**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	To encourage sustainable primary industry production by maintaining and enhancing the natural resource base To encourage diversity in primary industry enterprises and systems appropriate for the area To minimise the fragmentation and alienation of resource lands	measures will be adopted to protect, maintaining and enhance the local natural resource. Additionally, the Project will continue to provide upgraded access for ongoing agricultural activities and further provide a diversified income stream through host landowner agreement, NBSP and CEF .		
Considerations under Development Control Plans				
Development Control Plan	There are no Development Control Plans listed on the Hay Shire Council website.	The Project is classified as SSD. As such, under section 2.10 of the Planning Systems SEPP, DCP does not apply and is not a mandatory consideration for the Project.	**Section 2.3.3**	✓

TABLE C-3 EP&A REGULATION PART 8, DIVISION 5 COMPLIANCE

Requirement	Where Addressed	Compliant
Section 190. Form of the environmental impact statement		
(1) An EIS must contain the following information: *(a) the name, address and professional qualifications of the person who prepared the statement,* *(b) the name and address of the responsible person,* *(c) the address of the land -* *(i) to which the development application relates, or* *(ii) on which the activity or infrastructure to which the statement relates is to be carried out,*	REAP Declaration	✓
(d) a description of the development, activity or infrastructure,	**Section 3**	✓

Requirement	*Where Addressed*	*Compliant*
(e) an assessment by the person who prepared the statement of the environmental impact of the development, activity or infrastructure, dealing with the matters referred to in this Division,	Entire EIS	✓
(2) The person preparing the statement must have regard to— *(a) for State significant development—the State Significant Development Guidelines, or*	REAP Declaration Entire EIS	✓
(b) for State significant infrastructure—the State Significant Infrastructure Guidelines.	Not Applicable	✓
(3) An environmental impact statement must also contain a declaration by a relevant person that— *(a) the statement has been prepared in accordance with this Regulation, and* *(b) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure, and* *(c) the information contained in the statement is not false or misleading, and* *(d) for State significant development or State significant infrastructure—the statement contains the information required under the Registered Environmental Assessment Practitioner Guidelines.*	REAP Declaration	✓
Section 191. Compliance with environmental assessment requirements		
The environmental impact statement must comply with the environmental assessment requirements notified under the Regulation, Section 176 or the Act, Section 5.16(4).	**Appendix A**	✓
Section 192. Content of environmental impact statement		
(1) An EIS must also include each of the following: *(a) a summary of the EIS,*	Summary	✓
(b) a statement of the objectives of the development, activity or infrastructure,	**Section 1.3**	✓
(c) an analysis of any feasible alternatives to the carrying out of the development, activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure,	**Section 2.7**	✓
(d) an analysis of the development, activity or infrastructure, including— *(i) a full description of the development, activity or infrastructure, and*	**Section 3**, **Section 4** and **Section 6**	✓

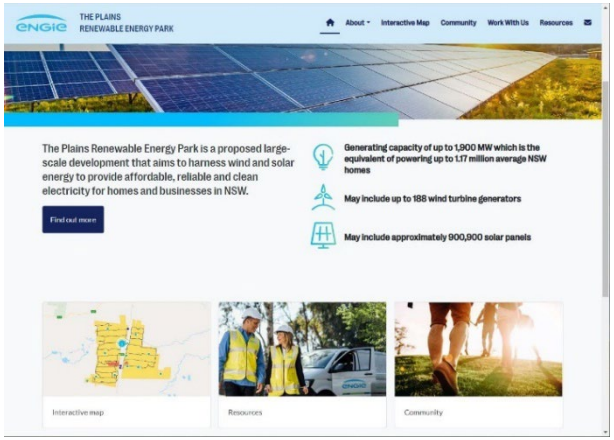
Requirement	*Where Addressed*	*Compliant*
(ii) a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and *(iii) the likely impact on the environment of the development, activity or infrastructure, and* *(iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, and* *(v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out,*		
(e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d) (iv) above,	**Appendix B**	✓
(f) the reasons justifying the carrying out of the development, activity or infrastructure, considering biophysical, economic and social factors, including the principles of ecologically sustainable development set out in section 193 of the Regulation.	**Section 7**	✓
(2) This section is subject to the environmental assessment requirements that relate to the environmental impact statement.	**Appendix A**	✓
(3) This section does not apply if— *(a) the Planning Secretary has waived the requirement for an application for environmental assessment requirements in relation to an environmental impact statement for State significant development, and*	Not Applicable	✓
(b) the conditions of the waiver specify that the environmental impact statement must instead comply with requirements set out or referred to in the conditions.	Not Applicable	✓
(4) A document adopted or referred to by an environmental impact statement is taken to form part of the statement.	Entire EIS Appendices	✓
Section 193. The principles of ecologically sustainable development		
(1) The principles of ecologically sustainable development are the following— *(a) the precautionary principle,* *(b) inter-generational equity,* *(c) conservation of biological diversity and ecological integrity,* *(d) improved valuation, pricing and incentive mechanisms.*	**Section 7**	✓

Requirement	*Where Addressed*	*Compliant*
(2) The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. *(3) In applying the precautionary principle, public and private decisions should be guided by—* *(a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and* *(b) an assessment of the risk-weighted consequences of various options.* *(4) The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.* *(5) The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.* *(6) The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as—* *(a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and* *(b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and* *(c) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*		

APPENDIX D STAKEHOLDER ENGAGEMENT

Table D-1 provides a summary of the engagement tools used to engage with and seek feedback from the stakeholders listed in **Table 5-1** of the EIS.

TABLE D-1 ENGAGEMENT ACTIVITIES OVERVIEW

Activities	***Summary***
Stakeholder and feedback database	A stakeholder and feedback database (Consultation Manager) was used to ensure that stakeholder feedback, concerns and enquiries are recorded and responded to and to capture stakeholder information and specific engagement details.
Project Website	A dedicated Project website was established to promote community awareness of the Project and ensure that up to date information on the project remains available to the community: • Website: The Plains Renewable Energy Park (engie.com.au) In August 2023 a separate website was launched, which provides information on the Project background and justification, Project milestones and timelines, community consultation opportunities, an interactive map showing various layers such as the Project layout, cultural heritage and biodiversity, a summary of the planning pathway, news and updates, how to provide feedback and email address for contact: • Website: Home - The Plains - Renewable Energy Park | The Plains | Engie (theplainsenergypark.com.au). The website and interactive map have received 822 page views from 167 visitors to the site since its launch.  **Photo D-1 Project Website**
Emails, Phone calls and Video calls	A dedicated Project email address and phone line have been established to answers queries and allow the community to provide feedback relevant to the Project. These are monitored daily by the Project community engagement team. The details for the hotline and email address are shared on the Project's website, social media and newsletters: • Email: theplainsenergypark.au@engie.com; and • Hotline: 1800 845 067.

Activities	Summary	
	There have been five email campaigns sent to subscribers about the Project, community information sessions and the Hub opening. A further two email campaigns were sent to targeted recipients for the launch of the Hub. There are currently 206 stakeholders subscribed to the electronic mailing list for Project updates.	
Community Information Hub	A Community Information Hub (Hub) is a dedicated physical space for the Project. The Hub is located at 165 Lachlan Street, Hay, NSW 2711. It was officially opened on 7 September 2023 and is open from 9am to 5pm every Thursday and is staff by a local resident.  **Photo D-2 The Plains Renewable Energy Park - Community information Hub**	The Hub provides an opportunity for community members and stakeholders to speak with a Project representative and to view Project information including high quality public viewpoint photomontages, an interactive engagement tool and fact sheets on areas of interest (including noise, decommissioning and social and economic benefits of the Project). Additionally, an education area has been established for local school groups to learn more about renewable energy and renewable energy zones.  **Photo D-3 Community Information Hub**

Activities	Summary	
Public Relations and Media	Media releases were provided to local print media outlets to release and promote Project news and milestones. Print advertisements promoted opportunities for the community to provide feedback and input. Print advertising was run in the Riverina Grazier newspaper, with eight advertisements in 2022 relating to community information sessions and ten advertisements in 2023 relating to community information sessions, the 2023 sponsorship program, local positions vacant at ENGIE and the opening of the Hub. The readership of the Riverina Grazier includes 850 printed hard copy newspapers, 200 digital subscribers and a social media reach of 4000 people. In addition to advertisements, there were two articles in 2022 about the Project's Boorooban information session and five articles in 2023 relating to the community information session at Boorooban, opening of the Hub and the awarding of funding to local groups from the 2023 sponsorship program. Five separate radio campaigns have been run to date and include August 2022 (two), October 2022, April/May 2023 and October/November 2023 for 2HayFM. A further radio campaign was run in May 2023 for ACE Radio – Edge FM in Deniliquin. Other sources of advertising include: • Advertisement of Community Information sessions on the Hay Shire Council Facebook page, Shire Snippets newsletter and Council website; • Advertisement of the Project on the website and Facebook page for Regional Development Australia; • Three Hay Community Noticeboard Facebook pages; and • Advertisement of Community Information sessions for April 2023 in the Deniliquin Pastoral Times.	 Wednesday August 16, 2023 **Funding boost for local community groups** ENGIE's Jacqui Niemand (centre), with Robert Marmont and Bob Dugal from CA4SE Hay. Image: The Riverine Grazier / Kimberly Grabham. **ENGIE has awarded over $40,000 in sponsorship funding, distributed across 13 community groups and organisations in Hay, following the launch of The Plains Renewable Energy Park Community Sponsorship Program in May.** The establishment of a Native Garden and Bush Tucker Demonstration Site and supporting a men's mental health weekend are among the inspiring and important projects to benefit from the Community Sponsorship Program. ENGIE Head of Stakeholder Relations, Jacqui Niemand, said it was great to receive so many applications for the first round of sponsorship. "The Plains Community Sponsorship Program is just one of the ways ENGIE is partnering with the community to deliver projects and events that bring people together and enhance what's great about Hay," says Mrs Niemand. Paraway Pastoral Company contributed funding to ENGIE's Program and participated in the selection panel. Paraway CEO, Harvey Gaynor said, "We are very pleased to support ENGIE's Sponsorship Program and the community projects that will benefit." As part of the program, Hay Plains Landcare will receive funding to establish a Native Garden and Bush Tucker Demonstration Site. Spokesperson for Hay Plains Landcare, Jenny Dwyer, said Hay Plains Landcare is committed to developing its Native Species Demonstration Site adjacent to the Hay Gaol. "Thanks to ENGIE's 2023 Community Sponsorship Program we have $5000 to go towards a Native Garden and Bush Tucker section, where the community will be able to learn about native garden and bush tucker species that are suited to our climate by enjoying the garden, and by being involved in activities on-site, including workshops and open days," said Mrs Dwyer. Another successful recipient was the Hay Local Aboriginal Land Council (LALC), where the funding will support a men's mental health weekend. "Hay LALC is very happy and pleased to accept this sponsorship which will help deliver a men's mental health workshop weekend for Aboriginal men out on country later in the year. "Thank you for the donation," said Tara Dixon from the Hay LALC. Hay CASE (Community Action for Suicide Elimination) also received $5000 to train more local community members in the recognition of mental health issues. "Hay CASE is most appreciative of the financial support given by ENGIE to enable CASE to continue its important work in the education and training of local community members with regard to recognition of mental health issues in Hay," said CASE Secretary Robert Marmont. Mrs Niemand congratulated the applicants and said the sponsorship will go directly back into the community. "I want to congratulate each of the recipients on their successful applications and for their contribution to their communities, which we at ENGIE are very proud to support." Further information about the project can be found at engie.com.au/the-plains. **Photo D-4 Project advertisement**

Activities	Summary
Project visualisation video	A Project visualisation video is currently being prepared to provide the community and other stakeholders with an overview of the Project, including locality and setting, process of layout and refinements, environmental impact assessment and the social and economic benefits of the Project. It is expected that the video will be released in Q2 of 2024 and will be available on the Project website and will be displayed in the Community Hub.
Briefings	Briefing documents were used to keep key stakeholders updated on specific events and activities. Each document was tailored to the stakeholder group being engaged with, which included meetings with government representatives, Indigenous communities and groups and other key stakeholder groups.
Project FAQs	Frequently Asked Questions (FAQs) are available on the Project's webpage (FAQs | The Plains | Engie (theplainsenergypark.com.au)) to provide key information about the Project, and enable consistent responses to common questions across the Project team and stakeholders. A booklet of FAQs detailing the key Project information including frequently asked questions was developed to support community engagement activities. This booklet has been distributed at drop-in sessions and to key stakeholders.
Community guide to the EIS	A summarised and engaging community guide to the EIS has been published to support effective engagement.

Activities	Summary	
Factsheets	Factsheets about the Project were developed and shared with stakeholders to provide a greater understanding of the Project. These have been adapted as the Project has evolved and updated facts have been made available on the website, in the newsletter and in person at the community sessions and one-on-one meetings. Factsheets include general information on the noise impacts, decommissioning process and the benefits of the Project to the community. This also includes an FAQs section, to help answer common queries and concerns and incorporates key aspects and topics that have been raised by the community, landowner and neighbours. In addition, following feedback from the social research completed in Hay in early May 2023, information about perceived noise generated from wind turbines and the decommissioning and recycling of wind turbines and solar panels have also been published into factsheets. These factsheets have been made available at community information sessions and also at the Hub. Information is updated regularly as the Project development progresses, and is available on the Project's website: • Resources | The Plains | Engie (theplainsenergypark.com.au).	 **Photo D-5 The Plains Renewable Energy Park - Factsheet**
Site visits and site tours	Project site visits were undertaken with landowner and nearby neighbours to deepen their understanding of the requirements for the Project, as well as the scope and scale. As part of the ACHAR, site visits were also undertaken to identify any cultural values within the landscape.	
Community survey	An online survey was available on the webpage and at community drop-in sessions to secure general feedback regarding the Project and more specific feedback on social values, visual aspects, landscape features, scenic quality, and views. The survey was also promoted through advertisements in the local media.	

Activities	Summary	
Newsletters	Newsletters help ensure that there is a consistent external message presented on key issues and progress of the Project. They include: • Project lead's message and Project updates; • Community engagement contact details (phone and email); • Any relevant monthly activities or upcoming events (e.g., community sessions, notice of sponsorship); and • Any relevant industry news, research and information. Newsletter database sign-ups are also promoted via Project's website. They are developed and distributed on a quarterly basis (frequency may vary in the future): • Digital copies are available on the Project's website and shared across the current recipient database: ◦ (Resources | The Plains | Engie (theplainsenergypark.com.au)); ◦ Newsletters have been emailed to 156 stakeholders who have subscribed to the mailing list via the website or by contacting the Project team; • Hardcopies of the monthly newsletter are distributed to local residences through Australia post mail outs and available at Community drop-in sessions and the weekly community hub: ◦ Two Project Newsletters were mailed to Hay residents, including updates to the Project, information about the 2023 sponsorship program and subsequent recipients and information about renewable energy concerns such as noise impacts; ◦ The April 2023 edition of the newsletter was delivered to all residences in the Hay, South Hay and Booroorban localities which totalled 1,396 households; ◦ The November 2023 edition of the newsletter was delivered to all residences in the Hay, South Hay and Boorooban localities which totalled 1398 households; and ◦ An invitation to 'Register your interest for a Visual Assessment' flyer was sent to 28 neighbouring property addresses via post during	 **Photo D-6 The Plains Renewable Energy Park - November Newsletter**

Activities	Summary	
	October 2022, with an invitation to 'Register your interest for a Visual Assessment'.	
Community drop-in / Information Sessions	Community drop-in sessions enabled stakeholders to speak to members of the Project team, ask questions, express their concerns and provide feedback. These sessions are used to share critical Project information and collateral. At least 2 members of the Project management team have been present at each session, distribution of FAQ, factsheets, information brochures, community contact card, Project community guide and flyers to provide the community with a greater understanding of the Project. A number of Community Information Sessions have been held about the Project: • 24 August 2022 in Hay: 30 attendees; • 25 August 2022 in Hay: 15 attendees; • 10 November 2022 in Booroorban: 14 attendees; • 11 November 2022 in Hay: 15 attendees; • 18 March 2023 in Hay: Hay Rust n Dust Rally Tally. Provided support for the event and an information stand. Approximately 200 attendees were present at the event; • 19 March 2023 in Hay: info stands outside IGA on Lachlan St.; • 27 June 2023 in Booroorban Info Session: 8 attendees; and • 7 September 2023 in Hay, launch event for opening of Hub in Lachlan St Hay: 20 attendees. • 7 September 2023 in Hay, ENGIE participated in the Hay Show with a stall including information on the Project. Among the attendees at these sessions were project landowners, neighbours, sponsorship recipients, council staff and councillors as well as local media.	 **Photo D-7 ENGIE stand at Rust N Dust**

Activities	*Summary*	
		 **Photo D-8 Community Information Sessions**

Activities	*Summary*	
One-on-one/ face to face meetings	Specific, targeted meetings have been held to discuss the Project and facilitate in-depth engagement. Meetings shared Project information, progress, potential impacts and captured concerns. Face to face meetings have been organised with local stakeholders to discuss the Project and answer questions on a range of technical areas such as noise, visual, biodiversity, hydrology, construction and many others. These are continuing, on a regular basis and are initiated by the Project team as well as any stakeholders that would like to meet and clarify any concerns regarding the Project.	 **Photo D-9 One-on-one meeting**

Activities	*Summary*	
Sponsorship	ENGIE is committed to supporting the local community and sharing the benefits of the Project. The Community Sponsorship Program includes community groups, projects / programs or facilities (Not for Profit) that are located within or provide a direct benefit to the community within a 20 km radius of the Project. In total 14 individuals and groups successfully applied for ENGIE's 2023 Community Sponsorship Program, with a total grant of $43,000 (full list is provided in Section 5 of the EIS). Details of The Community Sponsorship Program is available at: • Community | The Plains | Engie (theplainsenergypark.com.au).	 **Photo D-10 Community Sponsorship Program**
	The Applicant has provided funding for a 3-year sponsorship (2023-2025 inclusive) of the Rainbow on The Plains Festival. 18 ENGIE staff participated in the 2023 Festival both in the street parade and hosted a stall at the field day as part of the festival activities on Saturday 18 November 2023.	 **Photo D-11 Rainbow on the Plains Festival sponsored by ENGIE in the Newsletter**

Community and regulators engagement undertaken for the Project during development of the EIS is detailed in **Table D-2** and **Table D-3**.

TABLE D-2 COMMUNITY ENGAGEMENT CONDUCTED DURING EIS

Stakeholder	***Engagement date/ No.***	***Summary Engagement***
Landowners (including both neighbouring properties and neighbours proposing to host infrastructure)	198 phone calls, emails and face-to-face meetings	• This included campaign emails, emails, meetings, phone calls and community information sessions to discuss project layout and infrastructure. • Engagements with host landowners focused on landowner agreements, with specific discussion on placement of infrastructure and working within agreed areas. • Neighbour discussions have been broad with a range of technical assessments being mentioned, particularly visual, noise and biodiversity being raised. • Overall, there was large interest in the South West (REZ) and discussion regarding access rights process that is a possibility. • Neighbour agreement discussions have taken place with all neighbours within 10 km receiving a flyer about the program and a neighbour agreement has been sent to landowners within 6 km of a turbine, with additional agreements due to be sent out.
Local Schools	March – November 2023 Email	• To gather school interest in having members of the ENGIE team give a presentation on renewable energy, renewable energy zone's, and about the Project; however no response was received. • ENGIE provided a presentation about renewable energy and REZs to students from Hay Primary School and St Mary's Parish School: ° The presentation to Hay Primary School was given to approximately 60 students in Years 5 and 6 and focused on a general discussion about renewable energy and the various energy types, watching several educational videos and engaging the students in a question and answer activity; and ° The presentation to St Mary's Catholic School was divided into two sessions, one to 8 students in Kindergarten to Year 2 and then another session to 9 students in Years 3-6. The first session focused on a basic discussion on renewable energy followed by a craft activity putting together a windmill. The second session to students in Years 3-6 was similar to the session at Hay Primary School which included discussion on renewable energy, several educational videos and a question and answer activity.
Aboriginal stakeholders	January – March 2023 Email, mail, advert and phone	• To identify RAPs who wish to be consulted about the Project and to assist in the preparation of the ACHAR (Appendix H). • An email was sent to Aboriginal groups and agencies (listed in **Table 5-1)** and an advertisement was also placed in *The Riverine Grazier* and the Deniliquin Pastoral Times seeking registration of interested Aboriginal parties. • An invitation to register letter was sent to each of the 32 identified Aboriginal agencies and groups and a period of 14 days was provided for them to respond.

Stakeholder	Engagement date/ No.	Summary Engagement
		• Nine Aboriginal groups or individuals registered to be consulted as RAPs (listed in **Table 5-1**). • A letter was sent to Hay LALC, Deniliquin LALC, and Heritage NSW to notify of the interested registered parties for the Project.
	March – October 2023 Workshop	• To discuss how the Hay LALC, Gayini River Rangers and the Nari Nari Tribal Council can provide ongoing input into the design of the Project layout. • To discuss how the Project can assist the LALC with regards to benefit sharing and was facilitated by an independent First Nations consultant. • A number of benefits were put forward by the LALC across many shared domains including country, economic, culture and social. These benefits were recorded and included in both The Aboriginal Engagement Strategy and Aboriginal Benefit Sharing Program documents. • A copy of the draft Benefit Sharing Program was sent to the Hay LALC in October for review and input.

Photo D-12 ENGIE workshop with the Hay LALC, 20 March 2023

Photo D-13 ENGIE sponsorship of NAIDOC week celebrations hosted by the Hay LALC

Stakeholder	Engagement date/ No.	Summary Engagement
	April and August 2023 Site survey	• To identify any cultural values within the landscape in which the Project is located so that those values can be recognised and incorporated into the Project management recommendations. • 17 representatives from Hay LALC/ Nari Nari Tribal Council participated in the fieldwork undertaken over 3 days in April and August. • Two previously registered AHIMS Aboriginal sites (Artefacts and a Hearth) and 16 new sites (Artefacts, Hearths and PADs) with similar features to the previously registered sites were identified within the Project Area. Of these, 12 sites are located within the Development Footprint.
	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by NSW Aboriginal Land Council (Hay LALC).
	September – October 2023 Email	• The draft ACHAR was sent to the RAPs for review and provide any comments on the draft ACHAR and any recommended management and mitigation measures • No comments or requested amendments received to date
	August – October 2023 Email, face to face meeting	• The Applicant met with members of the Hay Aboriginal Working Party (HAWP) who represent the Wiradjuri people to introduce the Project and discuss how the two groups can work together with regards to co-design and benefit sharing. • A copy of the draft Aboriginal Benefit Sharing Program was sent to HAWP for their review and input.
	November 2023 Briefing	• To discuss and provide an overview of the Project, the timelines and the work completed to date for Aboriginal Participation and inclusion. • Attended by 14 participants representing Aboriginal business interested.
	28 phone calls, emails, and face to face meetings	• This included discussion of project design, benefit sharing, 2023 sponsorship program and invitation to Aboriginal business briefing. • Discussion around cultural heritage approach and setbacks to different sites that have been recorded in AHIMS as well as the sites recorded during the site surveys for the project • Land agreement discussions have taken place regarding the crown land the project is proposing to utilise for access and any undetermined aboriginal land claims

Stakeholder	Engagement date/ No.	Summary Engagement
	Aboriginal Business Briefing November 2023 (14 attendees)	• Project briefing to interested stakeholders on opportunities for aboriginal employment and procurement
Infrastructure Owners	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by Water NSW and/ or TransGrid.

TABLE D-3 REGULATORY ENGAGEMENT CONDUCTED DURING EIS

Regulator	Engagements date	Summary of Engagement
Hay Shire Council	30 June 2021	• Meeting with Project Manager for Economic Development and General Manager to introduce the potential development of the project
	30 November 2021	• Meeting with Project Manager for Economic Development and General Manager about the status of the project and to discuss a presentation on the project to Councillors in 2022
	2 August 2022	• Presentation to Councillors on the project
	24 August 2022	• Council Planning Meeting with Project Manager for Economic Development and General Manager which included discussion on the approval pathway for the meteorological mast and wind turbines
	21 March 2023	• Meeting with Project Manager for Economic Development and General Manager to discuss updated changes to project design (removal of some turbines and relocation of solar farm) and the proposed transport route for wind turbine components

Regulator	Engagements date	Summary of Engagement
	16 May 2023	• Meeting with Project Manager for Economic Development and General Manager and Director Planning and Development to discuss local housing requirements for the project and what local housing options are available in Hay
	28 June 2023	• Meeting with Project Manager for Economic Development and General Manager to provide an update on the project including the proposed opening of a shopfront, aviation study findings and feedback received from the community information session held on 27 June and community benefit sharing
Edward River Council	30 June 2021	• Meeting with Project Manager for Economic Development and General Manager to introduce the potential development of the project.
	11 November 2022	• Meeting with Director of Infrastructure to introduce the project
	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by Edward River Council.
Broken Hill Shire Council	19 June 2023	• Meeting with Director Infrastructure & Environment to introduce the project and discuss the transport route of turbine blades through Broken Hill and potential for road upgrades within the Broken Hill CBD.
DPE/ DPHI – Planning	15 September 2022	• Meeting with DPE to discuss layout changes, additional 6 landowners and removal of 41 turbines due to neighbour sensitivity and reducing impact to biodiversity areas
	25 October 2022	• Meeting with South West NSW BCD team to discuss survey and assessment of impacts in the BDAR align with BCD expectations.
	November 2022 Videoconference, briefing	• Pre submission meeting with DPE to discuss Wind Farm EIS
	August 2023 Videoconference, briefing	• To provide an update on The Plains Renewable Energy Park and the findings of technical assessments impacts relevant to the Project and how these impacts were avoided, addressed, or minimised. The aspects discussed include:

Regulator	Engagements date	Summary of Engagement
		• Threatened fauna species recorded within Project Area, the impacts on 2 TECs and how the Project layout has considered biodiversity constraints into design. • Proposed upgrades and turn treatments and an overview of the OSOM Route Assessment from the Port of Adelaide. • The economic and social benefits of developing the Project, including how the NBSP payments would be allocated. • Historical and Aboriginal heritage site surveys and identified sites within the Project Area. • Low/ no impact of the Project on aviation, visual and amenity, noise and vibration, bushfire and agriculture. • DPE highlighted key impact assessment matter is biodiversity, and hydrology.
DPE/ DCCEEW – Water	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by DPE – Water.
Heritage NSW	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by Heritage NSW.
Crown Lands	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No further comments were provided by Crown Lands.
Biodiversity and Conservation Division (BCD)	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by BCD.
	25 October 2022 Videoconference, briefing	• Presented survey effort and design to date including avoidance of mapped important habitat areas. • BCS noted that tracks increase opportunities for foxes to move across the landscape, which can have a negative impact on the plains wanderer.

Regulator	Engagements date	Summary of Engagement
		• Bat detectors installed on Met Mast at the recommendation of BCS. • ERM and ENGIE confirmed that they would be assuming presence of threatened flora that hasn't been able to be covered due to weather conditions. Where possible these would be included in a response to submissions or amendment report to ensure the project can continue progressing through the planning pathway.
	June 2023 Videoconference, briefing	• To provide an update on progress made to date, including a presentation on methodology and design changes to avoid a significant portion of 2 TECs located within the Project Area. • BCD noted that the approach proposed was in accordance with the Biodiversity Offset Scheme regarding the hierarchy of avoid, minimise and mitigate impacts, prior to offset.
DPI – Agriculture	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by DPI.
DPI – Fisheries	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by DPI.
NSW RFS	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by NSW RFS.
	August 2023 Email	• To provide a copy of the Project's draft Bushfire Hazard Assessment and request a review and feedback on the report and any recommend additional mitigation measures prior to submission of the EIS. • No comments were provided by NSW RFS.
FRNSW	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by FRNSW.

Regulator	Engagements date	Summary of Engagement
	August 2023 Email	• To provide a copy of the Project's draft Bushfire Hazard Assessment and request a review and feedback on the report and any recommend additional mitigation measures prior to submission of the EIS. • No comments were provided by FRNSW.
MEG	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by MEG.
TfNSW	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by TfNSW.
	6 February 2024 and Email and phone call	• To introduce the Project, discuss the route assessment for the wind turbine components travelling from the Port of Adelaide and provide a response to each of the comments provided by TfNSW. • TfNSW advised that further information regarding updating the route assessment to include OSOM vehicle data and GPS details, and engaging with Broken Hill Council which will be provided in the TIA. TfNSW will provide a comprehensive review of the route assessment and provide the best direction forward.
NSW EPA	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by NSW EPA.
Riverina LLS	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by Riverina LLS.
	3 August 2023	• Site visit with LLS team to discuss TSR access for project off Cobb Highway and environmental conservation efforts for Plains Wanderer and Black Falcon

Regulator	*Engagements date*	*Summary of Engagement*
DCCEEW	September 2023 Emails and phone calls	• EPBC referral lodged and ERM responded to information request as required.
	November 2023	• Correspondence via email to EPBC Referral decision
	22 August 2023	• ERM and DCCEEW staff undertook a one site visit to ground truth the referral documents and become familiar with the Plains Renewable Energy Park site.
CASA	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by CASA.
Airservices Australia	June 2023 Email	• To provide an update on the Project following the receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project layout updated figure was included in the email indicating Project key elements. • No comments were provided by Airservices Australia.
Member for Farrer	Q4 2022	• Meeting with Member for Farrer to discuss proposed project and answer any questions about the SW NSW REZ

APPENDIX E ESTIMATED DEVELOPMENT COST

APPENDIX F DETAILED MAPS AND PLANS

APPENDIX G BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

APPENDIX H ABORIGINAL CULTURAL ASSESSMENT REPORT

APPENDIX I HERITAGE TRANSPORT ROUTE ASSESSMENT

APPENDIX J NOISE IMPACT ASSESSMENT

APPENDIX K LANDSCAPE AND VISUAL IMPACT ASSESSMENT

APPENDIX L AGRICULTURAL IMPACT ASSESSMENT

APPENDIX M HYDROLOGY ASSESSMENT

APPENDIX N TRAFFIC IMPACT ASSESSMENT

APPENDIX O EMF / HUMAN HEALTH ASSESSMENT

APPENDIX P TELECOMMUNICATIONS IMPACT ASSESSMENT

APPENDIX Q AVIATION IMPACT ASSESSMENT

APPENDIX R BUSHFIRE ASSESSMENT

APPENDIX S ECONOMIC ASSESSMENT

APPENDIX T SOCIAL IMPACT ASSESSMENT

APPENDIX U OSOM TRANSPORT ROUTE ASSESSMENT

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