The Plains Solar Farm

Environmental Impact Statement

PREPARED FOR

ENGIE

DATE
19 March 2024

REFERENCE
0667692

DOCUMENT DETAILS

DOCUMENT TITLE	The Plains Solar Farm
DOCUMENT SUBTITLE	Environmental Impact Statement
PROJECT NUMBER	0667692
Date	19 March 2024
Version	Final 3.0
Author	Joanne Woodhouse, Elohanna Levi, Catherine Timbrell, Catherine Mackay
Client name	ENGIE

DOCUMENT HISTORY

				ERM Approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Draft	1.1	E. Levi C. Timbrell C. Mackay	J. Woodhouse	M. Davey	26.11.2023	Draft for client review
Draft	1.2	E. Levi	J. Woodhouse	M. Davey	29.11.2023	Draft for REAP review
Final	2.0	E. Levi	J. Woodhouse	M. Davey	8.12.2023	Final for soft lodgement
Final	3.0	J. Woodhouse	J. Woodhouse	M. Davey	22.02.2024	Final for submission
Final	4.0	M. Coles	J. Woodhouse	M. Davey	19.03.2024	Minor updates as requested by DPHI

SIGNATURE PAGE

The Plains Solar Farm

Environmental Impact Statement

0667692

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REAP DECLARATION

Project details	
Project name	The Plains Solar Farm and BESS
Application number	SSD-51219280
Address of the land on which the infrastructure is to be carried out	Cobb Highway, Hay NSW
Applicant details	
Applicant name	ENGIE
Applicant address	Level 23, 2 Southbank Boulevard, Southbank VIC 3006
Details of person by whom this EIS was prepared	
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Professional qualifications	• Bachelor of Env Science • Diploma in Bushfire Protection, • Diploma in Indigenous Archaeology
Declaration by Registered Environmental Assessment Practitioner	
Name	Michael File
Registration number	8596
Organisation registered with	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 Infrastructure 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	19 March 2024

Acknowledgement of Country

ENGIE Australia and New Zealand acknowledge the Traditional Custodians of all of these lands and waters upon which we work, live and play.

We particularly acknowledge the Wiradjuri, Wemba-Wemba and Nari-Nari peoples who are the Traditional Custodians of the lands proposed for The Plains Renewable Energy Park. We recognise that for many thousands of years, the Traditional Custodians of this Country cared for and lived harmoniously with this place, and we pay our respects to Elders past, present and emerging.

ENGIE is committed to a just, equitable and reconciled Australia and recognise that we all have a role to play in achieving this vision.

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 'Yellow Plains.'

"*Yellow Plains* represents the Sun shining over the Plains - the shades of red, orange and yellow represent the warmth that comes off the sun and the shade of brown represents the soils. In the soils, you can see a river connected with meeting places that is to show your rivers and how our towns all connect. The different shades of brown show the layers of soil. The lines and dots in the sky are to represent the light coming from the sun and the colour shows the heat."

- Emma Johnston, artist

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EXECUTIVE SUMMARY

Plains Solar 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 Solar Farm (the Project) is part of the broader Plains Renewable Energy Park and 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 Solar Farm will provide significant economic benefits to the Hay region and will supply 996 GW hours per year of clean, renewable energy, enough to power more than 175,000 NSW homes on average annually.

The Solar Farm is located on land predominately used for agricultural activities and is located approximately 38 kilometres (km) (by road) south of the Hay town centre and 12 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 Wind Farm, located to the east and west of the Cobb Highway, will form part of a separate development application and approval process.

400MW

Capacity

943Ha

Footprint

400MW

Battery Storage

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 943 ha**
- **Photovoltaic (PV) solar facility with an estimated capacity of up to 400 MWn**
- **Local road network upgrades**
- **A centralised large-scale battery energy storage system (BESS) with a capacity of up to 400 MW / 1.6 GWh**
- **Temporary construction facilities**
- **Electrical infrastructure to connect the Project to the electricity grid, including underground cables and overhead powerlines, substations and transmission lines**

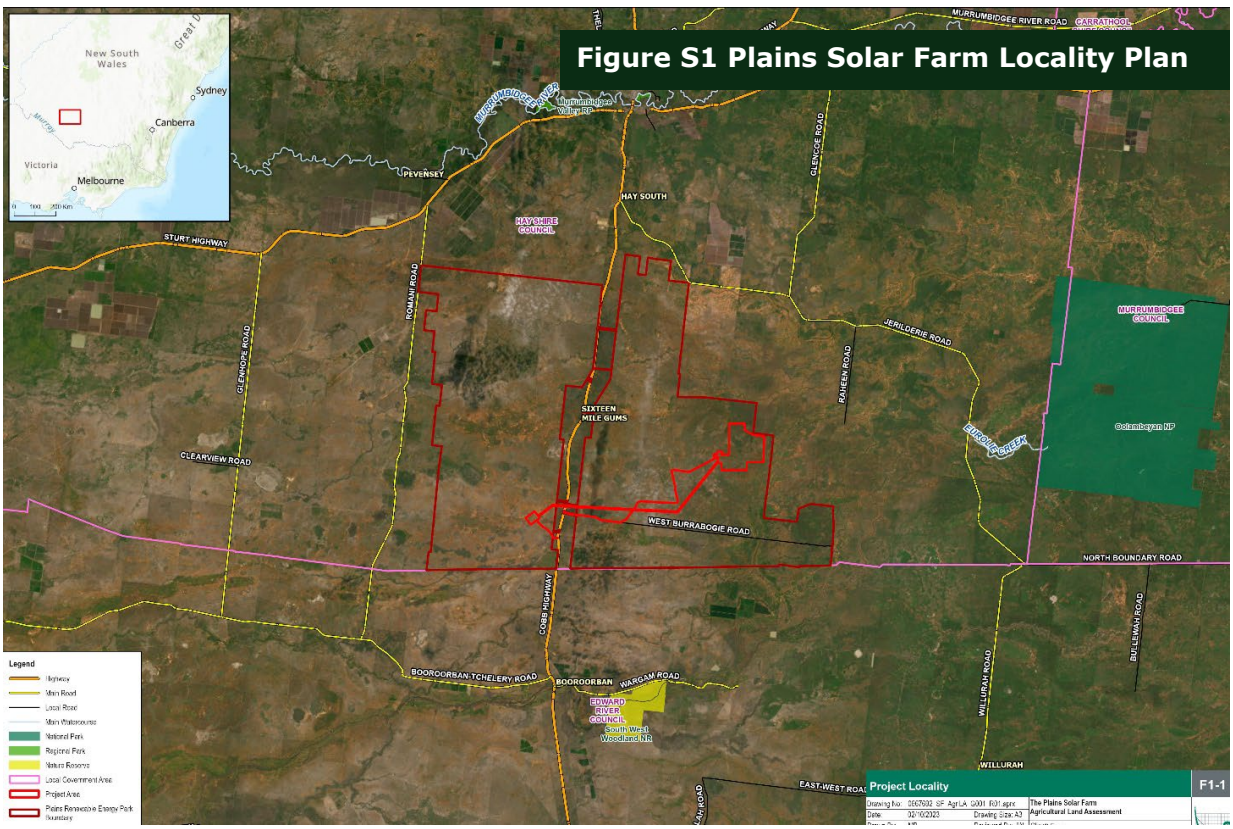


Figure S1 Plains Solar Farm Locality Plan

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 Solar 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 150 construction jobs annually during construction, plus 63 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), Neighbour Benefit Sharing Program (NBSP) and Voluntary Planning Agreement (VPA) options.

What is the planning process?

The Plains Solar 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: 2023/09584) and was determined to be a controlled action on 08 November 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 gets approval to proceed. The IPC will be the approval authority if public objections to the Project exceed 50, any reportable political donations are made by Engie or if the local Council 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. 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 that must be included in the Environmental Impact Statement (EIS) for the project and the community 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 of authority to make informed submissions or decisions 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 community participation in the SSD process and gives the community a right to have a say on these projects 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 Submission Report, the Department will assess the merits of the DA in accordance and prepare an Assessment Report.

This may include further community engagement, requesting additional information from the applicant, seeking advice from Government agencies' and independent experts and preparing recommended conditions of consent.

06. Determine DA

The independent Planning Commission 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 section415 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 Solar Farm 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 included:

- 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 will only be used following all efforts to first avoid, minimise and mitigate environmental impacts.

Key Design Principles Included:

- Minimise vegetation clearing – the Project has been designed 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 solar 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 – in consultation with landowners and community, infrastructure has been located away from both the Cobb Highway and nearby residences where practicable.
- 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 2156 ha during the scoping stage to 943 ha in this EIS.

Development Timeline

December 2026

Mobilisation and site establishment

May 2027

Earthworks and construction of roads, cabling and clearing

December 2027

Construction and installation of the solar farm infrastructure

September 2028

Commissioning and testing of the solar farm

+30 years

Decommissioning of temporary infrastructure

Inform, Consult, Involve, Collaborate and Empower.

How has Engie Engaged with Stakeholders?

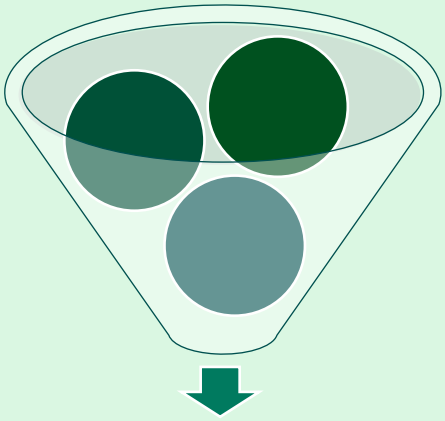
ENGIE is committed to ensuring public concerns and comments are considered, and that attempts are made to avoid, minimise or mitigate potential impacts where possible. The engagement incorporated best practice objectives for community participation in the Project, which is open and inclusive, easy to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

A significant number of individual and group meetings and public information events have been conducted since Project inception. 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 2km 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.

Social Impacts



Social Impact

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 Community Enhancement Fund (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; 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. ERM 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.).

A range of social management and mitigation measures to be adopted for the Project may 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 (LEP);
- 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.

Landscape and Visual

Key concerns raised during stakeholder engagement were visual amenity factors, potential impacts on 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 Solar Guidelines and the 'Technical Supplement – Landscape and Visual Impact Assessment' (Landscape and Visual Technical Supplement) (DPE, 2022b) and considered the potential visual impacts on residential viewpoints within 4 km from the nearest solar panel and public viewpoints within 2.5 km from the nearest solar panel. Due to the relatively flat terrain of the region, the LVIA has also considered a 5 km buffer from the nearest solar panel to identify visual impacts in a worst case scenario.

Visual impact assessment of non-associated dwellings

Application of the Preliminary Assessment Tool identified one (1) associated dwelling within 5 km of the nearest solar array panel. The Guideline states that associated dwellings are not required to be assessed, regardless an on-site inspection and desktop analysis was undertaken which showed that existing vegetation, topography and infrastructure are likely to screen views toward the Project from this location.

Visual impact assessment of public viewpoints

Viewpoint analysis undertaken for a total of four (4) public viewpoints demonstrated that due to a combination of distance, existing intervening scale of Project, the Project is likely to have a low to very low visual impact.

Two (2) key public viewpoints were identified through community consultation and further assessed:

- 16 Mile Gums Rest Area with a distance of 11.5 km to the west of the nearest solar panel; and.
- VP01 West Burrabogie Road, 5.6 km south of the nearest solar panel.

Using the Visual Magnitude Tool the detailed assessment identified that both public viewpoints would have a 'low' to 'very low' visual impact rating.

The requirements for night lighting of ancillary infrastructure for this Project is generally limited to security lighting to the substation, and within the operations & maintenance facility. The light sources are limited to low-level lighting for security, night time 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.

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 18 sites are reported within the Project area (two previously registered Aboriginal sites and 16 newly recorded sites), comprising artefacts, hearths and PADs. Based on the current development footprint potential harm to 12 sites 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, and a buffer of 100 m will be provided to recorded hearths;
- 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 solar 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 no registered historic heritage sites within or in the vicinity of the Project Area.

Biodiversity Impacts

The design of the Project has evolved to minimise impact on biodiversity features, 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 fauna species recorded include:
- Black Falcon (*Falco subniger*)
- Southern Myotis (*Myotis macropus*)
- White-fronted Chat (*Epthianura albifrons*)

Threatened flora species recorded include:
- Winged Peppercress (*Lepidium monoplocoides*)
- Chariot Wheels (*Maireana cheelii*)
- Slender Darling Pea (*Swainsona murrayana*)

Threatened species assumed present include:
- A Spear-grass (*Austrostipa wakoolica*)
- Mossgiel Daisy (*Brachyscome papillosa*)
- Lanky Buttons (*Leptorhynchos orientalis*,)
- Turnip Copperburr (*Sclerolaena napiformis*)
- Red Darling Pea (*Swainsona plagiotropis*)
- A burr-daisy (*Calotis moorei*)
- Small Scurf Pea (*Cullen parvum*)
- Silky Swainson-pea (*Swainsona sericea*)

The Plains-wanderer (*Pedionomus torquatus*) is considered present based on Important Mapped Areas and records within the broader Plains Renewable Energy Park.

Plains-Wanderer (stockphoto)

Slender Darling Pea

Measures to mitigate against these impacts will be implemented through a Construction Environmental Management Plan (CEMP) 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.

Where impacts to biodiversity can't be avoided, the NSW biodiversity assessment process requires use of the NSW Government online calculator to generate biodiversity credits. All credits then need to be offset prior to the impact occurring. Biodiversity offsetting is based on the theory that biodiversity values gained at an offset site will compensate for biodiversity values lost to development at another location to achieve a standard of 'no net loss' of biodiversity. Engie will develop a detailed offset strategy for the Project and will consider a number of options to secure the biodiversity credits needed.

Transport

Traffic accessing the solar farm is proposed to travel along Cobb Highway and then West Burrabogie Road, while traffic accessing the BESS would enter directly from Cobb Highway. The Project materials are expected to be delivered from the Port of Geelong.

- It is anticipated that during peak construction, the Project could generate up to 70 heavy and 150 light vehicle movements per day. The average traffic movements during construction will be up to 36 heavy and 80 light vehicle movements per day.
- During operation the Project is expected to generate a minimal level of traffic associated with maintenance and operation services. The Project is expected to be operated by up to 8 maintenance staff resulting in a traffic generation of up to 8 vehicle movements per day which would result in a negligible change to the traffic environment.
- Based on the expected traffic volumes at the intersection of Cobb Highway and West Burrabogie Road during the morning peak hour, this intersection will require a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment.
- The access location for the BESS area is via a connection with the western side of Cobb Highway and has also been designed with BAL and BAR turn treatments.
- A swept path assessment demonstrates the access locations are designed to accommodate two-way vehicle movement for B-Double vehicles.
- The sight distance available at the access location 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 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; and.
- Provide BAR and BAL treatments at the site access for the BESS area on the western side of Cobb Highway.

Flooding

The project area is located to the south of the Murrumbidgee River and the township of Hay in an area referred to as the Hay Plains. A series of waterways drain in generally a south-westerly direction to the south of the river, which includes the project area. Key findings of the flooding and hydrology assessment include:

- As the solar farm does not propose to alter the landform of the floodplain, there is unlikely to be measurable changes in flood levels or flood behaviour.
- Parts of the project area would be impacted by local catchment flooding during intense or long-durations rainfall events, to depths not exceeding 0.3 metres during storms up to 1% AEP in intensity.
- The flood hazard in the project area is generally classified as H1 (generally safe for vehicles, people and buildings) due to the shallow depths and slow surface water velocities, with areas of H2 classified flooding generally aligned with Curtains Creek. Flow within the inbank area of Curtains Creek is classified as H3, which is unsafe for vehicles, children and the elderly.
- The assessment found that the greatest potential construction related flood risk is associated with the construction of the footings and the erection of the internal transmission line towers which are located within the inbank area of Curtains Creek.
- Potential increases in localised 1% AEP rainfall intensities associated with future climate change have the potential to result in a minor encroachment of floodwater along the eastern boundary of the project area in the vicinity of the solar panel area. It would also result in a minor increase in the depth and velocity of flow in the reach of Curtains Creek which runs through the project area.

As the project will not have a measurable impact on flood behaviour, it can be concluded that it will:

- not impact the flood planning levels both internal and external to the project area;
- not increase the overall flood hazard both internal and extent to the project area; and.
- not have an 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).

Environmental management measures that would be implemented to manage flood related impacts during the construction and operation of the project include:

- The impact of the project on flood behaviour would be confirmed during detailed design. This would include consideration of future climate change;
- The project would be designed to minimise adverse flood related impacts in Curtains Creek;
- Access tracks will be designed to have a minimum hydrologic standard of 10% AEP;
- Access track connections would 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;
- Localised increases in flow velocities at drainage outlets and waterway crossings would be mitigated through the provision of scour protection and energy dissipation measures;
- Spoil stockpiles would be located outside the 10% AEP flood extent;
- Construction compounds would be located outside high flood hazard areas based on a 1% AEP flood; and.
- Flood emergency management measures for construction of the project would be prepared and incorporated into relevant environmental and/or safety management documentation.

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 solar farm itself will cause a fire is considered low given the application of appropriate protection measures. While 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 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 the solar arrays, and on all sides of the substations, switching station, BESS and O&M Buildings.
- The APZ and access road will be constructed prior to the installation of any solar panels or related infrastructure.
- Vegetation fuels throughout the solar farm (including under the panels) are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required.

Aviation and Glare

An Aviation Impact and Glint and Glare Assessment has been prepared to assess the proposed solar panel layout in relation to existing aircraft approach paths and nearby receptors, including residences and roads.

The glare analysis deemed the considered solar panel configurations to have low or no impacts to aviation, road users or residences and associated structures. The project meets the DPE NSW Large-Scale Solar Energy Guidelines which defines less than 10 hours annually as low glare impact with no mitigation required.

Battery Storage

An assessment of the risks associated with battery storage found that exposure to Electric and Magnetic Fields (EMFs) will not be exceeded and impact to the general public in surrounding land uses is negligible.

The BESS will also use lithium-Ion phosphate (LFP) batteries which do not cause fire, but there can be circumstances where battery modules catch fire due to leaking coolant or electric faults. In those cases, fire will be constrained by the stainless-steel enclosure and the built-in fire protection devices and will not transfer to nearby containers.

Noise

Background noise levels in rural areas, such as the area surrounding the Project, are typically low. The closest associated dwelling is 4 km and 6.7 km from a solar array and the BESS, respectively. The closest non-associated is 6.3 km and 9.5 km from a solar array and the BESS, respectively.

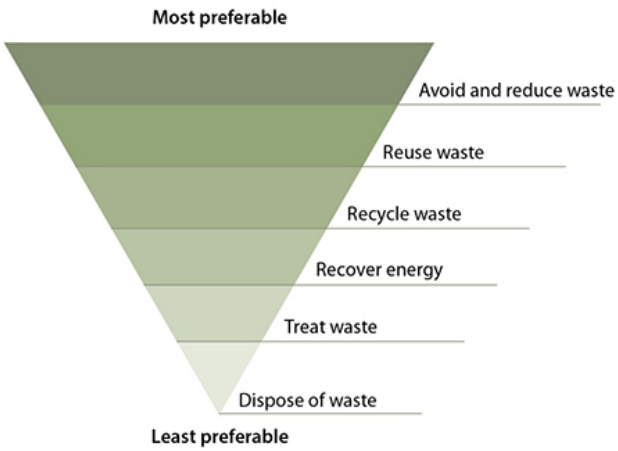
Based on assessment against the noise criteria provided by the Noise Policy for Industry and the Interim Construction Noise Guidelines, no noise impacts have been identified for the Project. As such, specific noise management measures are not required for the Project. However, general good practice environmental noise management measures are recommended to be adopted throughout the Project, including (but not limited to):

- Implementation of a construction noise management plan (CNMP);
- Establishment of a complaints management system for construction works and site operations;
- 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.

Waste

No 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, the majority of 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.

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 185,453 Mt 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 Site 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.

This 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.

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 150 workers. The annual construction impacts of the Project on the regional economy (during the 1.5-year construction phase) are estimated at up to:

- $55M in direct output and $35M in indirect output.
- $22M in direct value-added and $11M in indirect value-added.
- $11M in direct household income and $5M in indirect household income.
- 150 direct jobs and 81 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:

- $10M in direct output and $5M in indirect output.
- $2M in direct value-added and $2M in indirect value-added.
- $1M in direct household income and $1M in indirect household income.
- 5 direct jobs and 12 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 Solar Farm and BESS (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 the (then) Department of Planning and Environment (DPE; now Department of Planning, Housing and Infrastructure (DPHI)) (SSD- 51219280, dated 23 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 (HBESS). The HBESS 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 1,129.6 hectares (ha), over 23 freehold land parcels (and 2 parcels of 'Road Casement' / Crown Land), in the Hay Shire Local Government Area (LGA). The Project is about 38 kilometres (km) (by road) south of Hay town centre and 12 km (by road) north of Booroooban 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:

- Photovoltaic (PV) solar facility with an estimated capacity of up to 400 MWn (MW-nominal);
- A centralised large-scale battery energy storage system (BESS) with a capacity of up to 400 MW / 1.6 GWh;
- Electrical reticulation; and
- Associated and ancillary facilities.

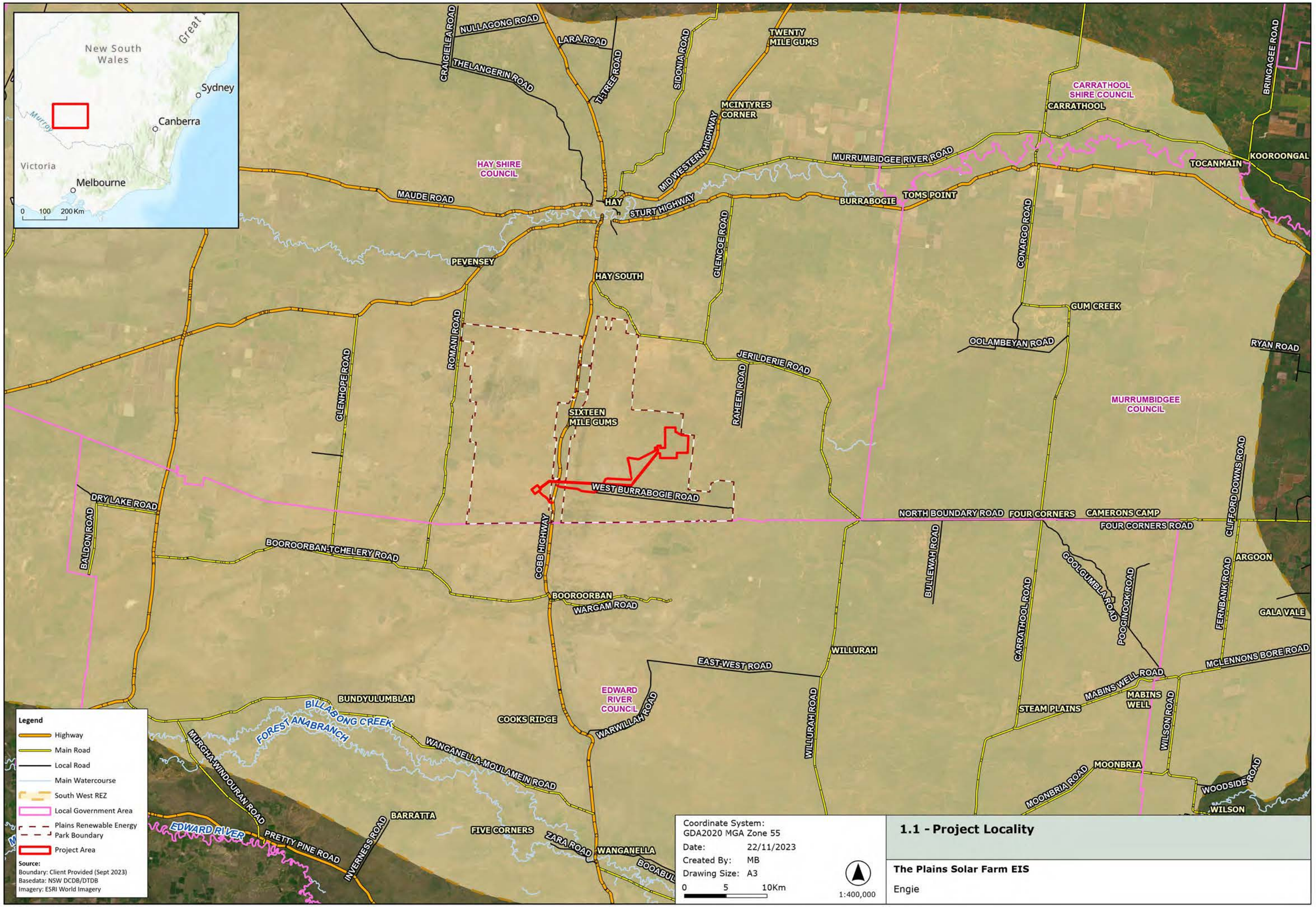
The Project will connect to either an existing 220 kV transmission line or the 330 kV Project EnergyConnect, both owned by TransGrid and located south of the Project Area.

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 1,129.62 ha, with a Development Footprint of 928.06 ha. The Development Footprint represents the expected 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).



1.1 - Project Locality

The Plains Solar Farm EIS

Engie

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1.2 - Project Overview

The Plains Solar Farm EIS

Engie

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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);
- Provide dispatchable energy through the proposed grid-scale BESS;
- Contribute to greenhouse gas (GHG) emissions reductions in the order of 185,453 tonnes 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 $89 million and up to $165 million in direct and indirect wages and profits respectively to the regional and NSW economy during construction of the Project;
    - Up to $15 million and up to $24 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 150 FTE jobs during peak construction, and 17 direct and indirect operational jobs in the region and 46 direct and indirect operational jobs in NSW;
    - 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) 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 December 2022. The Scoping Report proposed a 'main' solar area of 2,156 ha, and an 'optional alternate' solar area of 1,025 ha to the northwest. Project-specific SEARs were issued on 23 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 be relocated to the eastern side of the Cobb Highway; however, still within the boundary of Mungadal Station and The Plains Renewable Energy Park (see **Section 2.7**). As a result of the refinements, the Project Area has reduced from a total of 3,181 ha (including 'optional alternate' solar area) to 1,129.62 ha.

Apart from a change in the location of the solar farm infrastructure within The Plains Renewable Energy Park boundary, all other aspects of the Project description provided within the Scoping Report remain unchanged. Importantly, shifting the solar farm to the eastern edge of The Plains Renewable Energy Park has not impacted sensitive receivers and no additional environmental aspects have been identified for assessment specific to the new proposed location.

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

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 solar arrays 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 wind farm (The Plains Wind Farm) that will consist of up to 188 wind turbine generators (WTGs) providing a maximum installed capacity of up to approximately 1,350 MW. The Plains Wind Farm, located 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 400 MW of renewable energy supply into NSW and will include a 400 MW / 1.6 GWh BESS to regulate the supply of energy to the grid.

The Australian Energy Market Operator (AEMO) Integrated System Plan (ISP) (AEMO, 2022) highlights the planned retirement of all of NSW existing coal fired electricity generation by 2040; however, 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).

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 ISP (AEMO, 2022) states that given the imminent retirement of a significant portion of NSW coal fired power generation, and the relative lower capacity factors of wind and solar compared to coal, almost nine-fold renewable energy generation and three times the firming capacity is needed across the NEM to replace retiring coal fired power stations.

The AEMO's 2023 Electricity Statement of Opportunities (AEMO, 2023) 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, 2023).

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 ISP 2022 identified the locations of proposed REZs across the NEM. These REZ were proposed in locations where they could connect to existing transmission networks with 'the potential to foster a more holistic approach to regional employment, economic opportunity and community participation' (AEMO, 2022).

The Project will assist in meeting the projected nine-fold increase in utility-scale Variable renewable energy (VRE) required to meet the energy requirements across the NEM, by providing 400 MWn of renewable energy. As discussed, the Project will also include a BESS with a capacity of 400 MW / 1.6 GWh to provide dispatchable energy capabilities including potential energy arbitrage, demand management and ancillary services opportunities. The Project will therefore augment the security and reliability of the NEM, through consistent energy generation, energy storage and dispatch.

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 26 (COP26)

States that are Parties to the United Nations Framework Convention on Climate Change (UCFCC) have held regular Conference of the Parties (COP) since the inaugural meeting held in Germany 1996. The 26th COP (COP26) was held in Glasgow in 2021. A key outcome of COP26 was agreement by all States that are Parties to the agreement to "revisit and strengthen …2030 targets (Paris Agreement targets) in nationally determined contributions…by the end of 2022' (UNFCCC, 2021). 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 solar energy that will displace some fossil-fuel energy generation, thus reducing Australia's 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 solar energy that will displace some fossil-fuel energy generation, reducing Australia's GHG emissions by approximately 185,453 t-CO_2-^{e} pa.

2.2.4 GOVERNMENT'S RENEWABLE ENERGY TARGET

The Renewable Energy Target (RET) is a 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 996 GWh/year hours (MWh) per year of clean, renewable energy, enough to power more than 175,000 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 185,453 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 (NSW Climate and Energy Action, 2022a).

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 185,453 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 Renewable Energy Zone 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 using BESS stabilisation technology and the future supply of electricity to the NEM with the impending closure of coal fired power stations over the next 20 years.

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.

The Project will contribute to the development of the South West REZ by supporting the facilitation of additional infrastructure of electricity generation, which will result in an overall increase to NSW's energy capacity.

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, 2020b).

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, 2020b).

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, 2020b) 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,). 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 solar energy and battery development would increase the renewable generation in the region and assist with replacing fossil energy sources.

2.3.2 HAY LOCAL ENVIRONMENTAL PLAN 2011

The Project is located within the Hay LGA and is therefore 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.

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.

SIXTEEN MILE GUMS

COBB HIGHWAY

SP2

RU1

WEST BURRABOGIE ROAD

Legend

- Highway
- Local Road

Land Zoning

- RU1 Primary Production
- SP2 Infrastructure
- Project Area

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

Coordinate System:
GDA2020 MGA Zone 55

Date: 22/11/2023

Created By: MB

Drawing Size: A3

0 1 2Km

1:60,000

2.2 - Land Zoning

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

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. Solar panels and batteries 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 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 185,453 t CO2-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. Solar panels and batteries 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 provide renewable energy and generate employment opportunities. Up to 150 FTE construction jobs, and 17 direct and indirect operational jobs in the region and 46 direct and indirect operational jobs in NSW 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.

Site Setting	Summary
Conservation areas	Southwest Woodland Nature Reserve is the nearest nature reserve to the Project Area and is located approximately 16 km (direct line) to the south. It is located within the NSW Southwestern Slopes, Riverina and Murray-Darling Depression bioregions, covering about 13,840 ha. Oolambeyan National Park is situated about 30 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 50 km (direct line) northwest of the Project Area. The park includes cultural sites, such as 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. Murrumbidgee Valley Regional Park is a small reserve (50 ha) located 62 km (direct line) northeast of the Project Area across the Murrumbidgee River.
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 84,000 km2, 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 Telegraph Creek and Abercrombie Creek and its tributaries. At its closest point the Abercrombie Creek is about 1.4 km to the north of the Project Area. The Murrumbidgee River is at about 33 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. The Project Area is not mapped as flood prone land under NSW state flood information (refer **Section 6.8**). 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 no irrigation land on the Project Area.
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, palaeochannels, 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 boundary 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 solar 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. Solar 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 23 freehold individual lots and 2 Crown land.

The Applicant has entered into agreements with one landowner's entities hosting the Project. A small portion of the Project Area along West Burrabogie Road is 'Road Easement', where the 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
2	529796	Freehold
20	756745	Freehold
8, 9, 10, 11, 26, 27, 28	756778	Freehold
16, 17, 19, 25, 31, 36	756779	Freehold
7, 8, 9, 18, 19, 20	756785	Freehold
1	954661	Freehold
1	1015117	Freehold
7303, 7304	1149704	Crown land

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.

Seven parcels of Crown Land are located throughout the Project Area, as shown 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 1.6km 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 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

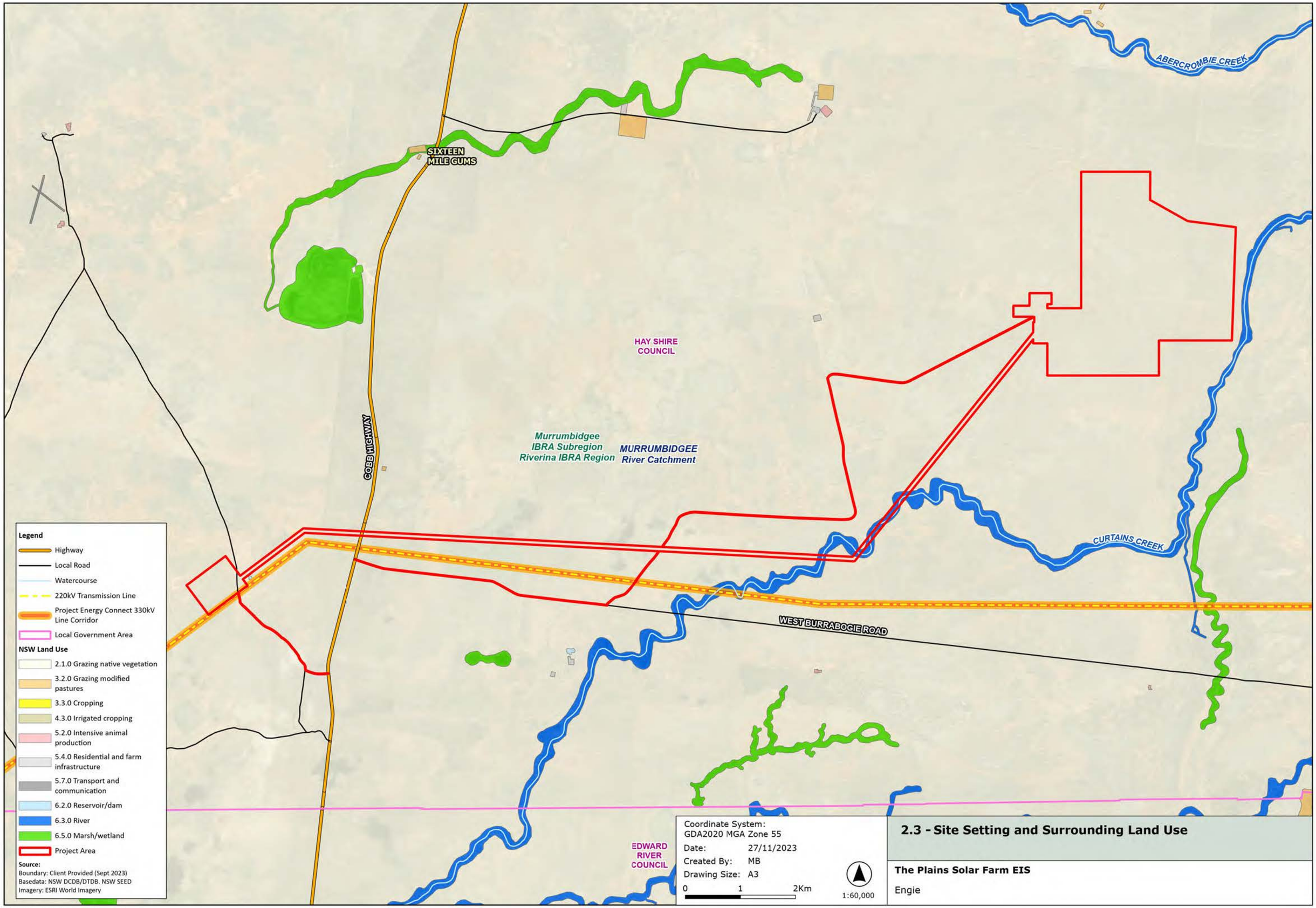
For the purposes of this EIS and relevant technical studies the following two categories of dwellings were identified:

- 'Associated' (or 'involved') dwellings – 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 – all other dwellings outside the Project Area but within the relevant assessment area (4 km of the Project Area).

There are:

- Zero (0) associated dwellings located within the Project Area;
- Zero (0) associated dwellings outside of the Project Area but within the associated land titles; and
- Zero (0) non-associated dwellings within 4 km of the Project Area.

The closest dwelling to the Project is the associated dwelling AD_3, located approximately 4.5 km to the northeast of the Project Area. **Figure 2.5** shows the location of the identified associated dwelling in relation to the Project Area.



2.3 - Site Setting and Surrounding Land Use

The Plains Solar Farm EIS

Engie

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SIXTEEN MILE GUMS

COBB HIGHWAY

AD_3

WEST BURRABOGIE ROAD

Legend

- Associated Dwelling (AD)
- Highway
- Local Road
- Host Landowner
- Crown Land
- Non-Associated Lot
- Project Area
- Project Area 1Km Buffer
- Project Area 2Km Buffer

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 22/11/2023
Created By: MB
Drawing Size: A3
0 1 2Km
1:75,000

2.4 - Land Cadastre – Project Area

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

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 substantially low, with only six (6) trees being recorded.

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 6.17**, in accordance with the 'Cumulative Impact Assessment Guidelines for State Significant Projects' (CIA Guidelines) (DPIE, 2021a).

2.6 CONTRIBUTIONS AND AGREEMENTS

2.6.1 HOST LANDOWNER AGREEMENT

The Applicant has entered into Agreements with one landowner/entities 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 landholder:

- '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 which would include programs such as community grants, infrastructure investment, sponsorships, and educational support for existing facilities in Hay. The VPA will be subject to indexation to consumer price index (CPI), for the operational life of the Project through to decommissioning.

The Applicant has undertaken ongoing consultation with Hay Shire Council during 2022 and 2023 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 following additional meetings schedule for late February 2024. Preliminary considerations include 1.5% of the Capital Investment Value (CIV) of the project could be provided as a total funding commitment for benefit sharing, although this not yet confirmed.

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

2.6.4 ABORIGINAL BENEFIT SHARING PROGRAM

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.

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 185,453 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, and contributions to local community facilities and infrastructure through host landowner agreement, NBSP and CEF.

2.7.2 ALTERNATIVE SOURCING OF ENERGY

The alternative to using solar 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 of solar resources, sparsely populated locality, and proximity to planned and existing transmission infrastructure, it is considered that use of the land to generate solar energy is justified. The Project is at scale potentially adding significant amounts of renewable energy supply over a 30-year period. Wind energy generation would also be a suitable use of the Project area. ENGIE is proposing a wind farm as part of the PREP. The combination of solar energy (this Project), wind energy (The Plains Wind Farm) and BESS 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 sites - Mungadal East and Mungadal West. The Project Area assessed in this EIS covers an area of about 1,129.62 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, including land capability;
- 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 Project landowners, Project neighbours, the broader community, local council, state and Australian Government agencies, and business and stakeholder groups as described in **Section 5**. This engagement, along with technical studies undertaken for the Project, has helped to refine the Project layout presented in this EIS.

Table 2.9 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 2.9 PROJECT AMENDMENTS

Project Element	Initial Scoping Layout	Project (EIS)	Environmental Benefits
Project Area	• 2156 ha and an optional solar area across 1025 ha	• 1,129.62 ha	The benefits of shifting the solar farm to the eastern portion of The Plains Renewable Energy Park includes: • Improving electrical efficiencies using overhead lines and collector substations; • Addresses community feedback on having the solar farm further than 2 km from the Cobb Highway; • The chosen location is in a low impact flood area based on a 1/100-year local catchment flood model (**Section 6.8**); and • Changes to the Project design including ongoing design optimisation will avoid impacting Aboriginal sites, a buffer of 200 m will
Solar Arrays	• 900,900 solar panels • 500 MW peak (MWp) and 400 MWn • Two locations within The Plains Renewable Energy Park - southern (preferred) and northern (optional)	• 900,900 solar panels, 8,336 solar arrays • 500 MW peak (MWp) and 400 MWn • One location only for the solar farm shifted to the eastern edge of The Plains Renewable Energy Park boundary	
Development Footprint	• 2156 ha and an optional solar area across 1025 ha	• Development footprint 928.07 ha	
BESS	• 400 MW / 1.6 GWh	• 400 MW / 1.6 GWh	

Project Element	Initial Scoping Layout	Project (EIS)	Environmental Benefits
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	also be provided to recorded PADs, and a buffer of 100 m will be provided to recorded hearths (**Section 6.4.3**).
Site access road	• Main access from Cobb Highway, secondary access via Sturt Highway	• Access the solar farm via West Burrabogie Road, access to the BESS via Cobb Highway	
Potential Ports	• Appleton Dock Melbourne, Port of Geelong, Port of Portland, Port Adelaide, Port Botany, Port of Newcastle and Port Kemba	• Port of Geelong • Port of Adelaide (OSOM only)	

The proposed new location of the Project (which is the subject of assessments undertaken in this EIS) improved the electrical reticulation design through considered use of overhead transmissions lines and collector substations. The location of the solar farm also considers proximity to the Cobb Highway and community feedback on having the solar farm located further than 2 km from the highway.

A hydrology assessment has also been completed for the Project and the location chosen for the solar farm is in a low impact flood area based on a 1/100-year local catchment flood model. The hybrid nature of the Project and the changing preferences for key outputs in the South West Renewable Energy Zone (REZ) will continue to cause iterations in Project design through the Project amendment phase.

STURT HIGHWAY
AD_2
AD_4
NAD_12
NAD_26
NAD_26A
JERILDERIE ROAD
GLENCOE ROAD
AD_6
AD_5
NAD_23
TELEGRAPH CREEK
COBB HIGHWAY
HAY SHIRE COUNCIL
NAD_11
ROMANI ROAD
SIXTEEN MILE GUMS
ABERCROMBIE CREEK
RAHEEN ROAD
AD_3
NYANGAY CREEK
NAD_13
NAD_14
CURTAINS CREEK
WEST BURRABOGIE ROAD
NAD_19B
NAD_19
NAD_19C
EUROLIE CREEK
NAD_15
EDWARD RIVER COUNCIL
NYANGAY CREEK

Legend

- Associated Dwelling (AD)
- Non-Associated Dwelling (NAD)
- Highway
- Main Road
- Local Road
- Track-Vehicular
- 220kV Transmission Line
- Watercourse
- Local Government Area
- Solar Farm Project Area
- Plains Renewable Energy Park Initial Boundary

Initial Layout:

- BESS
- Substation
- Solar Plant Area
- Optional Solar Farm Area
- Access Road
- Internal Transmission Line
- Indicative Site Access

Source:
Boundary: Client Provided
Basedata: NSW DCDB/DTDB
Imagery: ESRI World Imagery

Coordinate System:
GDA 1994 MGA Zone 55
Date: 23/11/2023
Created By: MB
Drawing Size: A3
0 1 2Km
1:120,000

2.5 - Project Initial Layout

The Plains Solar Farm EIS

Engie

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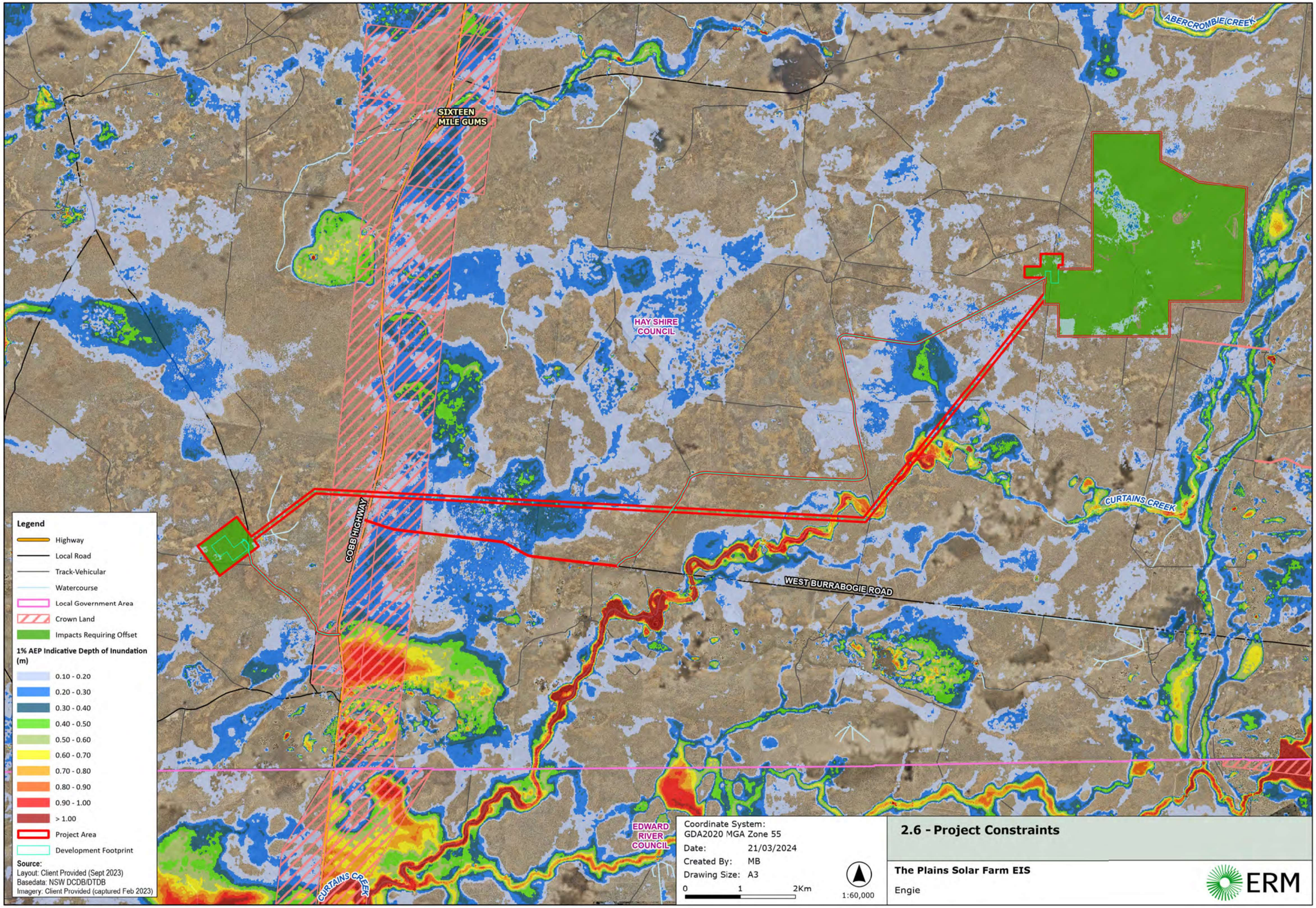

2.6 - Project Constraints

The Plains Solar Farm EIS

Engie

ERM

0667692_PlainsSF_EIS_R02.mxd

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 2.10**.

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

TABLE 2.10 PROJECT KEY RISKS OR HAZARDS

Key Risks/ Hazards	Summary
Biodiversity	Solar Farms typically require access to relatively flat or gently sloping land in sunny areas within proximity to electricity transmission networks. Land suitable for solar energy generation is typically clear of large stands of trees, has been historically used for livestock grazing, and therefore biodiversity impacts can be avoided or minimised. This often means that land which has been previously cleared or zoned for agricultural use is well-situated to host solar farm developments, as is the case for the Project Area. 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 (**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.
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, as described in **Section 6.7**. 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.

Key Risks/ Hazards	Summary
Noise	Ancillary infrastructure required for solar 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 (detailed in **Section 6.5**.
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. All viewpoints that were identified in the preliminary assessment as requiring a detailed assessment were deemed to have a low visual impact (refer **Section 6.6**).
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. 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 6.9**).
Aboriginal Heritage	An Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared for the Project (refer **Section 6.3**). The development footprint has been designed to minimise impacts on Aboriginal sites identified in the ACHAR, where possible.
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.
Water	The Development Footprint has, where possible, been designed to minimise impacts on watercourses. Very few watercourses occur across the Project Area. Nonetheless, 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 6.8**).
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 6.15** and **Section 6.16**). 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 solar farm layout and infrastructure components.

3.1 OVERVIEW

The Project will involve the construction, operation and decommissioning (where applicable) of a PV solar facility with a targeted electricity generating capacity of up to 400 MWn (MW-nominal), a centralised large-scale BESS with a capacity of up to 400 MW / 1.6 GWh, and associated infrastructure.

The Project will supply electricity to the national electricity to which it proposes to connect via EnergyConnect.

The Capital investment Value (CIV) of the Project is approximately $1,136 million (including $405 million for the BESS) as described in **Appendix E**.

The Project description is summarised in **Table 3.1** and layout in **Figure 3.1**. Further detail on the Project description is provided in the following sections.

No separate approvals are required for additional infrastructure for the Project.

TABLE 3.1 PROJECT SUMMARY

Project Terminology	Summary
Project	The Plains Solar Farm
Applicant	Engie Australia Pty Ltd
Project Area	The 1,129.62 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 928.07 ha
Temporary Disturbance	The area of land that will be temporarily disturbed during construction of the Project, and later rehabilitated up to 201.55 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 928.07 ha
CIV	$1,136 million

Project Terminology	Summary
Project Elements	
Solar Panels	• Solar Photovoltaic (PV panels) • Maximum installed capacity up to 400 MW • Solar arrays mounted
BESS	• Capacity of approximately 400 MW/ 1.6 GWh (4-hour) • Located on Lot 27 DP 756778 and Lot 9 DP 756778
Electrical Reticulation Infrastructure	• Direct grid connection to existing 220 kV or EnergyConnect • Main substation including 330 kV switching station, BESS substation and associated structures Located on Lot 27 DP 756778, Lot 9 DP 756778 and Lot 10 DP 756778 • One substation to the east next to the solar panels area • 33 kV underground electrical reticulation connecting PV panels • 330 kV overhead transmission line connecting substations • Approximately 85 m distance between the switching station and EnergyConnect
Monitoring Station	Permanent solar resource monitoring station
On-site Supporting Infrastructure	• Permanent O&M compound including control room, meeting facilities, storage facilities, SCADA facilities, workshop, parking, ablutions buildings, fencing, septic, static water supply, waste management facilities, maintenance facility, fencing and lighting • Landscaping works • Asset protection zones • Access tracks, drainage and access point
Off-site Supporting Infrastructure	• Waste and wastewater disposal facilities • Existing public road and communications network
Construction	
Construction Duration	Approximately 18 months
Construction Hours	As per standard daytime construction working hours (or as defined in **Section 3.4.2**)
Construction Workforce	150 FTE during peak construction, with an average of 100 FTE during construction periods
On-site Temporary Infrastructure	• Temporary construction compounds with offices, car parking and amenities • Concrete batching plants and on-site borrow pits, laydown and storage areas, fencing, power supply, access, communications • Water sourcing, power supply, access and communications
Ancillary Activities	• Delivery of Project components, including solar panels, battery modules, substations, transformers and associated components • Installation of underground and overhead cabling, maintenance and environmental managements processes and equipment • Access roads upgrade • 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 OSOM deliveries from Port of Adelaide Associated external road upgrades (also used for operational maintenance or decommissioning activities)

Project Terminology	Summary
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	Approximately 17 direct and indirect jobs in the region and 46 direct and indirect jobs in NSW

3.2 PROJECT AREA

The Project Area extends across 1,129.62 ha over 23 freehold land parcels and 2 parcels of 'Road Casement' / Crown Land (refer **Section 2.4**). The Development Footprint represents the maximum impacts associated with the construction and operation of the Project. It encompasses an area of 928.07 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 BESS, switchyard, substation and associated facilities (e.g., O&M compound).

A minimum asset protection zone (APZ) of 10 m has been added to the operational footprints of the PV modules (collectively), BESS, substation and associated infrastructure, as described in **Section 6.11**.

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.

SIXTEEN MILE GUMS

SIXTEEN MILE GUMS TANK

HAY SHIRE COUNCIL

ABERCROMBIE CREEK

CURTAINS CREEK

CUBA DAM

WEST BURRABOGIE ROAD

COBB HIGHWAY

EDWARD RIVER COUNCIL

CURTAINS CREEK

Legend

- Highway
- Local Road
- Track-Vehicular
- 220kV Transmission Line
- Watercourse
- Water Area
- Local Government Area
- Project Area
- Plains Renewable Energy Park Boundary
- Development Footprint

Development Layout

- 330kV Switching Station and BESS Substation
- 330kV Transmission Footing
- Access Track
- BESS
- O&M Building
- Solar Panel Area
- Substation
- Temporary Construction Compound
- Temporary Laydown Area
- Internal Transmission Line

Source:
Boundary: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (captured Feb 2023)

Coordinate System:
GDA2020 MGA Zone 55

Date: 23/11/2023

Created By: MB

Drawing Size: A3

0 1 2Km

1:60,000

3.1 - Project Layout

The Plains Solar Farm EIS

Engie

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3.3 PROJECT ELEMENTS

Figure 3.1 shows the conceptual Project layout for which approval is sought and considers:

- Maximising the yield of solar power generation through suitable positioning of solar panels on-site;
- 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 conceptual Project layout. Minor changes may be made during the detailed design phase and in response to commercial and technical decisions; however, will remain within the impacts identified in **Section 6**.

3.3.1 SOLAR PANELS

The solar photovoltaic (PV) panels will be the largest component of the Project and will comprise of approximately 8,336 solar arrays across a total area of approximately 885.3 ha. Each panel will have a nameplate capacity of approximately 400 W, installed on single axis tracking structures. Each solar module typically measures 2.4 m by 1.3 m with rows spacing approximately 5 m to 13 m apart.

The axis of the tracking system runs from north to south enabling the solar panels to follow the sun's path from the east in the morning through to the west in the afternoon, maintaining the best possible orientation throughout the day. A backtracking function ensures that the module rows are not shading each other, whereby the system tracks back to a point where shading is avoided to achieve the 'optimal sun angle'. The operational rotation range of the tracking system is typically +/- 60 degrees from the horizontal position.

The maximum height of the solar panels above natural ground is 2.6 m at 0 degrees of rotation and 5 m at 60 degree rotation. The solar panels will typically return to face east after sunset.

Solar panel materials include (but not limited to) 'solar glass', silicon glue, and 'Eva', which is a protective layer on top of the solar cells with lower reflectance and therefore lower glare than that of normal glass.

The final number of solar panels and tracker design will be dependent on detailed design, equipment availability and commercial considerations.

A minimum of 10 m bushfire APZ will be established around the perimeter of the solar arrays.

3.3.2 BATTERY ENERGY STORAGE SYSTEM

The centralised large-scale BESS will be situated on Mungadal Wests, within the southwest portion of the Project Area, over 2 km to the west of the Cobb Highway. The BESS will be constructed within a fenced compound that will also include the substation, switching station, laydown and construction compound footprint area, occupying a total area of up to 7.75 ha. A minimum 10 m bushfire APZ will surround the BESS**.**

The BESS will use lithium-ion technology with a nameplate capacity of approximately 400 MW/ 1.6 GWh (4 hours storage). The BESS will use pre-assembled and pre-tested systems, that may either be segregated into separate PCU and BESS units, or a fully integrated system that includes the battery modules, inverters, thermal management system, circuit breakers, fire protection system as specified by the BESS manufacturer and other controls. The number and layout of battery modules and cabinets would be confirmed during detailed design.

The BESS will include a cooling system to optimally operate the cells within a wide range of ambient temperatures. The BESS will be temperature monitored, and the automated control system will stop/reduce its operation if the temperature exceeds pre-set levels to prevent overheating. The BESS will be certified to UL9540A to prevent fire propagation between units, and ignition from external fire sources.

3.3.3 ELECTRICAL RETICULATION AND GRID CONNECTION

3.3.3.1 SUBSTATIONS

The solar farm and BESS will each have a dedicated 33/330 kV transformer which will be in the substation. One will be located within the BESS Compound and the other directly adjacent to the east of the solar panel area. The substation adjacent to the solar panels will collect power from the solar array and then connect via a 330 kV internal transmission line to the substation in the BESS compound. The substation in the BESS compound would be connected to a switching station and the switching station to the external transmission network.

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 and switching station.

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;
- Integrated earthing 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;
- 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. maintenance Lighting will be installed for occasional night work including emergency operations; however, the substation would normally be unlit, apart from low-level security lighting.

3.3.3.2 MEDIUM VOLTAGE RETICULATION

The internal electrical reticulation network, which connects the solar panels to the substation, will comprise approximately 151.2 km of underground and/or overhead 33 kV cables. 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 (Standards Australia, 2007).

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.

3.3.3.3 HIGH VOLTAGE TRANSMISSION LINE

A 330 kV single or double circuit, three phase, twin conductor bundle overhead transmission line connection. The construction of approximately 16.9 km of a new 330 kV overhead transmission line will be required to connect the solar substation 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;
- A total of 39 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 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.

3.3.4 PERMANENT O&M COMPOUND

A permanent site operations and maintenance (O&M) compound will be constructed to provide for all operations and maintenance activities associated with the Project. The O&M compound will occupy a total area of about 1 ha, located to the west of the solar panels.

The O&M compound will contain at least the following:

- Control room, an office, communications equipment, and staff amenities (toilet, kitchen, first aid, potable water supply, etc.);
- Static water supply for firefighting/bushfire management (may be part of above water supply) and septic system;
- Storage shed (including workshops area);
- Essential fire safety equipment will be provided at each facility within the O&M compound as required;
- Adequate rubbish waste/facilities providing appropriate waste stream separation using on-site skip bins emptied weekly or as required. Waste will not be retained permanently on-site; and
- Car parking facilities catering for approximately 5 direct and 12 indirect FTE for the Plains Solar Farm. The parking and vehicle manoeuvring areas will be sealed with crushed road base or asphalt.

Upon commissioning, the Project will be monitored and controlled by a remote Supervisory Control and Data Acquisition (SCADA) located in the control room. Where required, assistance from an offsite SCADA engineering team may be utilised. The SCADA system is designed to maximise power output, allowing for remote control of the solar panels, and monitoring the efficiency of the power plant.

The compound will be constructed of low-combustibility or non-combustible materials in accordance with the ‘National Construction Code’ (ABCB, 2022).

3.3.5 INTERNAL ACCESS TRACKS

Vehicles will access the solar farm via West Burrabogie Road, located south of the Project Area. Vehicles accessing the BESS will use the Cobb Highway to the south of the West Burrabogie Road.

The ongoing maintenance of the Project will be accessed through the construction of approximately 14.5 km of new private access tracks within the Project Area off Cobb Highway and 32.67 km of internal access tracks within the solar panel area. The internal access tracks will be connected to existing public roads.

The tracks will provide ongoing access to the solar panels, substation and associated infrastructure. Where practicable, the internal access tracks 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.

3.3.6 MICRO-SITING

The layout presented in this EIS may require refinement based on detailed geotechnical investigations. 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.

3.3.7 LIGHTING

The requirements for night lighting of ancillary infrastructure for this Project is generally limited to security lighting to the substation, and within the operations & maintenance facility. 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 (DCCEEW, 2023b) may also be considered during the detailed design phase for night lighting considerations.

3.3.8 LANDSCAPING

The landscape strategy for the Project Area 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.

3.3.9 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**.

3.3.10 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.

3.4 CONSTRUCTION

3.4.1 DURATION

The duration of construction from commencement to commissioning of the Project is expected to take approximately 18 months with a peak period from month 6 to 13. For the purposes of assessment, it is assumed that construction will commence in Quarter 4, 2026.

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 solar array's assembly and installation, then ancillary facilities.

Table 3.2 outlines an indicative timeline for the Project and **Table 3.3** presents the anticipated timing of key Project milestones as well as indicative peak workforce FTEs.

TABLE 3.2 INDICATIVE TIMELINE

Stage	Construction Activities	Description of works	Estimated Date of Commencement	Estimate Duration
1	Site Establishment	Site mobilisation and set up	December 2026	2 months
2	Earthworks	Construction of Roads, underground cabling, cut and fill work works, clearing of area for panels	May 2027	5 months
3	Construction and Installation	Installing mounting structures, panels, and electrical infrastructure	December 2027	12 months
4	Commissioning and Testing	Working with AEMO on commissioning process	September 2028	8 months
5	Decommissioning	Decommission of temporary infrastructures.	Q4 2058 at the earliest	6 months

TABLE 3.3 INDICATIVE MONTHLY CONSTRUCTION SCHEDULE

Stage	**Q1-1**			**Q2-1**			**Q3-1**			**Q4-1**			**Q1-2**			**Q2-2**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Site mobilisation and set up																		
Construction of Roads																		
Construction of Foundations and Hardstands																		
Electrical Installation																		
Substation Construction & Commissioning																		
Transmission Line Construction & Commissioning																		
Delivery of Equipment																		
Installation of Equipment																		
Commissioning & Testing																		

3.4.2 WORKFORCE AND HOURS OF OPERATION

The Project is anticipated to have a peak construction workforce of approximately 150 FTE personnel with an average of 100 FTE during construction periods, as generally shown in **Table 3.3**.

The focus will be on securing local resources and Aboriginal employment and procurement where possible, the efforts will focus on areas defined as (defined as the combined LGAs of Balranald, Hay, Edward River, Murrumbidgee, and Griffith). A strategy for achieving this is currently in progress and will be finalised in parallel to the development approval.

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.

Engie's accommodation strategy will include utilising short term accommodation options in Hay, such as boarding style houses that can house up to 150 workers at a time. Consultation with Hay shire Council has taken place with strategies currently being developed to ensure the project has a positive impact on the economy and availability of long-term housing.

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; and
  - 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;
- Solar panels:
  - Minor trenching works and land forming, including localised cut and fill areas to achieve more consistent gradients beneath the solar panels and facilitate drainage;
  - Driven or screw piles; and
  - Install mounting structures and tracker tubes;
  - Secure solar panels to tracker tubes;
- Install PCUs, BESS, O&M 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 CONSTRUCTION COMPOUND

Temporary facilities will be required to facilitate construction of the Project.

Temporary construction compounds and temporary laydown areas will be established for the duration of the construction works, occupying an area of approximately 5 ha and 10 ha, respectively. The construction compound will comprise of:

- Storage areas to accommodate storage of construction materials, plant, equipment solar module and other infrastructure elements;
- Material stockpile;
- Temporary power supply for construction; and
- Security fencing approximately 3 m high and CCTV.

Upon completion of construction works, all temporary facilities will be removed, and the land rehabilitated in line with **Section 3.4.8**, or as agreed with by 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 electrical infrastructure, internal access roads, O&M facility, substations and switchyard. Use of materials sourced onsite will be confirmed through geotechnical testing prior to works.

Up to two 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 1 ha, 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 and rock 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. Therefore, an Environmental Protection Licence (EPL) from the EPA (under the *Protection of the Environment Operations Act 1997* (NSW) (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 on-site will be confirmed through geotechnical testing prior to works.

Should volumes of fill required exceed those available on-site, 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 3.4** .

TABLE 3.4 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

Construction of the Project will require approximately 39.6 megalitres (ML) per annum of water for use in concrete batching, road works and earthworks, dust suppression and potential watering of revegetated areas (refer **Table 3.5**).

Water required for construction will be supplied from existing or new on-site 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.

Water required during the operation of the project will be from potable water, that is trucked into site.

A small amount of potable (drinking) water (estimated at 4.8 ML per annum in an average year) will be collected in rainwater tanks from the O&M buildings or imported during the construction period on an as-needs basis to top up the water tanks.

A non-combustible static water tanks will be included within the APZ for the substation, and associated infrastructure as defined in **Section 6.11**. 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.

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.

TABLE 3.5 INDICATIVE WATER REQUIREMENTS

Water Requirement	Construction Water Requirements	Operation Water Requirements
Civil works	26.2 ML/year	-
Dust suppression	13.4 ML/year	5.5 ML/year
Workforce use	4.8 ML/year (Construction Compound)	
Solar panels cleaning, firefighting, and other maintenance activities	-	

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

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 Project 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 6.14 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 solar arrays and substations, which includes emergency shutdowns and management of any maintenance requirements.

3.4.5.5 PLANT AND EQUIPMENT

Table 3.6 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 3.6 INDICATIVE CONSTRUCTION PLANT

Item	Vehicle
Equipment	
Solar panels	B Double
BESS	Semi-Trailer
Substation	Semi-Trailer
Switchyard	Semi-Trailer
Transformer and crane	Oversize and overmass vehicles (OSOM) vehicles
Total cables	Semi-Trailer
Steel posts, tables and brackets	Semi-Trailer
Heavy Machinery	
Telehandler	Semi-Trailer
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 Geelong in Victoria will be used for import and unloading of the majority 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. The proposed transport route for deliveries travelling from the Port of Geelong to the Project will travel along Langdon Street, Corio Quay Road, onto Station Street to Princes Highway, then Kimbolton-Axedale Road in Eppalock, Axedale-Goornong Road to Midland Highway in Goornong, then Northern Highway crossing to NSW onto Cobb Highway (vehicles accessing the BESS would enter via Cobb Highway), West Burrabogie Road and site access driveway.

OSOM vehicles will be required to deliver larger plant such as the substation transformer and earthmoving equipment from the Port of Adelaide to the site. An assessment of the access route identified that the vehicle is able to access the site with minor civil works, signage relocation and suitable traffic management measures. An overview of the proposed treatments and/or management measures for each point of interest is included within the route assessment in Traffic Impact Assessment prepared by Amber (refer to Appendix M).

The proposed transport route for OSOM deliveries travelling from the Port of Adelaide to the Project will travel along Port River Expressway, South Australia DIT, North-South Motorway, Port Wakefield Highway, Angle Vale Road and Horrocks Highway before crossing from South Australia to NSW and travelling on the Barrier Highway, Cobb Highway, West Burrabogie Road and site access driveway.

The Project will generate up to 8 OSOM vehicle movements during construction and up to 8 OSOM vehicle movements during decommissioning.

The traffic assessment for the Project is provided in **Appendix M** and summarised in **Section 6.9**.

3.4.7 ROAD UPGRADES

A route survey along the transportation routes from the Port of Geelong and Port of Adelaide to the Project Area identified the following the road upgrades, also conceptually shown in **Figure 3.2**:

- Widen West Burrabogie Road to a minimum width of 7 metres between Cobb Highway and the site access to allow two trucks to pass;
- Basic Right Turn (BAR) and Basic Left Turn (BAL) treatments at the intersection of Cobb Highway and West Burrabogie Road as shown in Appendix A of the TIA (refer **Appendix M**); and
- BAR and BAL treatments at the site access for the BESS area on the western side of Cobb Highway as shown in Appendix D of the TIA (refer **Appendix M**).

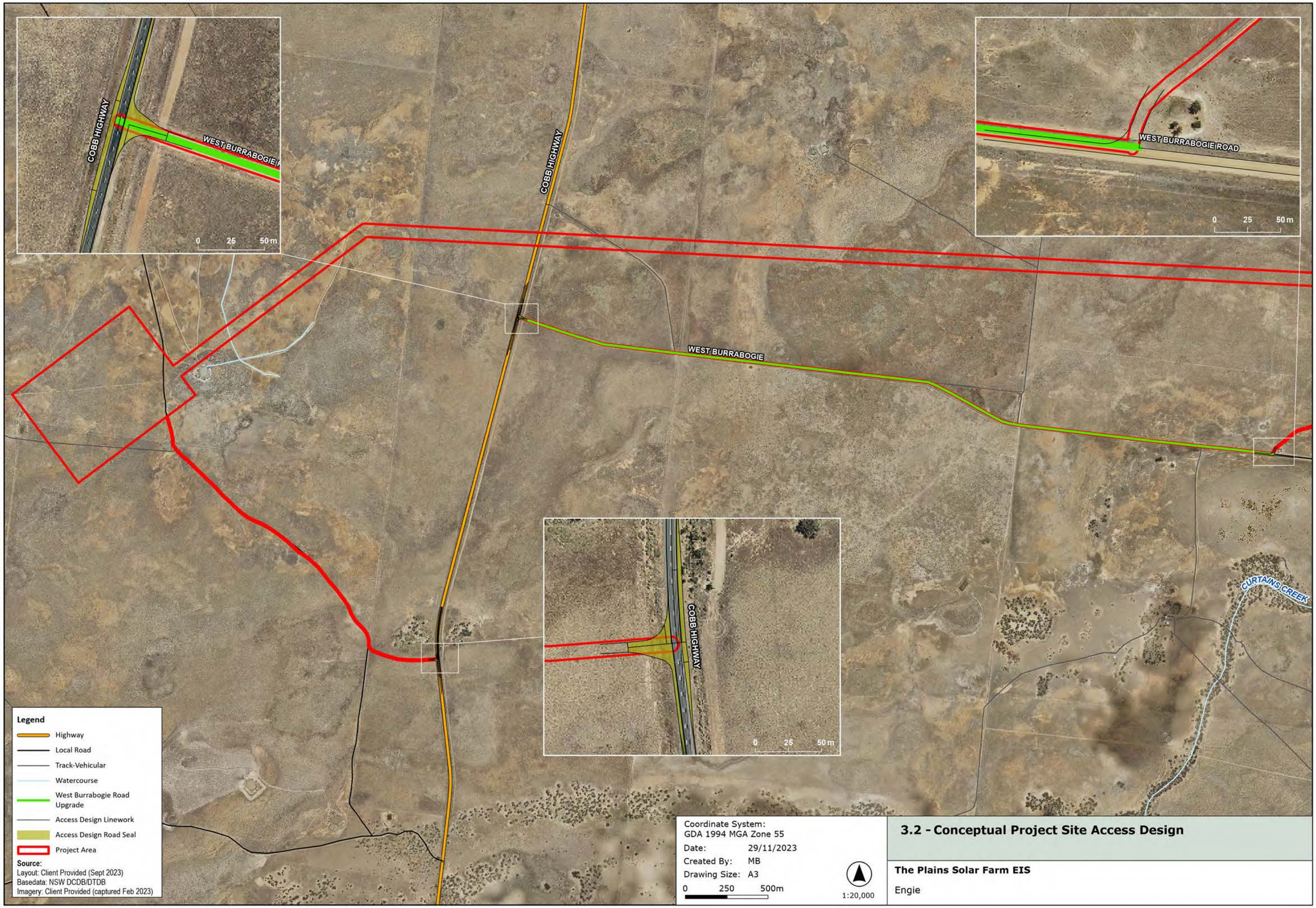
All treatments required for the Project are suitable to accommodate the future traffic volumes associated with the Project.

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**).



Coordinate System:
GDA 1994 MGA Zone 55

Date: 29/11/2023

Created By: MB

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3.2 - Conceptual Project Site Access Design

The Plains Solar Farm EIS

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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):

- Solar Panels;
- Battery Energy Storage System;
- Substation equipment;
- Communications equipment;
- Electrical Reticulation and Grid Connection;
- Internal access roads;
- Gates and fencing;
- O&M compound; and
- Lighting.

3.5.2 OPERATIONAL HOURS AND WORKFORCE

While the Project will be monitored remotely, the solar panels and other equipment will require regular maintenance. An operations workforce of approximately 17 FTE (direct (5) and indirect (12)) 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, cleaning of solar panels, maintaining access roads and APZs (if required), repair and replacements of Project's components (e.g., reticulation network, substations, transmission line and O&M compound).

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 solar farm using the existing or "best practice" at the time technology; or
- Replacement of solar panels and other infrastructure where generally within the predictions and criteria in this EIS; or
- Decommission the Project and remove the solar panels 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; and
- 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 6.14**).

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 6months 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, Lot 9 and Lot 10 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.

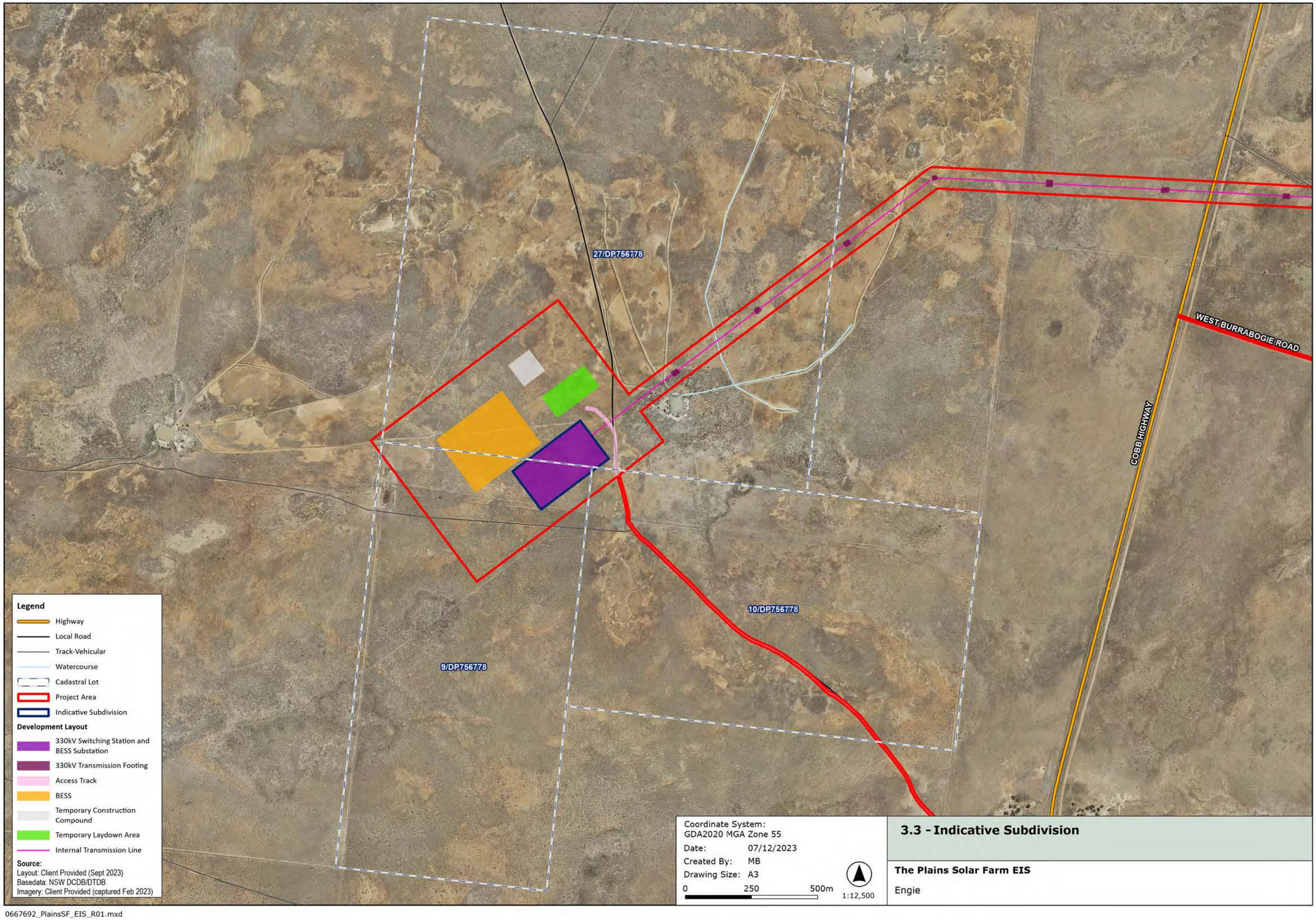
The Project may also require the creation of title(s) to enable land ownership of the substation assets located in Lots 27,9 and 10 of DP 756778.

Figure 3.3 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.



3.3 - Indicative Subdivision

The Plains Solar Farm EIS

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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 solar power, which will have a Capital Investment Value (CIV) 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 solar 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 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 which are 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 6.9 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 6.3 and Appendix H

Approval Category	Legislation	Discussion	Where Addressed
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). The Project was referred under the EPBC Act (EPBC Ref: 2023/09584) and was determined to be a controlled action on 8 November 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).	Section 6.2 and Appendix G
	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). As solar panels and electricity substation/s are defined as 'premises' it will not constitute a 'current plan' within the meaning of Section 7A Conveyancing Act 1919 and therefore will not require subdivision consent under Section 23G. 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. 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 6.3, 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 6.3
	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 6.11 and Appendix P
	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 describe 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; and
- 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);
- 'Large-Scale Solar Energy Guidelines' (Solar Guidelines) (DPE, 2022a);
- 'State Significant Development Guidelines – Preparing an Environmental Impact Statement' (DPE, 2022b);
- '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 2.4.1.3)	Landowners hosting infrastructures of the Project or that have entered into an agreement. The Project could affect hydrology, soil, land capability and agricultural production. The Project will implement agrisolar activities, 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 2.4.1.3)	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 2.4.1.3)	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.

Category	Stakeholder	Description
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 War Memorial High School and Saint Mary's Primary School • Sporting organisations, such as Hay Bowling & Golf Club Regional Centres • Local media • 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	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.
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)	

Category	Stakeholder	Description
Aboriginal Stakeholders		
Aboriginal communities and groups	Registered Aboriginal Parties (RAPs) groups and individuals: • John Jackson • Wakool Indigenous Corporation • Pappin Family Aboriginal Corporation • Hay Local Aboriginal Land Council (LALC) • Deniliquin LALC • Neville Whyman • Patricia Winch • Bangerang Aboriginal Corporation • Yarkuwa Indigenous Knowledge Centre Other Aboriginal groups and individuals: • Hay Aboriginal Working Party (HAWP) • Konanggo Aboriginal Cultural Heritage Service • Marie Havea • Miyagan Culture & Heritage • Tiem Wilson • Riverina Murray Regional Alliance • Alice Pettit • Alvira Wighton • Brian Gash Jnr • Cherokee Dixon • Corey Hughes • Daryl Singh • Galen Pettit • Gary Pappin • Geraldine Johnson • Jamie Woods • Josephine Goulding • Kerrie Parker • Mabel Fitzpatrick • Richard Dixon • Rod Pettit • Tara Dixon • Terence Singh	Specific cultural values of importance to Aboriginal parties may be affected by the Project. Refer to Section 6.3 and Appendix H.

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	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
	  ○ Cr. Paul Porter
	  ○ Cr. Martyn Quinn
	  ○ Cr. Darren Clarke	

Category	Stakeholder	Description
	• 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	• DPE/DPHI – Planning, Water, Heritage NSW, Crown Lands, Biodiversity and Conservation and Science (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 5.4** 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
Hay Junior Rugby League	Hay Junior Rugby League competition season-uniform purchase(jersey/shorts/socks)	$1000
Hay Local Aboriginal Lands Council (LALC)	HAY NAIDOC CELEBRATIONS	$5000
Nari Nari Tribal Council	Men's Mental Health Weekend	$2000
Hay Plains Landcare	Native Garden and Bush Tucker Demonstration Site	$5000
Hay Public School Parents and Citizens Association	New Playground Equipment for Hay Public School	$1000
CASE (Community Action 4 Suicide Elimination, Hay)	Ongoing Training and Education in support of Mental Health Issues in the Community.	$5000
Hay Incorporated	Hay Inc Rural Education Program	$4000
Hay Tennis Club	Hay Tennis Club Entry and Fence Upgrade	$1000
Country Education Foundation Edward River Region	CEFERR - supporting young people to follow their post school aspirations'	$2000
Hay Aboriginal Community Corporation Working Party	Empowering Futures: Expanding Aboriginal Services	$5000
HAY SHOW SOCIETY INC	Annual Hay Show	$5000
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

A total of 504 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 7 campaign emails, 9 phone calls, 60 emails, 20 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

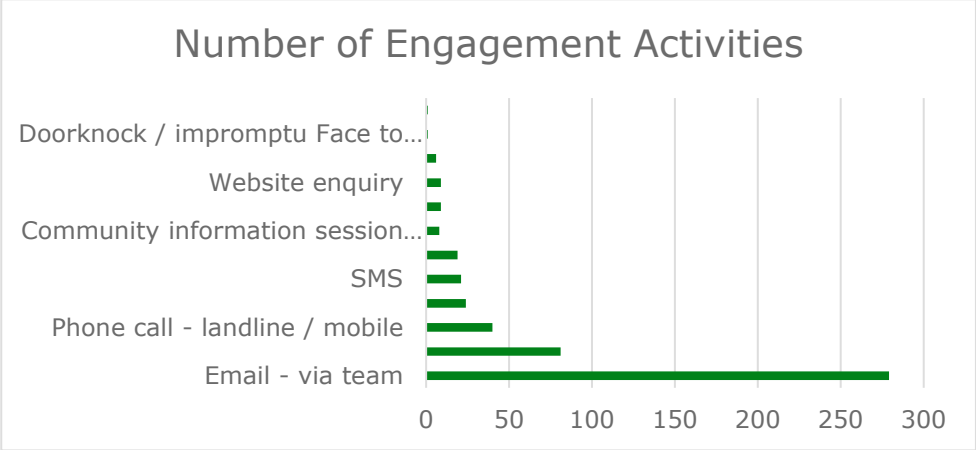


FIGURE 5.2 TOPICS RAISED DURING ENGAGEMENT ACTIVITIES FOR THE PROJECT

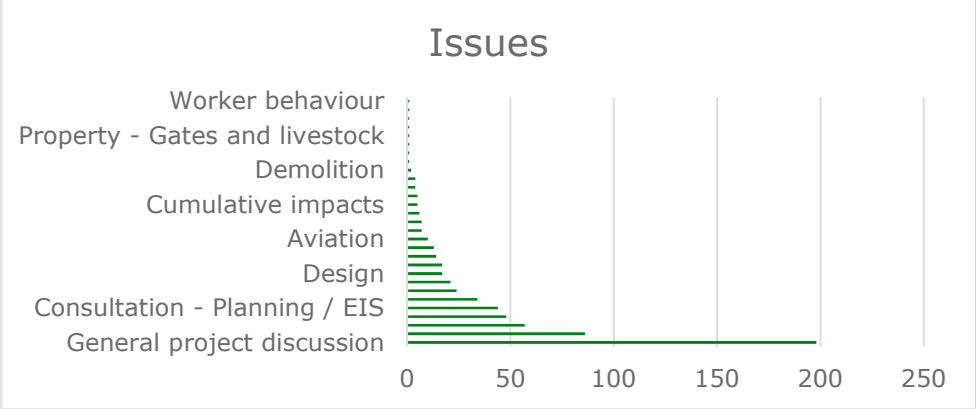


FIGURE 5.3 ENGAGEMENT ACTIVITIES FOR GOVERNMENT AGENCIES

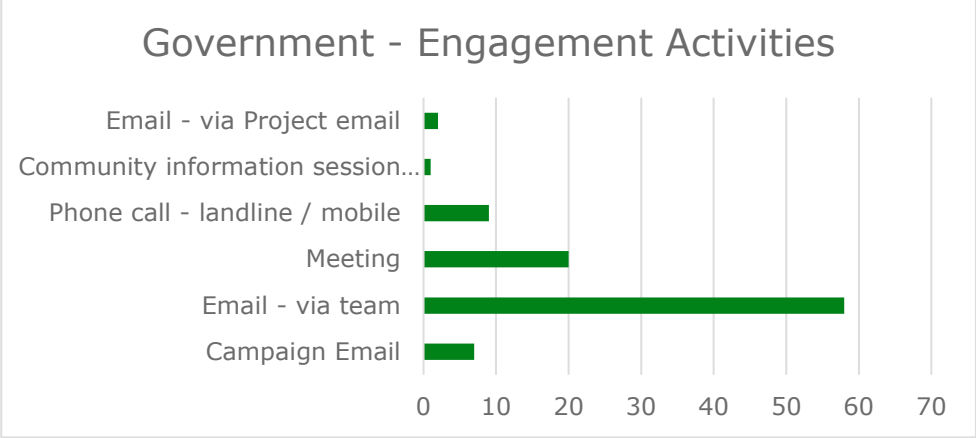
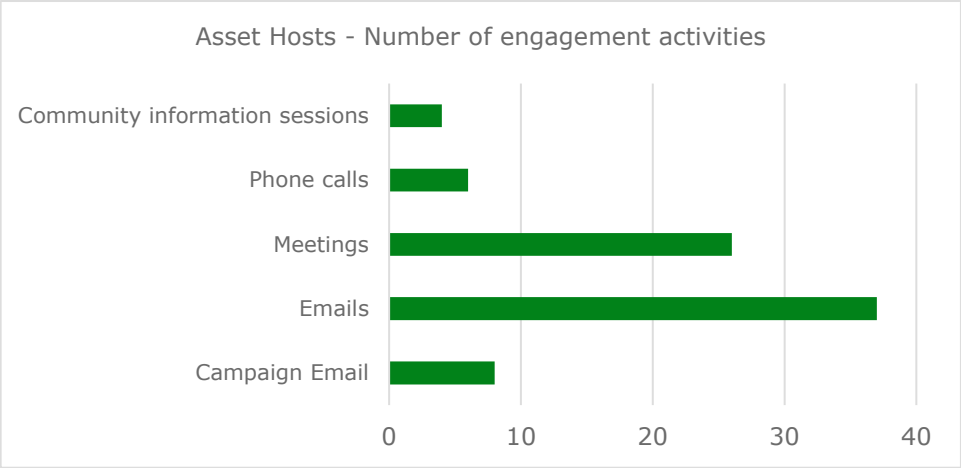
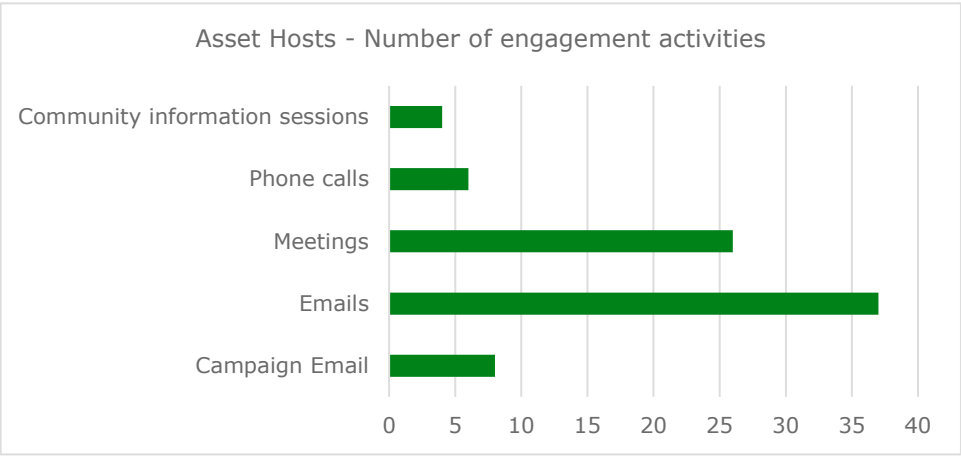


Table 5.3 provides a summary of the engagement activities undertaken with the community during EIS progression.

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 **Figure 5.4**, 8 campaign emails, 6 phone calls, 37 emails, 26 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 8 campaign emails, 21 phone calls, 55 emails, 29 face-to-face meetings and 4 community information sessions with neighbours to the Project. FIGURE 5.5 ENGAGEMENT ACTIVITIES WITH NEARBY LANDOWNERS 

Stakeholder	Engagement Activities
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 two Traditional Owners in Hay including the Hay LALC and the HAWP with face to face meetings, a co-design workshop, emails and phone calls.

5.5 STAKEHOLDER VIEWS SUMMARY

Table 5.4 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 Solar Farm | Planning Portal - Department of Planning and Environment (nsw.gov.au)).

TABLE 5.4 STAKEHOLDERS ISSUES SUMMARY

Stakeholder Category	Level of Interest / Geographic Extent[1]	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 6.7
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 6.6 and Section 2.4.2
Local Community	Medium Interest and Local	Historic buildings, flat nature of the plains	The solar farm area changed location to the east of the site and further than 2km away from the Cobb highway.	Glint and Glare, Traffic and Transport, Benefit Sharing	Throughout the EIS, as discussed in Section 5 and Appendix D	Section 6.12, Section 6.9 and Section 2.4.2
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 6.3

[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	Strategic Context	Design and Alternatives Where Addressed	Statutory Issues	Engagement	Impacts Assessment
Regulatory						
Biodiversity Conservation and Science (BCS)	High Interest and Regional	Biodiversity	Engagement with BCS 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 6.8
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 2.4.2
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 6.3

5.6 RESPONSE TO ENGAGEMENT REQUIREMENTS

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

Table 5.5 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 5.5 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*	
• *Be able to demonstrate how the demography of the area affected has been considered in how and what engagement activities have been undertaken*	Section 5.5
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

Requirement	Where Addressed
• *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

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 solar 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
	Aboriginal Heritage
	Historic Heritage
	Noise
	Landscape and Visual
	Soils and Agriculture
	Water Resources, Hydrology and Flooding
	Traffic
	Preliminary Hazard Analysis
	Bushfire
	Aviation, Glint and Glare
	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 appended in full, **Appendix G**.

Field surveys were undertaken over six (6) events as follows:

- 26th October – 12th November 2021: Surveys included a general habitat assessment, paddock tree assessments, targeted flora surveys, nocturnal avian driven transects, bird utilisation surveys (BUS), targeted avian area searches and nocturnal call playback and spotlighting;
- 14th February – 25th February 2022: Surveys included a general habitat assessment, paddock tree assessments, anabat deployment, amphibian aural-visual survey, diurnal avian driven transects and bird utilisation surveys (BUS);
- 16th May – 20th May 2022: Surveys included a general habitat assessment, paddock tree assessments and bird utilisation surveys (BUS);
- 8th August – 18th August 2022: Surveys included a general habitat assessment, paddock tree assessments, bird utilisation surveys (BUS) and nocturnal call playback;
- 21st February – 3rd March 2023: Surveys included a general habitat assessment, paddock tree assessments, targeted flora surveys, anabat deployment, Koala tree assessment, amphibian aural-visual survey, diurnal avian driven transects, nocturnal call playback and spotlighting and bird census; and
- 18th September – 29th September 2023: Surveys included threatened flora transects.

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

- **Assessment Area**: includes the Subject Land and a 1500 m buffer surrounding the outside edge of the boundary of the Subject Land;
- **Development Footprint**: includes all permanent and temporary disturbance as required under the BAM; and
- **Subject Land**: The Subject Land is inclusive of the Development Footprint, with a 100 m buffer applied to the construction disturbance boundary.

6.2.1 EXISTING ENVIRONMENT

The site is located 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. Prominent features of this bioregion include the following:

- Evidence of changed Quaternary environments and human history is preserved in the landscape patterns of prior streams, lake beds and lunettes;
- Coarse sand in prior stream beds is an important economic resource in a region without rock outcrop; and

- The wetlands of this bioregion are important habitats in southern inland regions of the state.

The Project is located within the Murrumbidgee River catchment, which covers an area of about 84,000 square kilometres. Abercrombie Creek is located about 1.4 km to the north of the Project Area and Curtains Creek flows along the western and southern boundaries of the Project Area. The Murrumbidgee River is located 33 km to the north.

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 plant community types within the site are derived and largely lack canopy and shrub layers >1m. Connectivity across this open landscape is considered substantially low, with only six (6) extant trees being recorded with limited proximity to connectivity corridors.

The Subject Land is not identified as an area of outstanding biodiversity value, as identified under the BC Act. A review of the Draft Native Vegetation Regulatory (NVR) Map (accessed 18th November 2023) identifies the Subject Land as containing Category 2-regulated lands. No Category 1 'Exempt Lands' are present and the clearing of vegetation across the Subject Land will be subject to approval and has been considered within the BDAR.

6.2.2 NATIVE VEGETATION EXTENT

The Subject Land has a long history of agricultural use and has been extensively grazed as evidenced by recent aerial imagery and verification from site visits. The vegetation classification has been reviewed against the BioNet Vegetation Classification database to align PCTs of best fit. PCTs of best are provided **Table 6.1** with extent shown in **Figure 6.1**.

Vegetation Zones across the Development Footprint were identified and delineated based on confirmed PCTs with similar levels of disturbance to growth form groups and/or extent of exotics. Six (6) Vegetation Zones were identified based on field reconnaissance and 27 Vegetation Integrity Plots (BAM plots) undertaken in accordance with the BAM. Each PCT was found to present in a single condition state, provided below:

- Zone 1 - PCT 17 of moderate condition;
- Zone 2 – PCT 24 of moderate condition;
- Zone 3 – PCT 44 of moderate condition;
- Zone 4 – PCT 157 of moderate condition;
- Zone 5 – PCT 163 of moderate condition; and
- Zone 6 – PCT 164 of moderate condition.

TABLE 6.2 PCTS IDENTIFIED WITHIN THE SUBJECT LAND

PCT ID	PCT name	Subject Land area (ha)	Development Footprint (ha)
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)	0.42	0
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	235.90	109.6
24	Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	113.81	2.86
44	Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion	116.98	33.85
157	Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	51.61	1.51
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	65.86	1.66
164	Cotton Bush open shrubland of the semi-arid (warm) zone	1,422.57	861.00

PCT ID - PCT Name

- 0-Cropping/Infrastructure/Non Native/Not classified
- 13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion). VEGETATION ZONE 1
- 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains. VEGETATION ZONE 2
- 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion. VEGETATION ZONE 3
- 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion. VEGETATION ZONE 4
- 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones. VEGETATION ZONE 5
- 164-Cotton Bush open shrubland of the semi-arid (warm) zone. VEGETATION ZONE 6

SIXTEEN MILE GUMS

COBB HIGHWAY

CURTAINS CREEK

WEST BURRABOGIE ROAD

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse
- BAM Plot
- Subject Land
- Development Footprint

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 27/11/2023
Created By: MB
Drawing Size: A3

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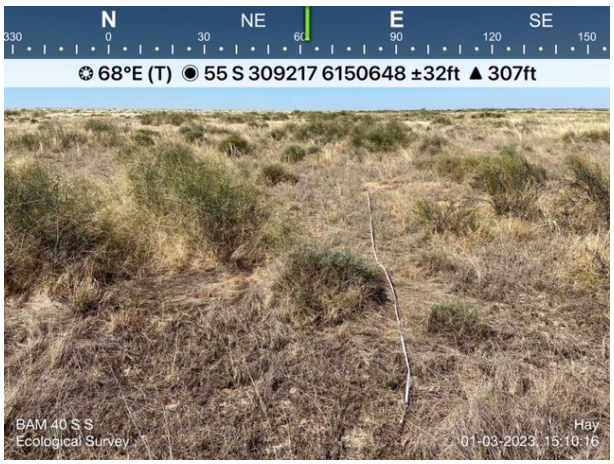
6.1 - PCTs and Vegetation Zones within Subject Land

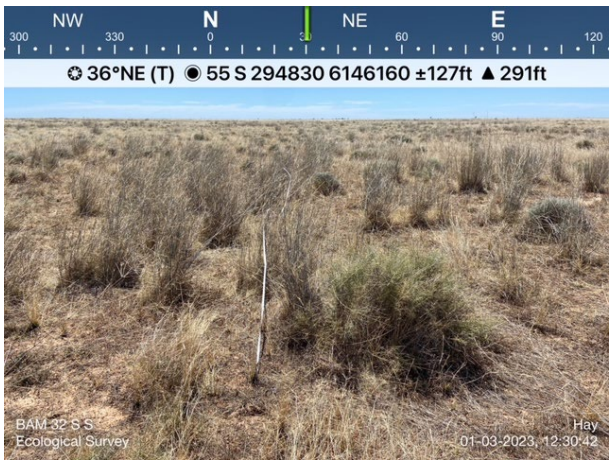
The Plains Solar Farm EIS

Engie

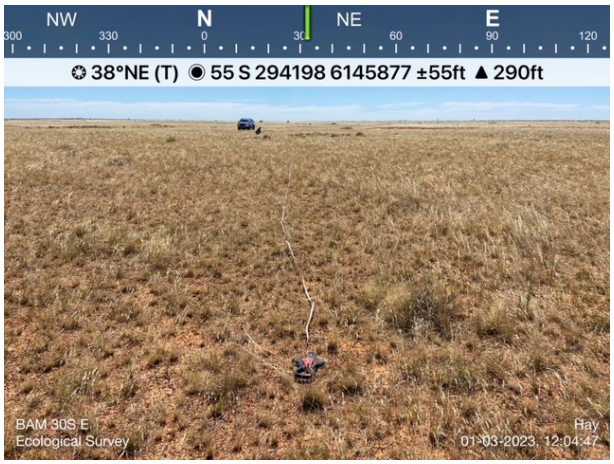
0667692_PlainsSF_EIS_R01.mxd



PHOTOGRAPH 1
PCT 17, VEGETATION ZONE 1



PHOTOGRAPH 2
PCT24, VEGETATION ZONE 2



PHOTOGRAPH 3
PCT44 VEGETATION ZONE 3

PHOTOGRAPH 4
PCT 157, VEGETATION ZONE 4

PHOTOGRAPH 5
PCT 163, VEGETATION ZONE 5

PHOTOGRAPH 6
PCT 164, VEGETATION ZONE 6

6.2.3 POTENTIAL THREATENED ECOLOGICAL COMMUNITIES

Based on field verification surveys undertaken across the Subject Land, no TECs are identified as occurring within the Subject Land.

TABLE 6.3 POTENTIAL THREATENED ECOLOGICAL COMMUNITIES

TEC	BC Act	EPBC Act	Associated PCT	Recorded within the Project Area
Natural Grasslands of the Murray Valley Plains	-	Critically Endangered	PCT 44	No – An analysis of plot data collected within and outside the Subject Land demonstrates that the Natural Grasslands of the Murray Valley Plains TEC is not present within the Subject Land. Further discussed in Appendix G.
Acacia loderi shrublands	Endangered	-	PCT 153	No – No form of Acacia shrublands recorded across the Subject Land
Artesian Springs Ecological Community in the Great Artesian Basin	Critically Endangered	-	PCT 163	No – Subject Land is situated outside distribution; the TEC is restricted to north-western NSW.
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia	-	Endangered	-	No – No associated PCTs nor key diagnostic species, Grey Box (Eucalyptus microcarpa), recorded across Subject Land.
Weeping Myall Woodlands	-	Endangered	-	No - No associated PCTs nor key diagnostic species, Weeping Myall (Acacia pendula), recorded across Subject Land.
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	-	Endangered	-	No - No associated PCTs nor record of key diagnostic species, Buloke, recorded across Subject Land.
Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions	-	Critically Endangered	-	No - No associated PCTs nor Mallee woodland communities recorded across Subject Land.

6.2.4 HABITAT SUITABILITY FOR THREATENED SPECIES

Dry chenopod shrublands and grasslands define the habitat values of the Subject Land, with the availability of water resources being seasonal and typical of a semi-arid climate. The sparse occurrence of woody vegetation (i.e., trees and/or tall shrub canopy strata) means that many species reliant on hollows and/or tree canopies as part of their lifecycle are likely to have a patchy distribution aligned with drainages lined with Black Box or isolated sandy rises where remnant trees may occur. Similarly, water dependent species are also rare to absent as the flat plain that characterises the Subject Land is generally dry with inundation being periodic and limited to lands with low relief.

The species credit species (predicted species) identified by the BAM-C are listed in **Table 6.4** and **Table 6.5**. A total of 26 potential species credit species were identified for assessment.

TABLE 6.4 PREDICTED FLORA SPECIES CREDIT SPECIES

Common name	Scientific name	BC Act	EPBC Act	Species retained for further assessment?	Associated PCTs
A spear-grass	*Austrostipa wakoolica*	V	V	Yes	17
Claypan Daisy	*Brachyscome muelleroides*	V	V	Yes	44
Mossgiel Daisy	*Brachyscome papillosa*	V	V	Yes	13, 24, 44, 157, 163, 164
A burr-daisy	*Calotis moorei*	E	E	Yes	157
Bindweed	*Convolvulus tedmoorei*	E	-	Yes	17, 24, 44, 157, 163, 164
Small Scurf-pea	*Cullen parvum*	E	-	Yes	44
Winged Peppercress	*Lepidium monoplocoides*	E	E	Yes	13, 24, 163
Lanky Buttons	*Leptorhynchos orientalis*	E	-	Yes	24, 44
Chariot Wheels	*Maireana cheelii*	V	V	Yes	44, 157, 164
Menindee Nightshade	*Solanum karsense*	V	V	No	-
Slender Darling Pea	*Swainsona murrayana*	V	V	Yes	44, 157, 163, 164
Red Darling Pea	*Swainsona plagiotropis*	V	V	Yes	44
Silky Swainson-pea	*Swainsona sericea*	V	-	Yes	44
Austral Pilwort	*Pilularia novae-hollandiae*	E	-	No	-
Turnip Copperburr	*Sclerolaena napiformis*	E	E	Yes	44

TABLE 6.5 PREDICTED FAUNA SPECIES CREDIT SPECIES

Common name	Scientific name	BC Act	EPBC Act	Dual credit species	Species retained for further assessment?	Associated PCT
Pink-tailed Legless Lizard	*Aprasia parapulchella*	V	V	No	No	-
Australian Bustard	*Ardeotis australis*	E	-	No	Yes	24, 44, 157, 163, 164
Curlew Sandpiper (Breeding)	*Calidris ferruginea*	E	CE	Yes	No	-
White-bellied Sea-Eagle (Breeding)	*Haliaeetus leucogaster*	V	-	Yes	No	-
Little Eagle (Breeding)	*Hieraaetus morphnoides*	V	-	Yes	No	-
Swift Parrot (Breeding)	*Lathamus discolor*	E	CE	Yes	No	-
Southern Bell Frog	*Litoria raniformis*	E	V	No	No	-
Major Mitchel''s Cockatoo (Breeding)	*Lophochroa leadbeateri*	V	-	Yes	No	-
Plains-wanderer (Breeding)	*Pedionomus torquatus*	E	CE	Yes	Yes	44
Koala	*Phascolarctos cinereus*	E	E	No	Yes	-
Masked Owl (Breeding)	*Tyto novaehollandiae*	V	-	Yes	No	-

Nine (9) species have been excluded from the assessment as outlined below:

- Two (2) species excluded based on the absence of Important Mapped Areas for the species across the Subject Land these being:
  - Curlew Sandpiper (*Calidris ferruginea*); and
  - Swift Parrot (*Lathamus discolor*);
- One (1) species excluded based on TBDC listed geographical constraints;
  - Menindee Nightshade (*Solanum karsense*);
- Five (5) species excluded based on TBDC listed habitat constraints, these being:
  - Pink-tailed Legless Lizard (*Aprasia parapulchell*);
  - White-bellied Sea-Eagle (*Haliaeetus leucogaster*);
  - Little Eagle (*Hieraaetus morphno*ides);
  - Major Mitchell's Cockatoo (*Lophochroa leadbeateri*); and

  - Masked Owl (*Tyto novaehollandiae*);
- One (1) species excluded based on the lack of microhabitat features, these being:
  - Southern Bell Frog (*Litoria raniformis*); and
- No species have been excluded based on expert reports or vagrancy.

A targeted field survey program followed prescribed survey methodologies to demonstrate presence or absence of the species. Species specific surveys are fully detailed in the appended BDAR. Five (5) threatened species have been determined to occur within the Subject Land:

Threatened fauna species recorded:

- Black Falcon (*Falco subniger*);
- Plains-wanderer (*Pedionomus torquatus*)[2];
- White-fronted Chat (*Epthianura albifrons*) [3]; and
- Southern Myotis (*Myotis macropus*)[4].

Threatened flora species recorded:

- Winged Peppercress (*Lepidium monoplocoides*);
- Chariot Wheels (*Maireana cheelii*); and
- Slender Darling Pea (*Swainsona murrayana*).

Eight candidate species could not be ruled out based on surveys alone as the surveys were not completed in full. Presence has been assumed in all suitable vegetation zones where survey coverage was sparse or not completed for these species;

- A Spear-grass (*Austrostipa wakoolica)*;
- Mossgiel Daisy (*Brachyscome papillosa)*;
- A burr-daisy (*Calotis moorei)*;
- Small Scurf-pea (*Cullen parvum)*;
- Lanky Buttons (*Leptorhynchos orientalis)*;
- Turnip Copperburr (*Sclerolaena napiformis)*;
- Red Darling Pea (*Swainsona plagiotropis)*; and
- Silky Swainson-pea (*Swainsona sericea)*.

Engie 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.

For all other candidate species, the targeted surveys conducted to inform the BDAR are considered sufficient to rule out the presence of each species within the Development Footprint.

This assessment has not used expert reports in place of any threatened species surveys.

[2] Plains-wanderer (*Pedionomus torquatus*) is also considered present based on Important Mapped Areas and records within the broader Plains Renewable Energy Park.
[3] White-fronted Chat (*Epthianura albifrons*) is an ecosystem credit species and no breeding habitat is located within the Subject Land.
[4] Southern Myotis (*Myotis macropus*) is an ecosystem credit species and no breeding habitat is located within the Subject Land.

SIXTEEN MILE GUMS

COBB HIGHWAY

WEST BURRABOGIE ROAD

CURTAINS CREEK

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse
- Winged Pepper-cress Sighting
- Charriot Wheels Sighting
- Threatened Species Polygon
- Subject Land
- Development Footprint

Source:
Boundary: Client Provided (Sept 2023)
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (captured Feb 2023)

Coordinate System:
GDA2020 MGA Zone 55
Date: 30/11/2023
Created By: MB
Drawing Size: A3
0 1 2Km
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6.2 - Threatened Species within Subject Land

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

6.2.5 IMPACT ASSESSMENT

6.2.5.1 PRESCRIBED IMPACTS

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

- Increased risk of vehicle strike.

Measures to mitigate these impacts will be implemented through a Construction Environmental Management Plan (CEMP).

Increased risk of vehicle strike:

Vehicle strikes can pose a threat to wildlife, including ground-dwelling species such as the Plains-wanderer, and protected native fauna species such as Emus and Kangaroos. The highest risk period for vehicle collision is anticipated during the construction and decommissioning stages. During operation, vehicle movement will be considerably reduced; however, also presents potential collision hazard with a limited number of vehicles entering for routine maintenance and monitoring purposes.

Native wildlife mortality due to vehicle strike above current/ baseline levels is anticipated; however, is expected to be relatively low with the implementation of mitigation measures. Vehicle movements on access tracks will be limited to 40 km/h speed limit to reduce the risk of vehicle strike to fauna. The implementation of appropriate signage and driving policies will increase driver awareness and further reduce associated risks. These measures will be addressed in the CEMP, and include examples such as on-site education, identifying and reporting hazards as they occur during construction, and setting appropriate working hours and vehicle speed limits.

6.2.5.2 DIRECT IMPACTS

The construction and operational phase of the development will result in direct impacts to biodiversity values (change in vegetation integrity score and habitat suitability) within the Development Footprint which cannot be avoided. 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 Project include:

- Native vegetation (outlined in **Table 6.6**); and
- Threatened species and threatened species habitat (outlined in **Table 6.7**).

TABLE 6.6 SUMMARY OF RESIDUAL IMPACTS TO NATIVE VEGETATION

Entity directly impacted	BC Act status	EPBC Act status	SAII entity	Project phase/timing of impact	Extent (ha)
Zone 1 (PCT17_Moderate)	-	-	No	Construction	109.60
Zone 2 (PCT24_Moderate)	-	-	No	Construction	2.86
Zone 3 (PCT44_Moderate)	-	-	No	Construction	33.85
Zone 4 (PCT157_Moderate)	-	-	No	Construction	1.51
Zone 5 (PCT163_Moderate)	-	-	No	Construction	1.66
Zone 6 (PCT164_Moderate)	-	-	No	Construction	861.00

TABLE 6.7 SUMMARY OF RESIDUAL IMPACTS TO THREATENED SPECIES AND THREATENED SPECIES HABITAT

Candidate Species Credit Species	BC Act status	EPBC Act status	SAII entity	Project phase/timing of impact (e.g. construction, operation, rehabilitation)	Extent (ha)
Plains-wanderer Pedionomus torquatus	E	CE	Yes	Construction	0.19
A spear-grass Austrostipa wakoolica	V	V	No	Construction	109.6
Mossgiel Daisy Brachyscome papillosa	V	V	No	Construction	874.63
A burr-daisy Calotis moorei	E	E	Yes	Construction	1.51
Small Scurf-pea Cullen parvum	E	-	No	Construction	33.85
Winged Peppercress Lepidium monoplocoides	E	E	No	Construction	9.37
Lanky Buttons Leptorhynchos orientalis	E	-	No	Construction	32.10
Chariot Wheels Maireana cheelii	V	V	No	Construction	871.04
Slender Darling Pea Swainsona murrayana	V	V	No	Construction	874.63
Red Darling Pea Swainsona plagiotropis	V	V	No	Construction	29.70
Silky Swainson-pea Swainsona sericea	V	-	No	Construction	29.70
Turnip Copperburr Sclerolaena napiformis	E	E	No	Construction	29.70

6.2.5.3 INDIRECT IMPACTS

The BAM (Section 8.2.2) identifies 16 potential indirect impacts that, as a minimum, must be considered as a part of a BDAR. Residual indirect impacts of the Project on native vegetation, threatened entities and their habitat beyond the development footprint have been considered in accordance with the BAM in **Appendix G** and summarised in **Table 6.8**.

TABLE 6.8 SUMMARY OF RESIDUAL INDIRECT IMPACTS

Indirect impact	Impacted entities	Project phase	Likelihood and consequences
Impacts of the proposal on TECs/PCTs and/or threatened species and their habitat beyond the construction area, including but not limited to: *(a) Inadvertent impacts on adjacent habitat or vegetation*	Retained vegetation and adjacent vegetation.	Construction	There are potential impacts to retained and adjacent vegetation through edge effects from increased dust and runoff from construction activities, potential impact from trampling by site vehicles, and overstepping clearing and disturbance boundaries. These risks will be mitigated through environmental management measures and controls via the preparation and implementation of a Construction Environmental Management Plan (CEMP). There is unlikely to be residual inadvertent impacts to adjacent vegetation.
(b) Reduced viability of adjacent habitat due to edge effects	Retained vegetation and adjacent vegetation.	Operation	Impacts to viability of adjacent habitat due to edge effects is considered very low due to current land use and condition (livestock grazing and weed incursions) of the Subject Land. However, to minimise edge effects as a result of the Project the CEMP will include measures to minimise soil disturbance, artificial light, runoff, noise and dust incursions on adjoining vegetation. The CEMP will also be implemented to manage weed incursions.
(c) Reduced viability of adjacent habitat due to noise, dust or light spill	The Project is not expected to result in reduced viability of adjacent habitat due to noise, dust or light spill.	N/A	N/A
(d) Transportation of weeds and pathogens from the Subject Land to adjacent vegetation	Subject Land and adjacent land	Construction, operation and rehabilitation	There is a potential risk of transportation of introduced weeds and pathogens during construction and operation to adjacent vegetation as weed species have been recorded across the Subject Land. The risk of weed and pathogen spread is considered manageable and will be management as part of the CEMP.

Indirect impact	Impacted entities	Project phase	Likelihood and consequences
(e) Increased risk of starvation, exposure and loss of shade or shelter	The Project is not expected to result in any indirect impacts resulting in an increased risk of starvation, exposure and loss of shade or shelter for further species.		
(f) Loss of breeding habitat due to vegetation clearance	The Project is not expected to result in any indirect impacts to breeding habitat due to vegetation clearing.		
(g) Trampling of threatened flora species	Identified and assumed present threatened flora species.	Construction, operation and rehabilitation	Winged Pepper-cress and Chariot Wheels are confirmed to occur within the Subject Land, with a further 12 species assumed to be present. The Project has potential to result in trampling of these threatened flora where they occur beyond the construction area. These risks will be mitigated through environmental management measures and controls via the preparation and implementation of a CEMP. There is unlikely to be residual inadvertent impacts to adjacent vegetation.
(h) Inhibition of nitrogen fixation and increased soil salinity	The Project is not expected to result in the inhibition of nitrogen or increased soil salinity.		
(i) Fertiliser drift	The Project is not expected to result in any fertiliser drift.		
(j) Rubbish dumping due to improper management of waste	The Project is not expected to result in rubbish dumping.		
(k) Wood collection	The Project is not expected to result in increased wood collection.		
(l) Removal and disturbance of rocks, including bush rocks	The Project is not expected to result in any indirect impacts resulting in Removal and disturbance of rocks, including bush rocks.		
(m) Increase in predators	The Project is not expected to result in any increase to predatory species.		
(n) Increase in pest animal populations	The Project will result in larger access routes with potential to be utilised by predatory species.	N/A	The Plains-wanderer is at risk of predation from Feral cats and European Foxes known to occur in the locality. This is further discussed in Appendix G. Mitigation measures will be implemented to minimise residual impact to the Plains-wanderer. Additionally, the Applicant will consider funding local control actions for the European Fox to further support conservation efforts for the species.

Indirect impact	Impacted entities	Project phase	Likelihood and consequences
(o) Change in fire regimes	The Project is not expected to result in any change in fire regimes.		
(p) Disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds	The Project is not expected to result in any disturbance to specialist breeding habitat		

Despite the propensity for indirect impacts, it is considered that the mitigation measures proposed are reliable and capable of remedying the effects of these impacts without causing harm to the adjoining environment. No residual indirect impacts are expected.

Increased risk of predators:

European Foxes (*Vulpes vulpes*), Feral Cats (*Felis catus*) and native birds of prey, such as the Spotted Harrier (*Circus assimilis*) and Black Falcon (*Falco subniger*), are all potential predators of the Plains-wanderer. Predation by European Foxes is considered a major threat to the species in New South Wales and is listed as a Key Threatening Process in Schedule 4 of the BC Act. European Foxes and other predatory species have been recorded within the broader PREP project boundary and are considered likely to traverse and forage across the Subject Land.

The Project includes the construction of internal roads and tracks, that will lead to a larger road network across the site. The European Fox and Feral Cat commonly make use of cleared areas with easy access such as tracks and roads, with greater hunting success for Foxes observed along linear habitats such as roadsides when compared to remnant vegetation and open paddocks.

The Project has been designed to maximise use of existing access tracks across the Subject Land where possible, reducing the potential for an increase to predatory access and activity. The potential risks will be mitigated further via the preparation and implementation of feral pest management programs to be developed in accordance with guidelines and relevant code of practice.

6.2.6 AVOID, MINIMISE, AND MITIGATE

The Project design has evolved through the course of preparing the BDAR to minimise impact on biodiversity features, 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 TECs, and retaining vegetation beneath solar arrays.

Mitigation measures proposed to be undertaken as part of the Project include a CEMP 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.

A range of mitigation measures have been developed 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. Each mitigation measure is discussed in detail in **Appendix G**, and a summary is provided in **Table 6.9.**

TABLE 6.9 SUMMARY OF PROPOSED MITIGATION AND MANAGEMENT MEASURES

ID	Mitigation measure	Method
Removal of native and threatened species habitat and habitat features		
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	Construction timing	Construction work will be restricted to daylight hours to minimise impact on nocturnal species such as the Plains-wanderer, detailed within the CEMP.
Bio4	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.
Bio5	Chemical Protocols	Protocols for the use of spraying exclusion zones around Plains-wanderers and their habitat to be implemented
Impact to native vegetation		
Bio6	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.
Light/noise/dust		
Bio7	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.
Bio8	Adaptive dust monitoring programs to control air quality	The Applicant will implement daily monitoring of dust generation during construction activities. All activities relating to the Project would be undertaken with the objective of preventing visible dust emissions from the development footprint.

ID	Mitigation measure	Method
Invasive flora/pathogens		
Bio9	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 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.
Bio10	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.
Increased pest species presence		
Bio11	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.
Erosion and sediment		
Bio12	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.

6.2.7 ASSESSING AND OFFSETTING IMPACTS

6.2.7.1 SERIOUS AND IRREVERSIBLE IMPACTS

A serious and irreversible impact (SSAII) is listed under the BC Act as an impact that is likely to contribute significantly to the risk of extinction of a 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 because:

- It will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline;
- It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size;
- It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution;

- The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable; or
- Potential SAII has been addressed in the following sections in accordance with Section 9.1 of the BAM (2020).

Based on candidate ecosystem credit species, species credit species, and result of field surveys, the potential SAII for the Subject Land are listed in **Table 6.10**. Species polygons for threatened entities retained for assessment for SAII are presented in **Figure 6.3**.

TABLE 6.10 ENTITIES AT RISK OF AN SAII

Entity	SAII Principles	Reason for inclusion in assessment
Plains-wanderer *Pedionomus torquatus*	Principle 1: Population reduction of >=80% in 10 years or three generations.	Important Mapped Areas are present
A burr-daisy *Calotis moorei*	Principle 3: Known from <=3 locations and/or an area of occupancy <10 km^2 or extent of occurrence <100 km^2.	Assumed present.

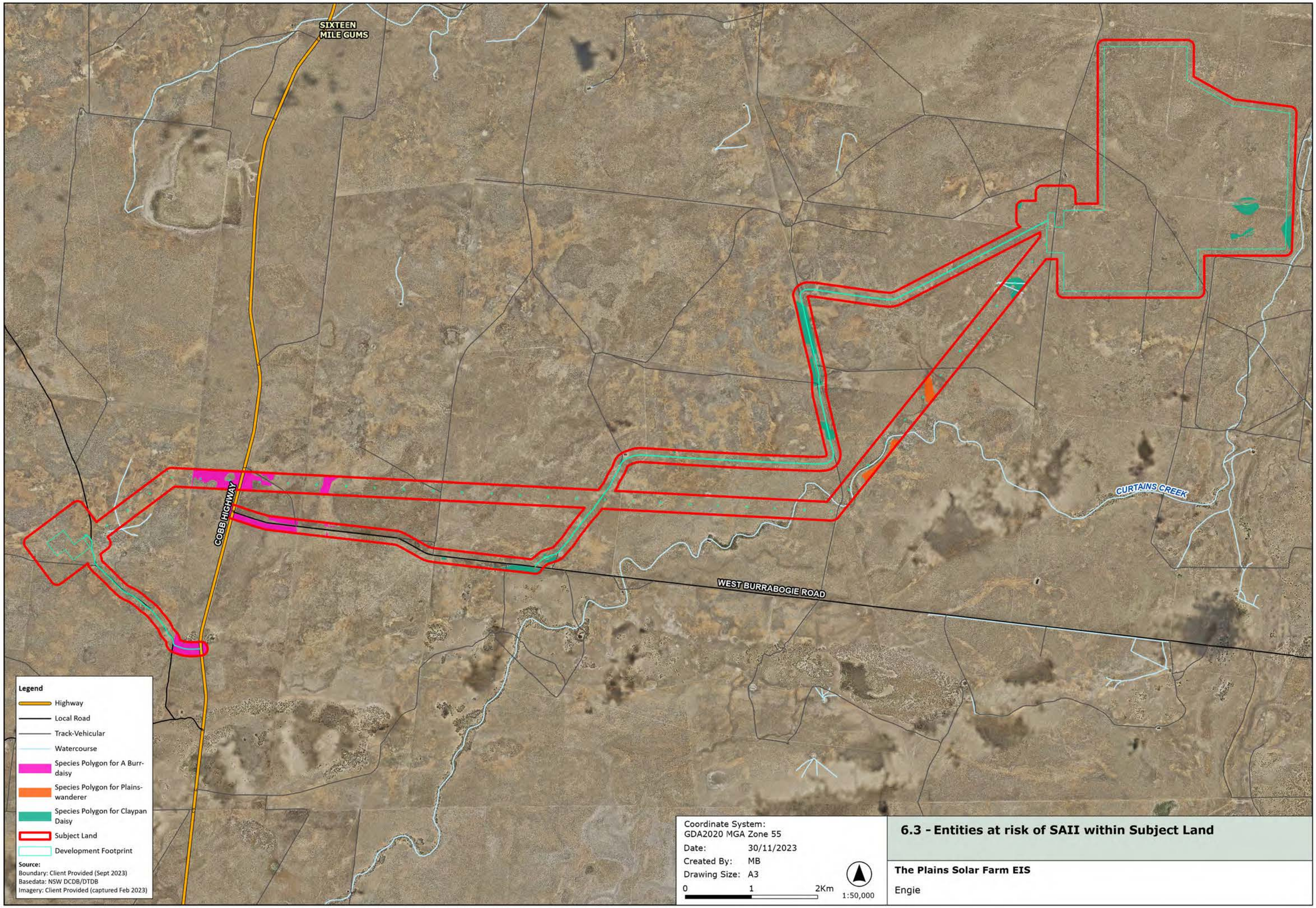
This assessment took into consideration the impacts of the Project and avoidance, minimisation and mitigation measures proposed, and concluded that the severity of the impact was not of a kind that would contribute to an increase in the decline of the species such that it would become extinct. It is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

6.2.7.2 ECOSYSTEM CREDITS

Table 6.11 identifies the ecosystem credits required to offset the Project as per BAM Subsection 9.2.1(1.).

TABLE 6.11 IMPACTS THAT REQUIRE AN OFFSET – ECOSYSTEM CREDITS

Vegetation zone	PCT ID/Condition	Impact area (ha)	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
1	17_Moderate	103.81	-91	1.75	4,363
2	24_Moderate	0.44	-50.7	1.5	54
3	44_Moderate	16.98	-79.1	2	1,274
4	157_Moderate	0.55	-62.8	1.75	41
5	163_Moderate	0.21	-78.5	1.5	49
6	164_Moderate	805.78	-81.4	1.5	26,569



6.3 - Entities at risk of SAII within Subject Land

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

6.2.7.3 SPECIES CREDITS

Candidate species requiring an offset are presented in **Table 6.12.** The area from which the Species credits can be obtained is limited to the State of NSW.

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	0.19	3	31
A spear-grass	*Austrostipa wakoolica*	V	V	109.6	2	4,986
Mossgiel Daisy	*Brachyscome papillosa*	V	V	874.63	2	35,925
A burr-daisy	*Calotis moorei*	E	E	1.51	3	24
Small Scurf-pea	*Cullen parvum*	E	-	33.85	2	1,274
Winged Peppercress	*Lepidium monoplocoides*	E	E	9.37	2	334
Lanky Buttons	*Leptorhynchos orientalis*	E	-	32.10	2	1,179
Chariot Wheels	*Maireana cheelii*	V	V	871.04	2	38,748
Slender Darling Pea	*Swainsona murrayana*	V	V	874.63	2	35,864
Red Darling Pea	*Swainsona plagiotropis*	V	V	29.70	2	1,118
Silky Swainson-pea	*Swainsona sericea*	V	-	29.70	2	1,118
Turnip Copperburr	*Sclerolaena napiformis*	E	E	29.70	2	1,118
Total credits						**182064**

6.2.7.4 OFFSET STRATEGY

The No Net Loss standard involves the retirement of ecosystem and species credits for Project related direct impacts in accordance with the NSW Biodiversity Offsets Scheme (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 Biodiversity Assessment Report. 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.

6.3 ABORIGINAL HERITAGE

An ACHAR has been prepared to assess the potential impacts the construction and operation of the Project may have on Aboriginal cultural heritage 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**), in 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 to establish background parameters;
- Research of Aboriginal cultural heritage literature and archaeological records on a regional and local context, including review of the Aboriginal Heritage Information Management System (AHIMS) database and other relevant database;
- Two archaeological surveys within the Project Area (from the 3 April 2023 to 14 April 2023 and from 8 August 2023 to 16 August 2023). The aims of the field survey were to:
  - Identify the presence or absence of Aboriginal cultural material within the Project Area;
  - Assess the likely extent and nature of any such cultural material;
  - Assess the archaeological significance of any cultural material;
  - Provide an opportunity for Registered Aboriginal Parties (RAPs) to assess the cultural significance of any material; and
  - Assess the management requirements for any cultural material.

6.3.1 ABORIGINAL COMMUNITY CONSULTATION

A key objective of the ACHAR was to identify any cultural values within the landscape in which the Project is located so that those values can be recognised, and appropriate mitigation and management measures can be proposed. 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 include four main 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 above is summarised in **Table 6.13** .

TABLE 6.13 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. 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.	The following individuals/ groups registered to be consulted, and constitute the RAPs for the Project: • John Jackson – Individual • Wakool Indigenous Corporation - Cynthja Pappin • 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.

Stage	Actions	Outcome
4	The draft ACHAR was sent to RAPs on 4 September 2023 The letter attached to the draft ACHAR invited 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.

6.3.2 BACKGROUND

6.3.2.1 ABORIGINAL ARCHAEOLOGICAL CONTEXT

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 palaeochannels 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 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, for 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 participated in a semi-sedentary lifestyle, moving periodically based on the availability of local resources, setting up temporary villages along the way. During the Summer when the river systems 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 Riverine Plain more than 20 km from a main river channel. The plains were predominantly used in winter when there was usually more surface water resulting from winter 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 central Murrumbidgee Riverine corridor were the ovens and/or mounds that were left behind (Klaver, 1998). 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. Beveridge (1884) described the importance of particular members of society, the Ngalla Wattow, in facilitating trade links between Aboriginal communities. These men were able to communicate in the languages of the surrounding communities which assisted with the transport of goods between these communities.

According to Pardoe & Martin (2001) in their Murrumbidgee Province Aboriginal Cultural Heritage Study, the Project Area is within the boundaries of the Kulin language group of the Western Murrumbidgee. 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. He stated 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 and 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).

6.3.2.2 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 Project Area design changes. An additional two searches using shapefiles were completed on 6 October 2023 to encompass further changes to the boundary of the Project Area. The searches were conducted using the parameters provided in **Table 6.14**

TABLE 6.14 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[5]	81	60

A total of 134 valid sites were identified within the search parameter area, 19 sites were within the Project Area, and 7 additional sites recorded within the eastern portion of the PREP have been destroyed or partly destroyed. The results of the full AHIMS searches are summarised in **Table 6.15**.

TABLE 6.15 AHIMS REGISTERED SITE TYPES (OCTOBER 2023)

Site Type	Sites within Search Parameters	Sites within Project Area
Artefact	76	13
Artefact, Hearth	15	1
Artefact, PAD	12	3
Hearth	10	0
Modified Tree (Carved or Scarred)	9	0
Artefact, Hearth, Potential Archaeological Deposit (PAD)	8	1
Potential Archaeological Deposit (PAD)	2	1
Earth Mound	2	0
Total	**134**	**19**

Note: The 1,129.62 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.

6.3.2.3 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.

[5] Number of sites registered following data download on 6 October 2023. A total of 141 sites (134 valid sites and 7 recorded as destroyed).

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**).

6.3.3 IMPACT ASSESSMENT

6.3.3.1 NEWLY RECORDED ABORIGINAL SITES

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.

A total of 13 new sites were discovered during the first survey program (April 2023) and an additional 3 sites were identified in the second survey program (August 2023), specifically:

- Nine sites (artefacts, hearths, PADs) were in the scalded red earths, red brown earth and sliceous sand associated with the bordering dunes and lunettes of palaeochannels (prior streams) (high sensitivity); and
- Seven sites (artefacts, hearths, PAD) were identified in the red-brown earth or grey-brown cracking clays associated with palaeochannel rangelands, bordering aeolian dunefields (moderate sensitivity).

Table 6.16 presents the Aboriginal sites identified. All identified sites have been registered on AHIMS.

TABLE 6.16 NEWLY IDENTIFIED SITES AND POTENTIAL IMPACTS

Site Name	Site Number	Site Type	Description
PREP SOLAR 01	48-5-0464	Artefact	Site measured about 100 m x 45 m. Artefact scatter across a scour of red sand. Approximately 5 quartz and silcrete flakes were identified.
PREP SOLAR 02	48-5-0465	Artefact	Site measured about 100 m x 100 m. Artefact scatter comprising approximately 20 silcrete, volcanic and quartz flakes.
PREP SOLAR 03	48-5-0466	Artefact, Hearth, PAD	Site measured about 100 m x 100 m. Artefact scatter and hearth present across a scour of red sand. Large pieces of raw material (silcrete and quartz) were identified at the site. The presence of rusted metal farming equipment demonstrates historic disturbances. The site is a potential PAD due to the slightly raised land surrounding the red sand depression.
PREP SOLAR 04	48-5-0467	Artefact, PAD	Site measured about 200 m x 200 m. Artefact scatter comprising over 50 blades and flakes. Quartz, silcrete, chert, crystal quartz and volcanic material types were identified. The site is also a potential PAD.
PREP SOLAR 05	48-5-0468	Artefact	Site measured about 1 m x 1 m. Isolated volcanic (hornfels) flake.

Site Name	Site Number	Site Type	Description
PREP SOLAR 06	48-5-0469	Artefact	Site measured about 50 m x 50 m. Artefact scatter within area of exposed red sand. Approximately 10 artefacts were identified, with silcrete, quartzite and crystal quartz material types noted.
PREP SOLAR 07	48-5-0470	Artefact, PAD	Site measured about 300 m x 150 m. artefact scatter and PAD present with an exposed scour of red sand. Approximately 50 artefacts were identified of silcrete, quartz and quartzite material types.
PREP SOLAR 08	48-5-0471	Artefact	Site measured about 1 m x 1 m. An isolated quartz flake, located along a linear access track/former fence line/drainage ditch.
PREP SU C 02	48-5-0472	Artefact	Site measured about 150 m x 50 m. Low-density artefact scatter located in area of exposed red clay. Approximately 3-5 artefacts were present with material types of silcrete, quartz and quartzite identified.
PREP SU D 01	48-5-0524	PAD	Site measured about 50 m x 50 m. Sections of the landscape was slightly raised around sandy depressions indicating a potential PAD. No artefacts recorded.
PREP SU D 02	48-5-0474	Artefact	Site measured about 100 m x 100 m. Artefact scatter within red sandy scour. Silcrete and quartz flakes were identified.
PREP SU E 04	48-5-0481	Artefact	Site measured about 1 m x 1 m. Isolated silcrete flake present.
PREP SU E 05	48-5-0482	Artefact	Site measured about 50 m x 50 m. Artefact scatter located within red sandy scour on a slight rise. Approximately 5 quartz and silcrete flakes were identified.
PREP SOLAR 09	48-5-0550	Artefact	Site measured about 1 m x 1 m. Isolated and broken silcrete flake, located in an area of exposed red sand
PREP SOLAR 10	48-5-0551	Artefact	Site measured about 100 m x 50 m. Low density artefact scatter located within red sandy scour adjacent to a drainage channel (containing standing water). Approximately 5 silcrete flakes were identified.
PREP SU B 01	48-5-0554	Artefact; PAD	Site measured about 200 m x 100 m. Low-density artefact scatter located within red sandy scours. Approximately 4 quartz and silcrete flakes were identified. Landform features indicated presence of PAD.

6.3.3.2 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 a number of 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.

6.3.3.3 LIKELY IMPACTS TO ABORIGINAL HERITAGE

The potential impacts to Aboriginal cultural heritage associated with the Project Area are shown in **Table 6.17** include both the Project Area and a 100m buffer.

TABLE 6.17 IMPACT ASSESSMENT SUMMARY

Aboriginal site	Site Type	Significance	Potential for Impact within the Project Area	Potential for Impact within the 100m survey buffer
48-5-0440	Artefact	Low	High – within the development footprint	-
48-5-0439	Artefact, Hearth	Moderate	High – within the development footprint	-
48-5-0438	Artefact	Low	-	Moderate – can avoid
PREP SOLAR 01	Artefact (multiple)	Low	-	Low – easy to avoid
PREP SOLAR 02	Artefact (multiple)	Moderate	-	Low – easy to avoid
PREP SOLAR 03	Artefact (multiple), Hearth, PAD	Moderate	-	Low – easy to avoid

Aboriginal site	Site Type	Significance	Potential for Impact within the Project Area	Potential for Impact within the 100m survey buffer
PREP SOLAR 04	Artefact (multiple), PAD	Moderate	High – within the development footprint	-
PREP SOLAR 05	Artefact (isolated)	Low	High – within the development footprint	-
PREP SOLAR 06	Artefact (multiple)	Moderate	High – within the development footprint	-
PREP SOLAR 07	Artefact (multiple), PAD	Moderate	High – within the development footprint	-
PREP SOLAR 08	Artefact (isolated)	Low	High – within the development footprint	-
PREP SOLAR 09	Artefact (isolated)	Low	-	Low – easy to avoid
PREP SOLAR 10	Artefact (multiple)	Low	-	Low – easy to avoid
PREP SU B 01	Artefact (multiple), PAD	Low	-	Moderate – can avoid
PREP SU C 02	Artefact (multiple)	Low	Moderate – edge of the development footprint	-
PREP SU D 01	PAD	Unknown	Low – very edge of the development footprint	-
PREP SU D 02	Artefact (multiple)	Low	High – within the development footprint	
PREP SU E 04	Artefact (isolated)	Low	High – within the development footprint	-
PREP SU E 05	Artefact (multiple)	Low	High – within the development footprint	-

6.3.4 MITIGATION AND MANAGEMENT

Impacts to Aboriginal sites (as described in **Section 6.3.3.3**) will be avoided through implementation of specific mitigation and management measures as detailed in **Table 6.18**.

TABLE 6.18 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 should be provided to recorded PADs, and a buffer of 100 m should be provided to recorded hearths. This would affect the following sites: • PREP SOLAR 03: Artefact, Hearth; • PREP SOLAR 04: Artefact, PAD; • PREP SOLAR 07: Artefact, PAD; • PREP SU D 01: PAD; and • PREP SU B 01: Artefact, PAD.

ID	Mitigation and Management Measures
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: • 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	The ACHMP will include mechanisms for managing the expected finds of additional Aboriginal cultural material being found during construction activities.
AH4	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 until the outcome of the project is known. However, in response to feedback received from the Department and Heritage NSW the Applicant aims to complete any required test excavations during the RtS phase of the project.
AH5	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; and
AH6	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.

6.4 HISTORIC HERITAGE

An assessment of historic heritage has been prepared to inform this EIS (ERM, 2024; as part of the ACHAR, **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, two rounds of field surveys (refer Section 3.1.3 of **Appendix H**). It also addresses the requirements of the SEARs (**Appendix A**), in consideration of relevant stakeholder engagement as described in **Section 5**, and consideration of the Burra Charter, 'NSW Heritage Manual' (Heritage Office , 1996), and relevant Practice Notes.

6.4.1 BACKGROUND

6.4.1.1 HISTORICAL ARCHAEOLOGICAL CONTEXT

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 utilised for sheep grazing. It also contains numerous bores, areas of irrigated cropping, an extensive pipe and trough system, and a frontage onto the Murrumbidgee River at the northern end of the original property.

6.4.1.2 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 6.19** .

TABLE 6.19 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.

6.4.2 IMPACT ASSESSMENT

6.4.2.1 HISTORICAL ARCHAEOLOGICAL POTENTIAL

During the archaeological field survey, no historic sites were identified within the Project Area. 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 a number of tanks, troughs, dams and fence lines.

The gradings for archaeological potential that were used for this assessment are detailed in **Table 6.20**.

TABLE 6.20 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**.

6.4.3 MITIGATION AND MANAGEMENT

There are no historic heritage sites within or in the vicinity of the Project Area. An Unexpected Finds Protocol will be developed as part of the Aboriginal Cultural Heritage Management Plan (ACHMP) and will be applied to any historic heritage finds during the construction and operational phases of the Project.

6.5 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, 2023; **Appendix K**). 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) and 'Noise Policy for Industry' (NPI) (NSW EPA, 2017).

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.

6.5.1 BACKGROUND

6.5.1.1 EXISTING NOISE SOURCES

Background noise levels in rural areas, such as the area surrounding the Project, are typically low. Background noise levels surrounding the Project were not measured; however, they were assumed to be dominated by natural noise sources, such as wind in trees, insects or birds.

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. The use of minimum assumed RBLs is common practice in rural environments, which allows for the strictest NPI Project Noise Trigger Levels (PTNLs) to be developed.

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.

6.5.1.2 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 on **Figure 6.4**. The closest associated dwelling is about 4.0 km from a solar array and 6.7 km from the BESS. The closest non-associated is 6.3 km from a solar array and 9.5 km from the BESS. The closest national park is about 15.0 km from a solar array and 22.0 km from the BESS. Due to the large separation distances between the noise sources of the Project and the sensitive receivers, the noise levels are expected be low.

6.5.1.3 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 6.21 provides a summary of RBL and NMLs relevant to the Project, and in accordance with the ICNG.

TABLE 6.21 INTERIM CONSTRUCTION NOISE GUIDELINES CRITERIA

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)

Sleep Disturbance

In the event where construction is proposed to occur at night, the ICNG provides guidance to prevent disturbance to sleep at residential receivers. Where noise levels from a construction (or industrial) source at a residential receiver at night exceeds the following, a maximum noise level event assessment should be undertaken:

- $L_{eq,15min}$ 40 dB(A) or the RBL + 5 dB(A), whichever is greater; and/or
- L_{max} 52 dB(A) or the RBL +15 dB(A), whichever is greater.

"Particularly Annoying" Noise Sources

For some construction activities or use of construction equipment, the ICNG requires that 5 dB(A) should be added to the predicted noise levels to factor in the greater annoyance that may be caused. These activities or equipment include:

- Use of 'beeper' style reversing or movement alarms, particularly at night-time;

- Use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work;
- Grinding metal, concrete or masonry;
- Rock drilling;
- Line drilling;
- Vibratory rolling;
- Rail tamping and regulating;
- Bitumen milling or profiling;
- Jackhammering, rock hammering or rock breaking; and
- Impact piling.

6.5.1.4 OPERATIONAL NOISE CRITERIA

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. The NPI determines PNTLs for a development as shown in **Table 6.22** below.

TABLE 6.22 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)

6.5.2 NOISE IMPACT ASSESSMENT

6.5.2.1 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 level predicted is 28 dB(A) at an associated receiver. This noise level is associated with site preparation earth works and is below the relevant NML. The highest noise level predicted at a non-associated receiver is less than 20 dB(A), again during the site preparation earth works stage.

Table 6.23 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 6.23 CONSTRUCTION NOISE PREDICTIONS

Stage	Highest Associated Predictions		Highest Non-Associated Predictions	
	$L_{eq\ (15\ min)}$	L_{max}	$L_{eq\ (15\ min)}$	L_{max}
Stage 1 – Site Establishment	25 dB(A)	26 dB(A)	< 20 dB(A)	< 20 dB(A)
Stage 2 – Earthworks	28 dB(A)	30 dB(A)	< 20 dB(A)	< 20 dB(A)
Stage 3 –Construction and Installation	21 dB(A)	25 dB(A)	< 20 dB(A)	< 20 dB(A)
Stage 4 –Commissioning and Testing	< 20 dB(A)	21 dB(A)	< 20 dB(A)	< 20 dB(A)
Future Stage – Decommissioning	27 dB(A)	30 dB(A)	< 20 dB(A)	< 20 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 6.21**

For any works required outside of standard construction hours, modelling predicts that associated or non-associated receivers would not experience noise greater than the NML (**Table 6.23**).

Sleep Disturbance

Based on the modelled noise level predictions, the Project will not lead to sleep disturbance. The highest predicted noise level of 28 dB(A) (30 dB(A) L_{max}) during construction **(Table 6.23**) is below the threshold for sleep disturbance - $L_{eq,15min}$ 40 dB(A) and L_{max} 52 dB(A).

"Particularly Annoying" Noise Sources

It is likely that one or more of the "particularly annoying" noise sources associated with the activities listed in **Section 6.5.1.3** will be present during construction.

The noise predictions in **Table 6.23** inclusive of the "particularly annoying" noise source factor (addition of 5 dB(A) as required by ICNG) will be below the lowest NML of 35 dB(A). For instance, the maximum $L_{eq(15min)}$ 28 dB(A) during Stage 2 at the highest associated dwelling inclusive of the "particularly annoying" noise source factor will be 33 dB(A), which is still below the lowest NML of 35 dB(A).

6.5.2.2 OPERATIONAL NOISE

Table 6.24 provides assumed noise levels of activities undertaken during the operation of the Project. These proposed maximum capacities allow for conservative estimates of the noise emissions to be made. **Figure 6.4** provides a noise contour plot of the predicted operational noise levels relative to the noise sensitive receivers.

The modelled noise levels for the operation of the solar and BESS are less than 20 dB(A) at all associated and non-associated dwellings during both day and night. This is below the relevant criteria of 40 dB(A) and 35 dB(A) during the day and evening / night respectively. Modelling also demonstrates that noise levels associated with Project operation activities at the closest national parks would be below 20 dB(A).

TABLE 6.24 OPERATIONAL NOISE SOURCES

Operational Section	Noise Source	Noise Level[6]
BESS	BESS	117 dB(A) total
	PCS	117 dB(A) total
	Transformer	102 dB(A)
Solar	Tracking Motor	57 dB(A) each 74 dB(A) total
	Inverter	95 dB(A) each 114 dB(A) total
	Transformer	102 dB(A)

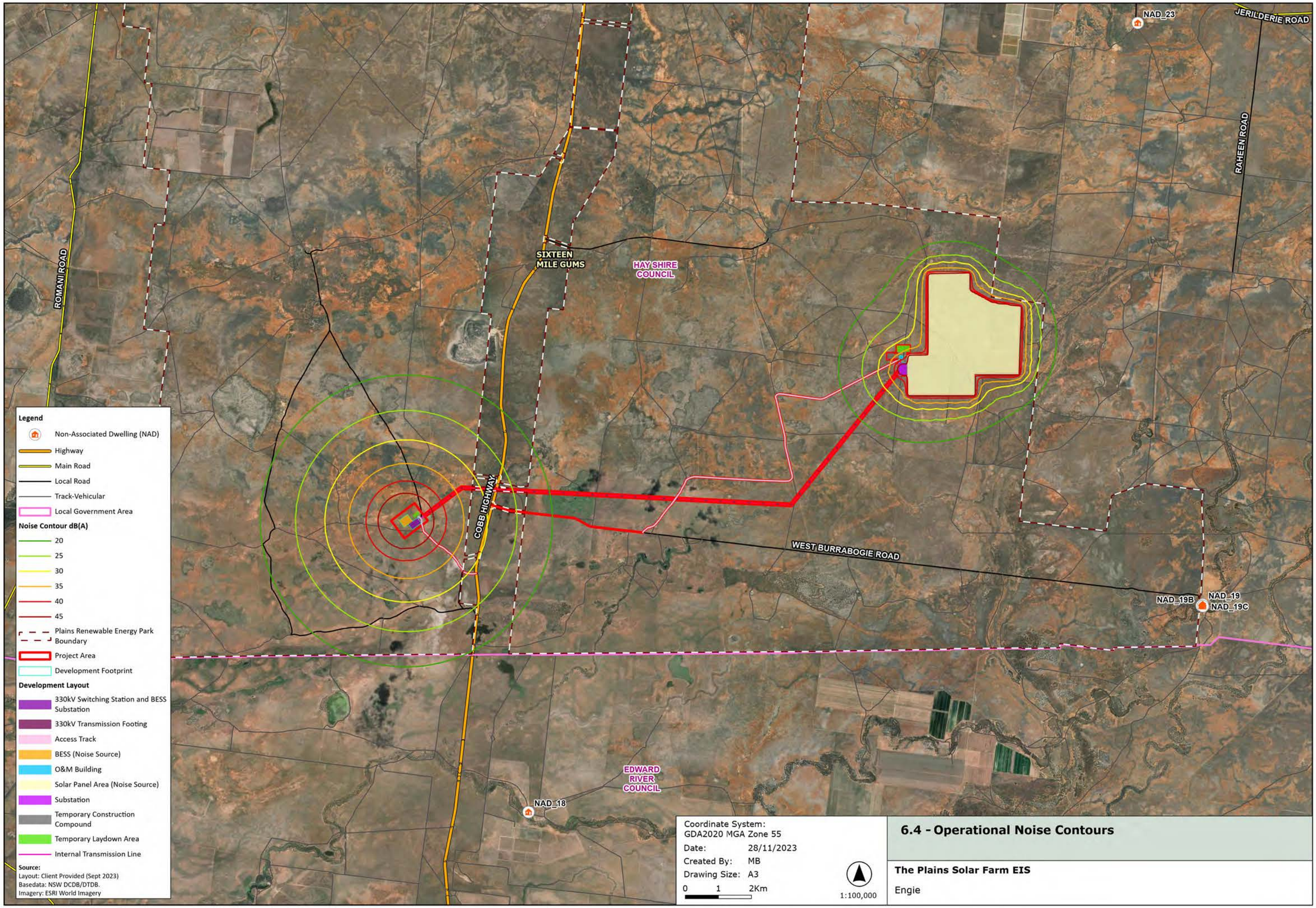
6.5.3 MITIGATION AND MANAGEMENT

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 are recommended to be adopted, summarised in **Table 6.25**.

TABLE 6.25 NOISE MITIGATION AND MANAGEMENT MEASURES

ID	Mitigation and Management Measures
N1	• Implementation of a construction noise management plan (CNMP).
N2	• Establishment of a complaints management system for construction works and site operations.
N3	• Revised noise modelling following the finalisation of selected equipment.
N4	• Implementation of an operational noise management plan, inclusive of post construction testing at sensitive land uses or at a representative location, to confirm that the noise levels achieve the requirements.

[6] Noise levels are estimated at the source.



6.4 - Operational Noise Contours

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

6.6 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 J**. The LVIA provided recommendations to assist in the mitigation of potential impacts resulting from the Project.

The LVIA was prepared in accordance with the Solar Guidelines and the 'Technical Supplement – Landscape and Visual Impact Assessment' (Landscape and Visual Technical Supplement) (DPE, 2022c) and has considered engagement undertaken for the Project with stakeholders as discussed in **Section 5**.

The LVIA is provided in **Appendix J**.

The scope of works undertaken in the LVIA included:

- An assessment of how the Project will affect the elements that make up the aesthetic and perceptual aspects of the landscape and its distinctive character, which involved:
  - A baseline analysis to establish the existing landscape character of the area and its sensitivity;
  - Identification of the landscape character zones (LCZs) within 5 km of the Project Area, based on common distinguishing visual characteristics; and
  - Landscape character impact assessment to determine the impact of the Project on each LCZ by evaluating the sensitivity of the landscape and the magnitude of the Project's effects in that area;
- An assessment of the potential impacts of the Project on viewpoints within the private and public domain, which involved:
  - A preliminary assessment to identify viewpoints that will require a detailed assessment, in accordance with the Landscape and Visual Technical Supplement, viewpoints included public roads and rail lines within 2.5 km from the Project Area, other public and private viewpoints within 4 km from the Project Area;
  - A detailed assessment of each viewpoint identified in the preliminary assessment to assess potential visual impacts resulting from the Project on these viewpoints; and
  - Determining the degree of visual impacts resulting from the Project, in accordance with the visual performance objective of each assessable viewpoint;
- A glint and glare assessment to demonstrate whether the Project posed a significant risk to motorists or pilots; and
- Justification. From a visual perspective, of the final proposed layout and identification of mitigation and management measures based on the any visual impacts identified.

6.6.1 BACKGROUND

6.6.1.1 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".

The concerns the community raised during engagement 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.

6.6.1.2 BASELINE ANALYSIS

For the purposes of the LVIA the Project Area is referred to as the 'Project Investigation Area' and in accordance with the Landscape and Visual Technical Supplement, the Study Area was defined as the area within 5 km of any proposed solar panel. Fieldwork was undertaken for the Project in April 2023 to assess and identify the existing landscape character of the Study Area.

Table 6.26 summarises the baseline investigation results. The key landscape features are shown in **Figure 2.3**.

TABLE 6.26 BASELINE INVESTIGATIONS SUMMARY

Visual Baseline	Investigation Summary
Physical Influences	The Project is located within the Murrumbidgee subregion of the Riverina IBRA Bioregion, which is situated in southwest NSW. The landform of the Study Area is characterised by flat, open and generally treeless plains that are used for agricultural activities. The surrounds are generally flat with grasses and shrubs and become more undulating within their extents. A network of creeks and waterways, including Abercrombie Creek and Curtains Creek are located within Study Area. The area is also characterised by shallow depressions that act as floodplains and refuge for excess water in the area.
Ecological Characteristics	The plains, where the Study Area is located at, are dominated by saltbush and bluebush communities such as old man saltbush, cottonbush and native grasslands. Vegetation communities along creek corridors within the Study Area are generally grassy and include saltbush shrublands.

Visual Baseline	Investigation Summary
Human Activity	The nearest major settlement is the town of Hay, which is located approximately 25 km (direct-line) north of the Project. Booroorban is a smaller settlement located about 20 km (direct-line) to the southwest of the Project. Preliminary community consultation identified the 16 Mile Gums Rest Area, located about 11 km from the Project Area, as a key public viewing location on the Cobb Highway. 16 Mile Gums Rest Area forms part of the 'The Long Paddock' touring route and is frequently used by motorists travelling between Hay and Deniliquin on the Cobb Highway. Land within the Study Area has been predominantly cleared of remnant vegetation to support agricultural activities; however, this excludes areas along creek corridors.
Key Landscape features and Aesthetics	The Project Investigation Area and its immediate surrounds consist of flat, open, generally treeless landscapes. The Study Area includes waterways such as Abercrombie Creek and Curtains Creek. Other landscape features within the Study Area include areas identified as swamps and floodplains that are characterised by gently flat depressions that are covered with grasses and saltbush varieties. Southwest Woodland Nature Reserve was identified as the nearest nature reserve, and it is located approximately 16 km south of the Project. No historic heritage items were identified within 5 km of the Project Area.
Aboriginal Cultural Heritage Value	The Project is located within the extents of Hay LALC. Murrumbidgee River and Lachlan River which are located further north of the Project Investigation Area are key cultural elements in the surrounding landscape.
Landscape Condition	Topography of the Project Area is gently undulated, ranging from 91 m to 95 m Australian Height Datum (AHD) from south to north and 93 m to 94 m from east to west. Abercrombie Creek and Curtains Creek are ephemeral creeks and generally flow east - west to the north and south of the Project Area.
Land Use	The Study Area is predominantly located on land dedicated to grazing areas with native vegetation, where small parcels of land have been modified for grazing purposes. The existing 220 kV electrical transmission line generally runs in the east - west direction on the southern side of the Project. One (1) associated dwelling is located within the Study Area. Land use surrounding the Project is further discussed in **Section 2.4**.
Large Scale Energy Development in the area	Pottinger Wind and Solar Farms are located adjacent to the eastern side of the Project Area. Other proposed renewable energy projects in proximity include the Bullawah Wind Farm located at about 6.4 km east of the Project Area. The remainder of the proposed, in operation or approved renewable energy projects are more than 30 km from the Project and it is likely that they do not have the potential to be viewed in combination with the Project.

6.6.1.3 LANDSCAPE CHARACTER ASSESSMENT

Table 6.27 summarises the landscape character assessment for each identified LCZ within the Study Area.

For each LCZ a quantitative frame of reference was applied to establish the scenic quality rating, which ranged from low to moderate. The overall sensitivity and magnitude of change resulting from the Project on each LCZ was then assessed, which informed the overall landscape character impact ratings.

TABLE 6.27 LANDSCAPE CHARACTER ASSESSMENT SUMMARY

LCZ	Ratings			
	Scenic Quality	*Sensitivity*	*Magnitude*	*Landscape Character Impact*
LCZ01: 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. The LCZ comprises of roads and infrastructure elements such as the existing 220kV electrical transmission line.	**Low**: Evident human modifications with vegetation utilised for pastoral grazing or settlements.	**Low**: Due to the lack of intervening vegetation and flat terrain, views are likely to be available from areas within LCZ01. However, due to the isolated location of the Project public and private viewing are likely to be limited. Resulting change is unlikely.	**Low**
LCZ02: 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 are a visible element from some locations within LCZ02.	**Moderate:** Vegetation along Abercrombie Creek, Curtains Creek and other minor creek connections is native grasses and saltbush communities with occasional stands of mid-storey shrubs.	**Low:** The Project is not expected to compete visually with the landform and associated vegetation of LCZ02. Resulting change is not expected.	**Low**
LCZ03: 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 LCZ03 comprises of native vegetation and is not extensively modified by human intervention.	**Low:** Vegetation is typically native to the region and some parcels are utilised for grazing, with the capability to absorb the change as a result of the Project.	**Low:** Most swamps and floodplains are located adjacent to LCZ02. The Project will be a visible element when viewed from the LCZ3. However, the extent of this change is considered minor. Resulting change is unlikely.	**Low**

6.6.2 VISUAL IMPACT ASSESSMENT

6.6.2.1 PRELIMINARY ASSESSMENT

Viewpoint Analysis

Residential viewpoints (non-associated dwellings) within 4 km from the nearest solar panel and viewpoints from public roads and rail lines (public viewpoints) within 2.5 km from the nearest solar panel were identified as shown in **Figure 6.5**. Due to the relatively flat terrain of the region, the LVIA has also considered a 5 km buffer from the nearest solar panel to identify visual impacts in a worst-case scenario.

The Preliminary Assessment Tool – Vertical Field of View was then used to identify non-associated dwellings and public viewpoints that require detailed assessment in the EIS and eliminate the need to assess the viewpoints that are likely to experience very low impacts.

Viewshed Analysis

A viewshed map and a reverse viewshed map were prepared to help identify all areas within 5 km of the Project Area that have views of the Project, these have considered a bare ground scenario without intervening elements such as vegetation. Further assessment and ground-truthing during field work ascertained potential visibility by considering structures and vegetation.

The viewshed mapping was undertaken to eliminate viewpoint locations that will not have a line of sight to the Project (refer to **Figure 6.5**). Based on topography alone the viewshed map analysis concluded:

- Due to the relatively flat terrain within the Study Area, most areas within 2.5 km of a solar panel array are likely to view most of the Project (between 75-100%). However, isolated small topographical variations reduce visibility for area in the east, northeast, south and northwest;
- Views from associated dwelling AD_3 are likely to be limited (approximately 25 - 50% range of visibility). This is due to existing topographic changes;
- Views from 16 Mile Gums Rest Area are likely to be limited (approximately 25 - 50% range of visibility). The zone of visual influence (ZVI) indicates that views from Cobb Highway vary and are available for a limited stretch of the road; and
- Viewpoint VP01 identified along West Burrabogie Road, a private low use road used to access dwelling NAD_19, may experience high levels of visibility toward the Project. This is due to proximity, and relatively flat terrain.

Figure 6.5 illustrates the dwellings with no line of sight to the Project and dwellings with theoretical view to the Project (worst case scenario, which represents a bare ground scenario with no screening, structures or vegetation). The visibility of the Project based on a 5 m solar panel height is also illustrated in **Figure 6.5**. For the purposes of the LVIA, the solar panel height of 5 m has been selected in consideration of different manufacturers and solutions in the market as it represents the worst-case for visual impact.

Based on topography alone, **Figure 6.5** suggests that, theoretically views to the majority of the Project would be visible at one (1) associated dwelling (AD_3) identified within 5 km of the nearest part of the Development Footprint.

6.6.2.2 DETAILED VIEWPOINT ASSESSMENT

The Preliminary Assessment Tool results identified two (2) key public viewpoint that would require detailed assessment:

- 16 Mile Gums Rest Area, 11.5 km to the west of the nearest solar panel; and
- VP01, 5.6 km south of the nearest solar panel.

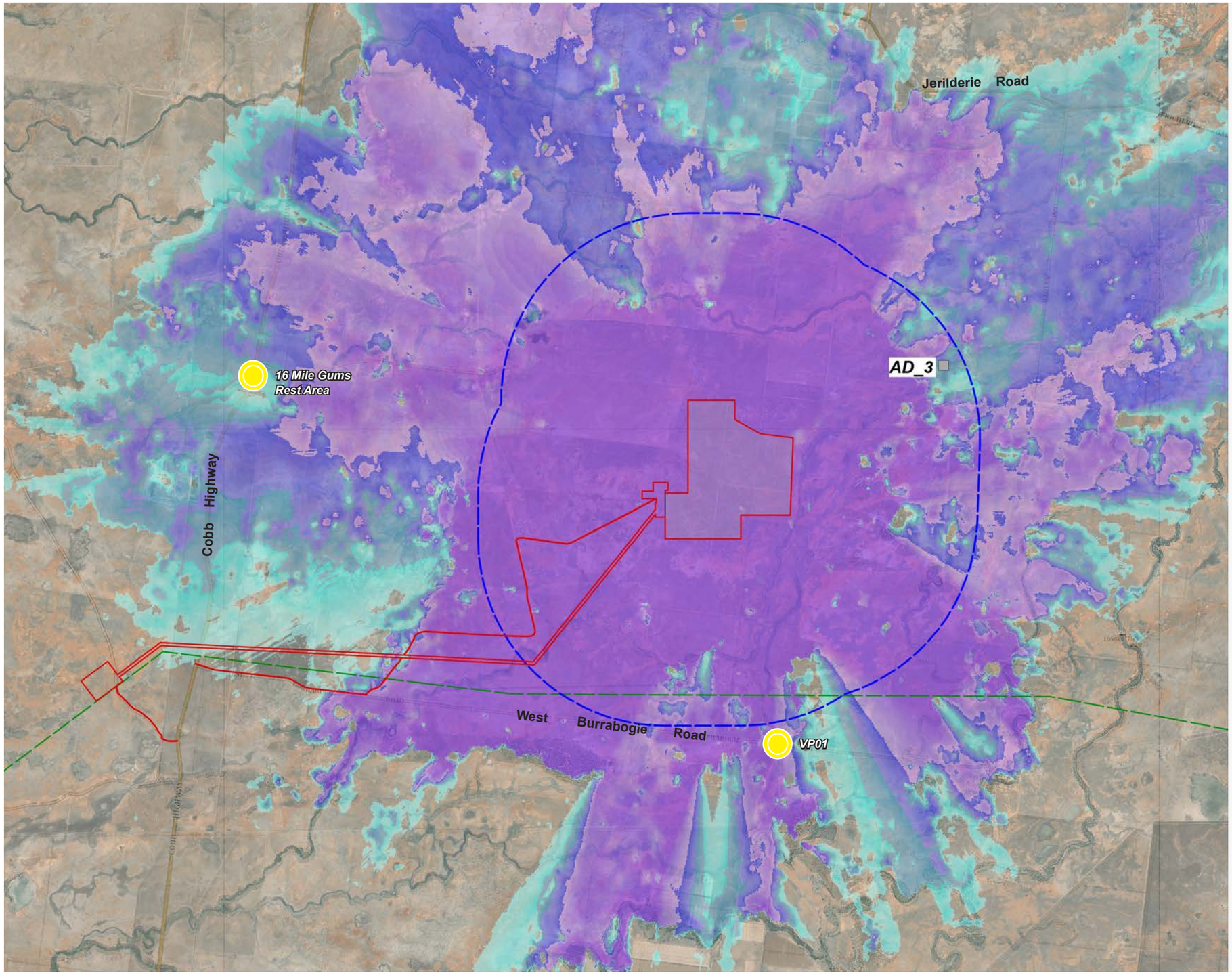
The identified associated dwelling AD_3 does not require further assessment.

The detailed viewpoint assessment considers the likely visual impact that the Project would have on the existing landscape character and visual amenity. The visual impact of the viewpoint was assessed based on the topographic and aerial information, and field work and photographic evidence to ensure accuracy.

Using the Visual Magnitude Tool, the detailed assessment identified that both public viewpoints would have a 'low' visual impact rating (refer to Appendix B of the LVIA (**Appendix J**).

Table 6.28 summarises the two public viewpoints (16 Mile Gums Rest Area and VP07) identified in the LVIA to verify the Visual Impact from the Project using photomontages (refer **Photo 6-1** and **Photo 6-2**). The photomontages for these viewpoints are provided in Appendix C of the LVIA (**Appendix J**).

Assessment of the photomontage using the visual magnitude grid tool identified a 'very low' visual impact rating. As such, they do not require additional mitigation measures.



Viewshed Map
Broader Context

The Plains Renewable Energy Park Solar Farm

LEGEND

- Project Investigation Area
- Solar Development Footprint
- Associated Dwelling
- 5 km from nearest panel array (Study Area)
- Existing 220 kV electrical transmission line
- Key viewpoint location (as identified during Community Consultation)

ZVI (Based on 5.0 m Panel Height)

- No Visibility
- 1 - 25% Visibility
- 25 - 50% Visibility
- 50 - 75% Visibility
- 75 - 100% Visibility

Note:
Viewshed Map 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 map is based solely on topographic information. Therefore this form of mapping should be acknowledged as representing the worst case scenario.

N

0 1 2 3 4 5km

Figure 18: Viewshed Map (Map Source: Six Maps, December 2011)

TABLE 6.28 VISUAL MAGNITUDE SUMMARY

Viewpoint Type and ID	Potential Visual Impact [7]
Public Viewpoint *16 Mile Gums Rest Area*	• Occupied Cells[8]: 0. • Visual Impact Rating: Very Low.

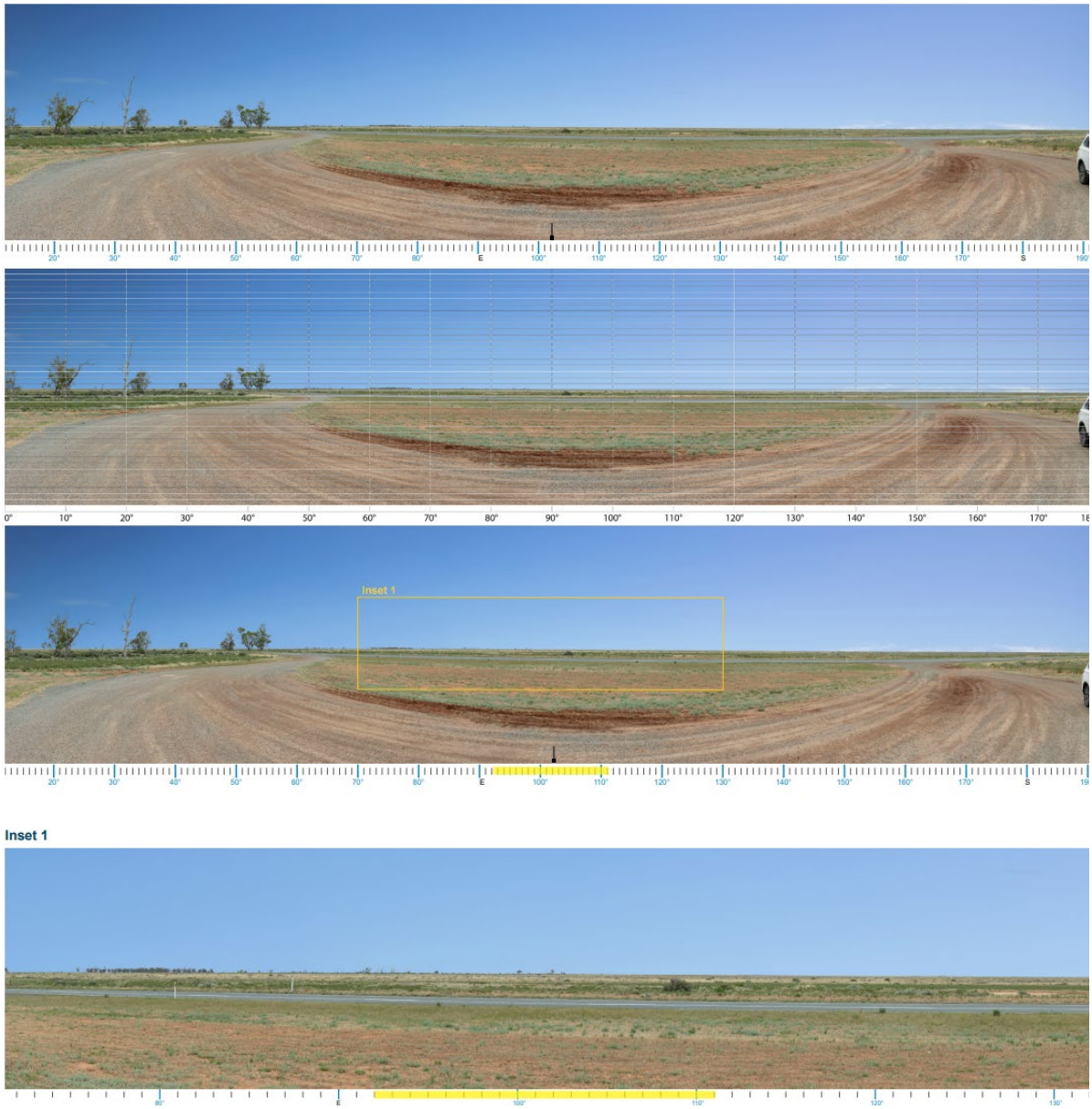


PHOTO 6-1 PHOTOMONTAGE 01 - 16 MILE GUMS REST AREA

[7] The inset image provides an accurate representation of the view when the document is viewed at 100% zoom on a screen or held at arm's length when printed at A3 size.
[8] Occupied cell. A cell is deemed to be unoccupied if the Project does not cover more than approximately 25% of a cell (Technical Supplement, DPE 2022)

Viewpoint Type and ID	Potential Visual Impact [9]
Public Viewpoint VP01	• Occupied Cells: 3. • Visual Impact Rating: Very Low.

PHOTO 6-2 PHOTOMONTAGE 02 - VP02 FROM WEST BURRABOGIE ROAD

[9] The inset image provides an accurate representation of the view when the document is viewed at 100% zoom on a screen or held at arm's length when printed at A3 size.

6.6.2.3 ASSESSMENT OF ASSOCIATED INFRASTRUCTURE

In addition to the proposed PV arrays, the associated infrastructure has the potential to contrast with the existing visual landscape:

- BESS and BESS substation are located approximately 8.6 km to the southwest of 16 Mile Gums Rest Area. Existing vegetation around the viewpoint may partially limit views of the infrastructure;
- The existing 220 kV electrical transmission line crosses the Cobb Highway and runs parallel to West Burrabogie Road, as such it is a clearly visible element in the landscape when travelling along these roads. It is likely that alterations to existing visual setting will be minimal; and
- Main substation and O&M facility views may be available from the associated dwelling AD_3. However, it is likely that existing intervening vegetation will partially limit views.

6.6.2.4 NIGHT LIGHTING

Existing sources of light including homesteads and motor vehicles are currently present in the night-time landscape of the Study Area. These sources are considered limited due to the relatively isolated location of the Project. Given limited receptors within the Study Area, the impact of night lighting is unlikely to be experienced from inside of a dwelling as internal lights reflect on windows and limit views to the exterior at night. Isolated receptors within the Study Area experience a dark night sky with minimal light sources.

Night lighting requirements of ancillary infrastructure for the Project is generally limited to security lighting to the substation, and within the O&M facility, which will be installed to comply with relevant standard and guidelines. The light sources are limited to low-level lighting for security, nighttime 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. Therefore, it is likely there will be limited or no visual impacts resulting from night lighting of ancillary structures for the Project (refer Section 10 of **Appendix J**).

6.6.2.5 GLINT AND GLARE

An Aviation Impact and Solar Glare Analysis was undertaken in accordance with the Solar Guidelines and other relevant aviation guidelines. The assessment evaluates the glare resulting from the Project's solar array at each receptor (includes dwellings, roads and rail and aviation) (refer **Section 6.12** and **Appendix J)**.

The following summarises the findings of the Aviation Impact and Solar Glare Analysis:

- No dwellings have been identified within 3 km of the nearest solar panel. However, glare analysis was undertaken for the nearest residential receptors, which identified that residential receptors are unlikely to experience glare from the Project;

- Unnamed low use public roads identified within 1 km of the nearest solar panel are unlikely to experience glare from the Project; and
- No private landing strips were identified within 5 km of the nearest solar array panel.

6.6.3 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 6.29 outlines the design considerations that have been developed in response to the associated infrastructure.

TABLE 6.29 LANDSCAPE AND VISUAL MITIGATION AND MANAGEMENT MEASURES

ID	Mitigation and Management Measures
LV1	Retain the existing vegetation, where possible, within the Study Area and along creek corridors to reduce the overall visual impact.
LV2	Consider the colours of the ancillary structures to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable.
LV3	Consider the height of ancillary structures to ensure the development does not contrast significantly with surrounding landscape.
LV4	Existing vegetation generally present around the Project Investigation Area will be retained and protected to maintain the existing level of screening. In accordance with the Technical Supplement, Moir determined that no additional mitigation would be required.
LV5	Adoption of lighting practices in consideration of the 'Dark Sky Planning Guideline' (DPE,) and 'The National Light Pollution Guidelines for Wildlife' (DEE, 2020) including: • Control the level of lighting by only using lighting for areas that require lighting (e.g., paths and building entry points), and reducing the duration of lighting (e.g., switch off lighting when not required and use of sensors); and • Light design considerations such as lowest intensity, energy efficient bulbs and warm colours, light directed downwards, closer as possible to the ground and not directed at reflective surfaces, use of non-reflective dark coloured surfaces, and use of light shield fittings.

6.7 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 K**.

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:

- Solar Guidelines (DPE, 2022a);
- CIA Guidelines (DPIE, 2021a);
- 'Riverina Murray Regional Plan 2041' (DPE,);
- 'Land and Soil Capability Assessment Scheme' (LSC Scheme) (OEH, 2012);
- 'Infrastructure Proposals on Rural Land' (DPI, 2013)';
- 'Land Use Conflict Risk Assessment Guide' (LUCRA Guide) (DPI, 2011); 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 K**.

In accordance with the Solar Guidelines (DPE, 2022a) a 'Level 2' AIA is required for solar energy projects proposed to be located on rural zoned land which has been verified as moderate capability land (Class 4) under the LSC scheme. The requirements of a level 2 AIA are detailed in Table 1-4 of **Appendix K**.

For the purposes of the AIA the Project Area is also referred to as 'construction footprint' and the Development Footprint is referred to as 'permanent footprint'.

6.7.1 BACKGROUND

The Project Area is located in between two intermittent watercourses, being to the south of Abercrombie Creek and to the north and east of Curtains Creek. The landscape is described as relatively flat alluvial riverine plains, with elevation ranging from approximately 90 m to 95 m AHD at the solar panel area, and about 85 m AHD at the BESS and switching station area.

The Project is located within the Hay region, which experiences maximum temperatures ranging from 33 Celsius degrees (°C) in January to 3.5 °C in July, average rainfall of 366 millimetres (mm), with over 70 rain days per annum. Rainfall is relatively evenly spread throughout the year with a slight dominance in winter and spring.

According to the NSW Government Sharing and Enabling Data (SEED) land use mapping, the land use within the Project Area is considered mostly 'grazing of native pastures', with some 'river' along Curtains Creek and 'transport' along Cobb Highway (refer **Figure 2.3**).

6.7.1.1 SOILS AND LAND CAPABILITY

A search of the NSW regional soil mapping (**Figure 6.6**), 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);
- Rudosols: Located in a small area of the eastern access track. Rudosols 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 that borders the solar panel area to the east along Curtains Creek. 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 (81.94% of the Project Area);
- Class 5 (moderate-low capability land) land has high limitations for high-impact land uses (17.96% of the Project Area); and
- Class 6 (low capability land) land has very high limitations for high-impact land uses (0.11% of the Project Area).

These are shown in **Figure 6.7**. 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 or SSAL were identified within or near the Project Area.

6.7.1.2 AGRICULTURAL PRODUCTIVITY

Table 6.30 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 two properties as follows:

- Property 1 covers most of the Project Area (82%) across approximately 925.62 ha. It 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; and
- Property 2 covers the eastern section of the Project Area (18%) across about 204 ha. It also 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 White Suffolk 'terminal' sires.

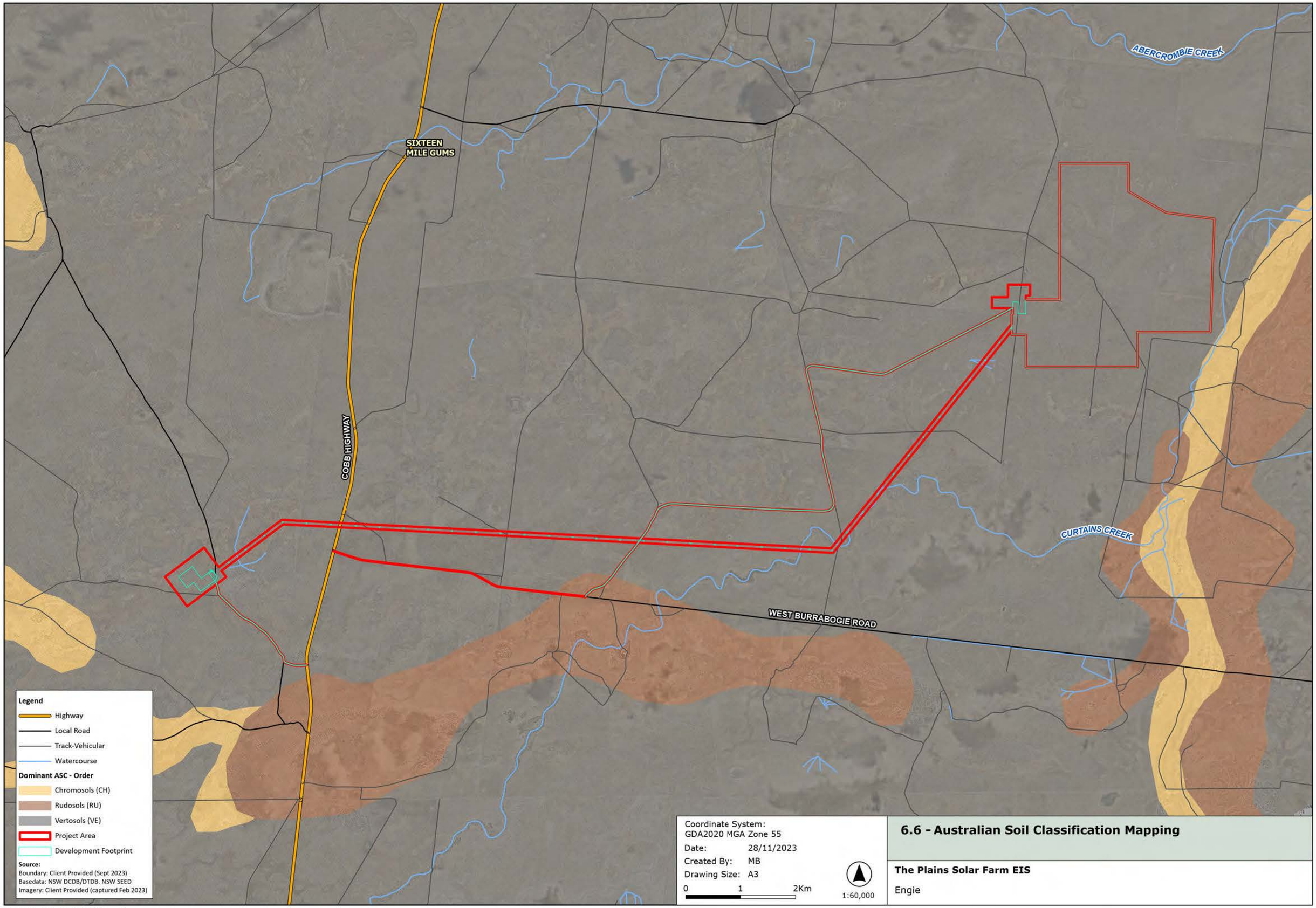
It is important to note that agricultural productivity is subject to long term climate and rainfall variables, as well as changes in economic, social and policy frameworks, often at a scale well beyond the Project Area.

TABLE 6.30 AGRICULTURAL PRODUCTIVITY OF THE REGION AND PROJECT AREA

Aspect	**Agricultural Productivity Assessment**	
Regional – Hay Shire LGA		
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 $74.7 million across 1,020,792 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).	
Project Area	Property 1	Property 2
Enterprises	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	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

Aspect	Agricultural Productivity Assessment	
	ewes were operated, with lower numbers during poor seasons. In good seasons agistment cattle and Merino wethers (sold as weaners or retained or transferred in from associated properties on a seasonal basis) are also operated at an average of 50% of the time. In the past, between 800 and 2,000 agistment cattle have been operated.	the past, sheep numbers have generally been slightly higher with 900 to 1,000 Merino ewe lambs retained for breeding. Wether lambs are usually sold early as weaners or retained for longer during good seasons. In 2023, A wether flock of 300 head has been retained. Some agistment cattle have also been taken on in the past.
Average stocking rate 10	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. The stocking rate per DSE is 0.74 (refer Section 4.6.2 of **Appendix K**).	Based on a usual stocking rate of 5,000 ewes and a seasonal stocking at an average of 100 agistment steers per year. The stocking rate per DSE is 1.10 (refer Section 4.6.2 of **Appendix K**).
Average gross income	Based on $80 annual gross incomes per head and a DSE of 0.74, the average gross income is $59/ha.	Based on $80 annual gross incomes per head and a DSE of 1.10, the average gross income is $88/ha.

[10] Derived from the NSW DPI Livestock Budgets for Merino Ewes (20 micron) – Merino Rams.



6.6 - Australian Soil Classification Mapping

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SIXTEEN MILE GUMS

ABERCROMBIE CREEK

COBB HIGHWAY

CURTAINS CREEK

WEST BURRABOGIE ROAD

CURTAINS CREEK

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse

Most Limiting LSC

- 4 - Moderate to severe limitations
- 5 - Severe limitations
- 6 - Very severe limitations
- Project Area
- Development Footprint

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 28/11/2023
Created By: MB
Drawing Size: A3

0 1 2Km

1:60,000

6.7 - Land and Soil Capability Mapping

The Plains Solar Farm EIS

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6.7.2 AGRICULTURE IMPACT ASSESSMENT

The Applicant intends to adopt agrisolar across the Project Area and is committed to maintaining as much of the Project Area as possible for agricultural purposes for the duration of the construction and operational phases of the Project. Agrisolar activities involves the coexistence of solar power generation and agricultural activities on the same land, creating a mutually beneficial system.

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 6.31** summarises the potential impacts to soils and agriculture associated with the Project.

TABLE 6.31 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 of the Project Area (1,129.6 ha);
	• During operation of the Project the potential area of agricultural land affected would correspond to 56 ha if grazing continues on the solar panel area, or 928.07 ha if grazing is not adopted on the solar panel area;
	• The impact of the Project on productivity of agricultural land was estimated to be:
	  ◦ During construction: $72,563.58 per year, or $145,127 during the estimated 24-month construction period, and a further $36,282 during the 6-month decommissioning period (refer Section 5.1.3 of **Appendix K**); and
	  ◦ During operations: $3,315 per year considering full grazing on the solar panel area, or $60,812.80 per year considering no grazing on the solar panel area (refer Section 6.1.3 of **Appendix K**);
	• 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 6.7.3,** 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.

Risk Category	Impact Assessment
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 6.11**.
Livestock disturbance	• Disturbance to livestock, particularly during sensitive periods (e.g., lambing, calving) may occur through noise associated with construction activities, physical damage to water pipelines or fences, and localised impacts on rangeland pasture. • The effect on agricultural productivity is expected to be minor, and can be reduced through consultation, cooperation and planning with landowners
Air quality and dust	• 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 6.13**). As such residual impacts are expected to be negligible to minor.
Travelling stock reserves	The Cobb Highway is an important livestock route in the region. Construction of the transmission line may impact access to the Cobb Highway; however, this will only occur for a short period of time (e.g., a few hours). Construction vehicles will use the Cobb Highway; however, these are unlikely to significantly impact use of the travelling stock route. No impact on TRS is expected during operations.
Solar grazing	Data on solar grazing in Australia is limited. International research indicates that grazing of the solar panel area would have a positive impact on pasture and sheep productivity. Solar panels provide shade, shelter from wind, can maintain soil moisture and pasture growth.

6.7.3 MITIGATION AND MANAGEMENT

Table 6.32 summarises the mitigation measures to be implemented for the Project to avoid or minimise impacts on agricultural resources and enterprise.

TABLE 6.32 MITIGATION AND MANAGEMENT MEASURES

Impact	ID	Environmental Safeguard	Timing
Project Elements	SA1	The client has engaged with the landowner to design the project to avoid or minimise impacts to agricultural productivity. During construction, temporary structures will be located or oriented to further avoid or minimise impacts.	Detailed design and construction
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, and in consultation with affected landowners (as described in **Table 6.31**).	Construction and operation
Biosecurity	SA10	Biosecurity protocols will be implemented, including recording of all persons entering the Project Area.	Construction
	SA11	All project vehicles to be washed down prior to entering any agricultural areas.	
	SA12	All vehicles will be washed down when moving between paddocks with known weed infestations.	

Impact	ID	Environmental Safeguard	Timing
	SA13	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.	
	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	Where present within the permanent footprint, weeds would be managed in accordance with the *Biosecurity Act 2015*, the relevant regional strategic weed management plans, and in consultation with the Project landowners.	Operation
	SA17	The land around transmission line structures and other project infrastructure would be monitored for the spread of weeds.	
	SA18	The Project Area would 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	SA19	The Project Area will be rehabilitated the condition agreed with the landowners and as specified in contractual agreements.	Decommission
	SA20	Underground infrastructure (such as cables and footings) will be removed where practical to a depth of 0.3m millimetres below ground surface.	
	SA21	Any contamination or waste would 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.	

6.8 WATER RESOURCES, HYDROLOGY AND FLOODING

An assessment was undertaken of the potential impacts of the Project on groundwater and surface water resources within and adjacent to the Project Area. The risk of flooding within the Project Area, as well as the risk posed by Project infrastructure on flood and surface water behaviour was also undertaken (Lyall and Associates, 2024); **Appendix L**). The flood assessment included hydraulic modelling of 5%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) and probable 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,);
- '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).

6.8.1 BACKGROUND

6.8.1.1 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 Murrumbidgee River is located at a minimum distance of 33 km to the north and Coleambally Outfall Drain, an irrigation channel, is about 16 km to the south of the Project Area.

Several non-perennial creeks are located adjacent to the Project Area, all of which are fifth Strahler stream order or higher. Higher order streams near the Project Area include Abercrombie Creek, which is located about 1.4 km to the north of the Project Area and Curtains Creek, which flows along the western and southern boundaries 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.

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 five farm dams within the Project Area. The watercourses present within the Project Area and the surroundings are presented in **Figure 6.8.**

6.8.1.2 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 6.33** and **Figure 6.8**.

TABLE 6.33 GDE RELEVANT TO THE PROJECT AREA

GDE Type	Description
Aquatic	There are no aquatic GDEs mapped within the Project Area. Medium potential aquatic GDEs are mapped along Sixteen Mile Gum Tank, approximately 16 km west of the Project.
Terrestrial	The majority of terrestrial GDEs mapped within the Project Area are low potential.
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.

6.8.1.3 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.

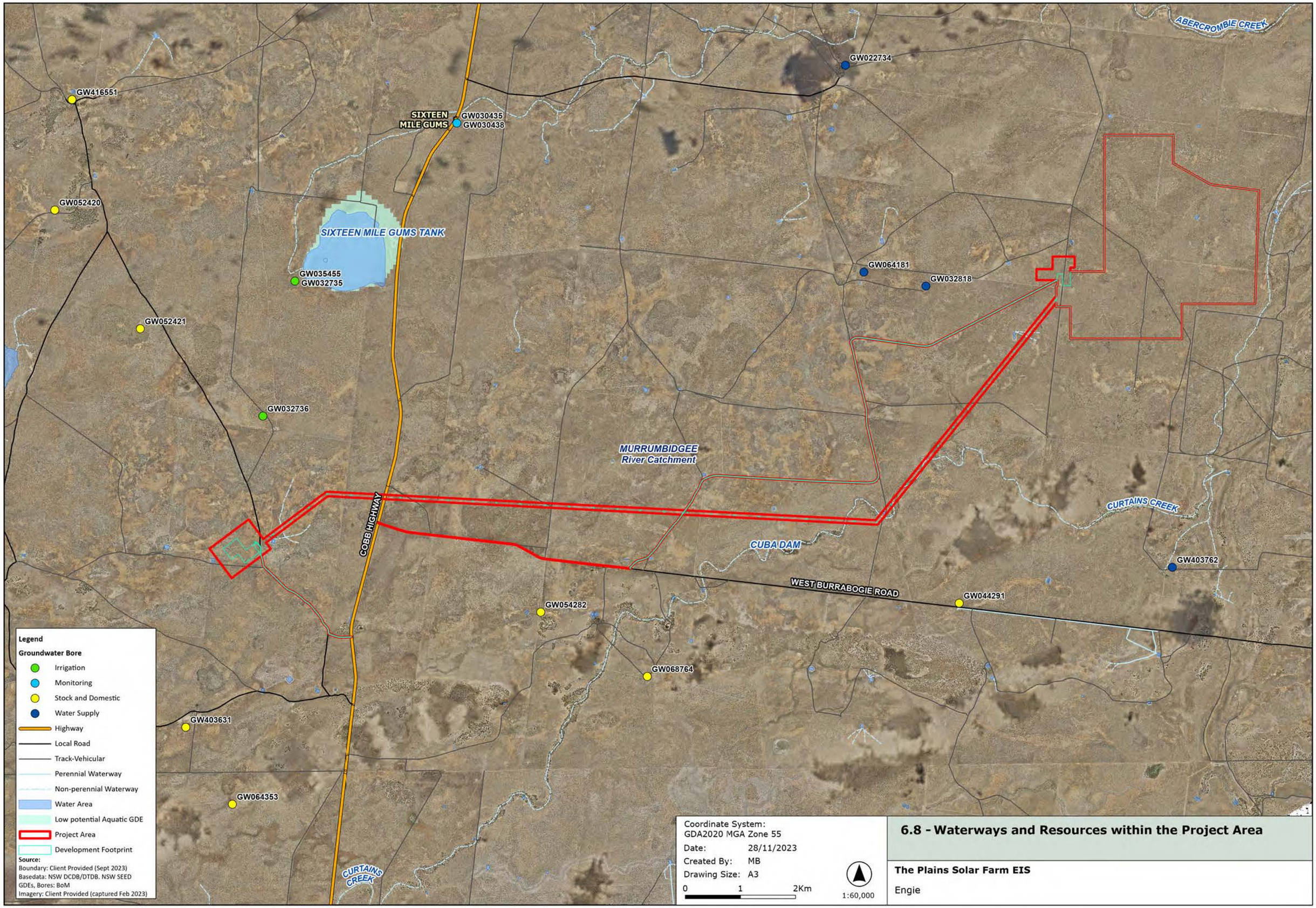
Murrumbidgee water resource plan area WQO have been developed to provide guideline levels to assist water quality planning and management. The WQOs for the Murrumbidgee River catchment are detailed in **Table 6.34**.

TABLE 6.34 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, 2023a). The Guideline establishes default guideline values (DGVs) for various water quality measures which support the WQOs.



6.8 - Waterways and Resources within the Project Area

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6.8.1.4 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 (18 months) water requirements for construction activities are estimated to be 39.6 ML per year (ML/year), as shown in **Table 3.5** . During operations (minimum of 30 years) 5.5 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 WAL(s) 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 (WaterNSW, 2023) for the period of financial year 2023/2024 are summarised in **Table 6.35** below.

TABLE 6.35 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
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 no WALs and/ or groundwater bores within the Project Area. The closest bores (GW064181.1.1 and GW032818.1.1) are located about 1.2 km to the north of the Project Area, but within the Plains Renewable Energy Park (refer **Figure 6.8**). Both are listed as functioning for water supply use. Bore ID GW064181.1.1 has a total depth of 80.5 m below ground level (BGL) and GW032818.1.1 a total depth of 130 m BGL.

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 permit 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.

6.8.1.5 FLOODING

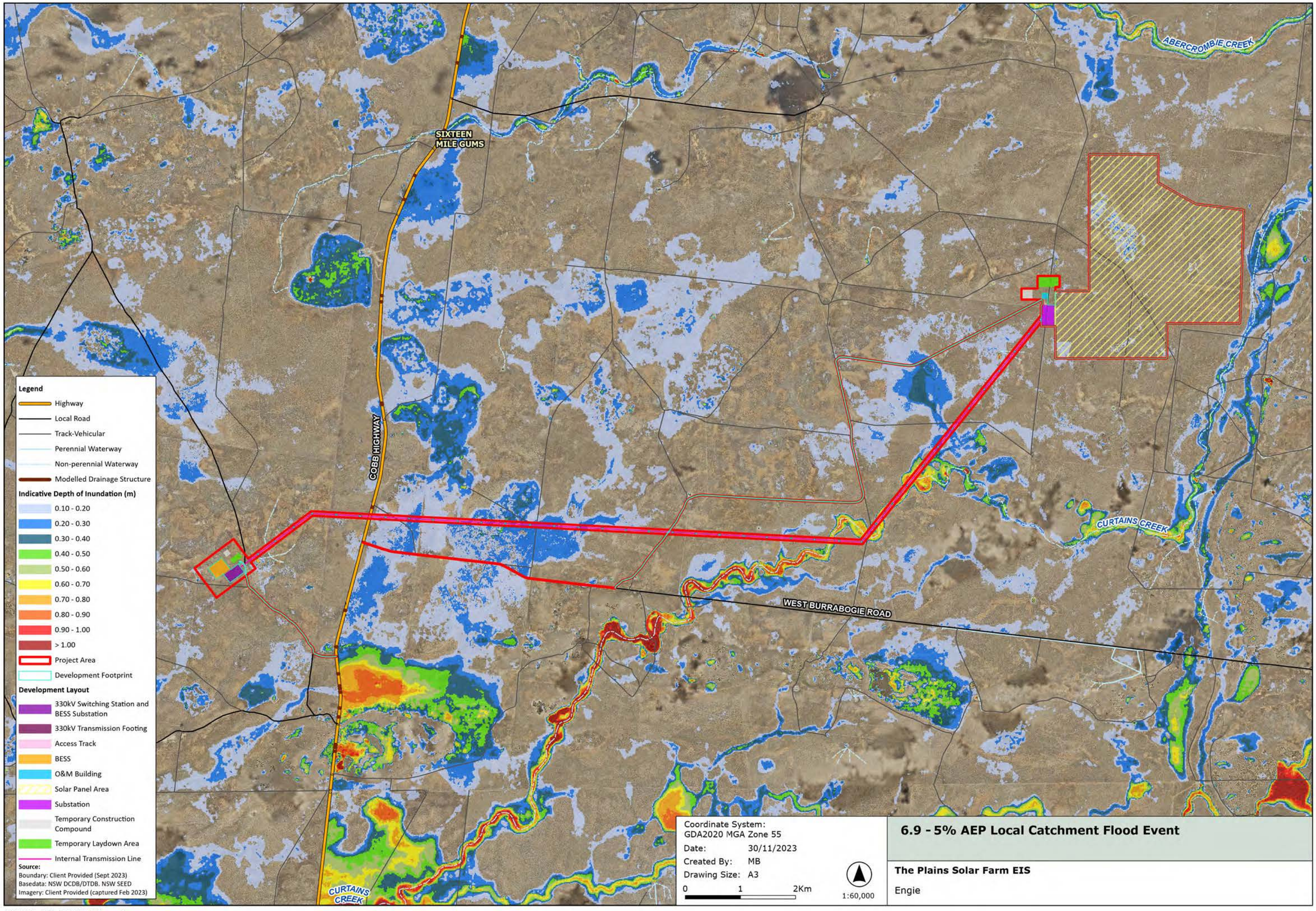
Two separate hydraulic (TUFLOW) models were developed to investigate flood risk of the Project Area from both Murrumbidgee River and local catchment flooding. Modelling of existing flood conditions (pre-Project) was undertaken for the Project Area for 5% and 1% AEP and PMF.

The outputs of the modelling are shown in **Table 6.36**. The pre-Project 5% and 1% AEP and PMF Local Catchment modelled scenarios are presented in **Figure 6.9** to **Figure 6.11** respectively (refer Appendices D and E of **Appendix L**).

As shown in **Figure 6.11** 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 6.36 RIVERINE AND LOCAL CATCHMENT FLOOD BEHAVIOUR – 5% AND 1% AEP AND PMF FLOOD EVENTS

5% AEP	1% AEP	PMF
Murrumbidgee River		
• The Project Area is not impacted by floodwater originating from the Murrumbidgee River.		• Widespread flooding of the Project Area is not predicted to occur.
Local Catchment		
• *The Project Area is generally not impacted by local catchment flooding. However, shallow ponding of surface waters is shown to occur to depths of up to about 0.25 m.* • *Existing roads are inundated to depths of up to 0.3 m;* • *The inbank area of Curtains Creek where transmission line infrastructure of the Project is located would reach a maximum depth of 0.8 m and flow velocities of 0.3 m per second (m.s^{-1}); and* • *Standing surface water is predicted beneath the Project's transmission line corridor at several locations at depths of up to 0.3 m within the area 5 km east of the Cobb Highway.*	• The solar panel and substation areas are generally not impacted by local catchment flooding. However, shallow ponding may occur beneath the solar panel area at depths up to about 0.3 m and local ponding of surface water is expected across the wider Project Area. • Existing roads and proposed access tracks experience inundation at depths of up to 0.4 m; • The inbank area of Curtains Creek where transmission line infrastructure of the Project is located would reach a maximum depth of 1.0 m and velocities of 0.4 m.s^{-1}; and • Standing surface water is predicted beneath the Project's transmission line corridor at several locations at depths of up to 0.3 m within the area 5 km east of the Cobb Highway.	• Existing roads and proposed access tracks experience inundation at depths of up to 0.6 m. • The inbank area of Curtains Creek where transmission line infrastructure of the Project is located would reach a maximum depth of 1.5 m and velocities of 0.6 m.s^{-1}; and • Standing surface water is predicted beneath the Project's transmission line corridor at several locations at depths of up to 0.7 m within the area 5 km east of the Cobb Highway.



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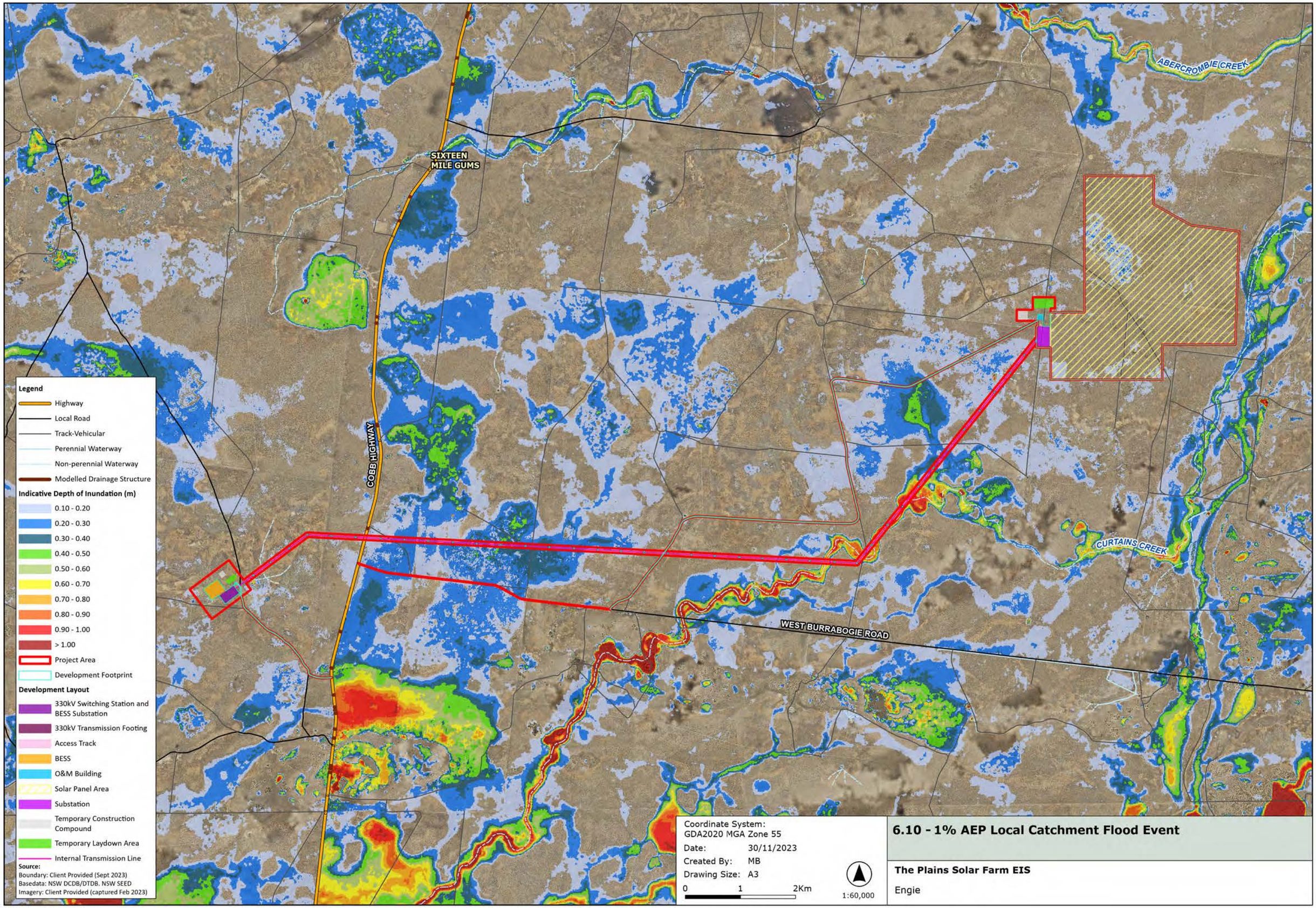

6.10 - 1% AEP Local Catchment Flood Event

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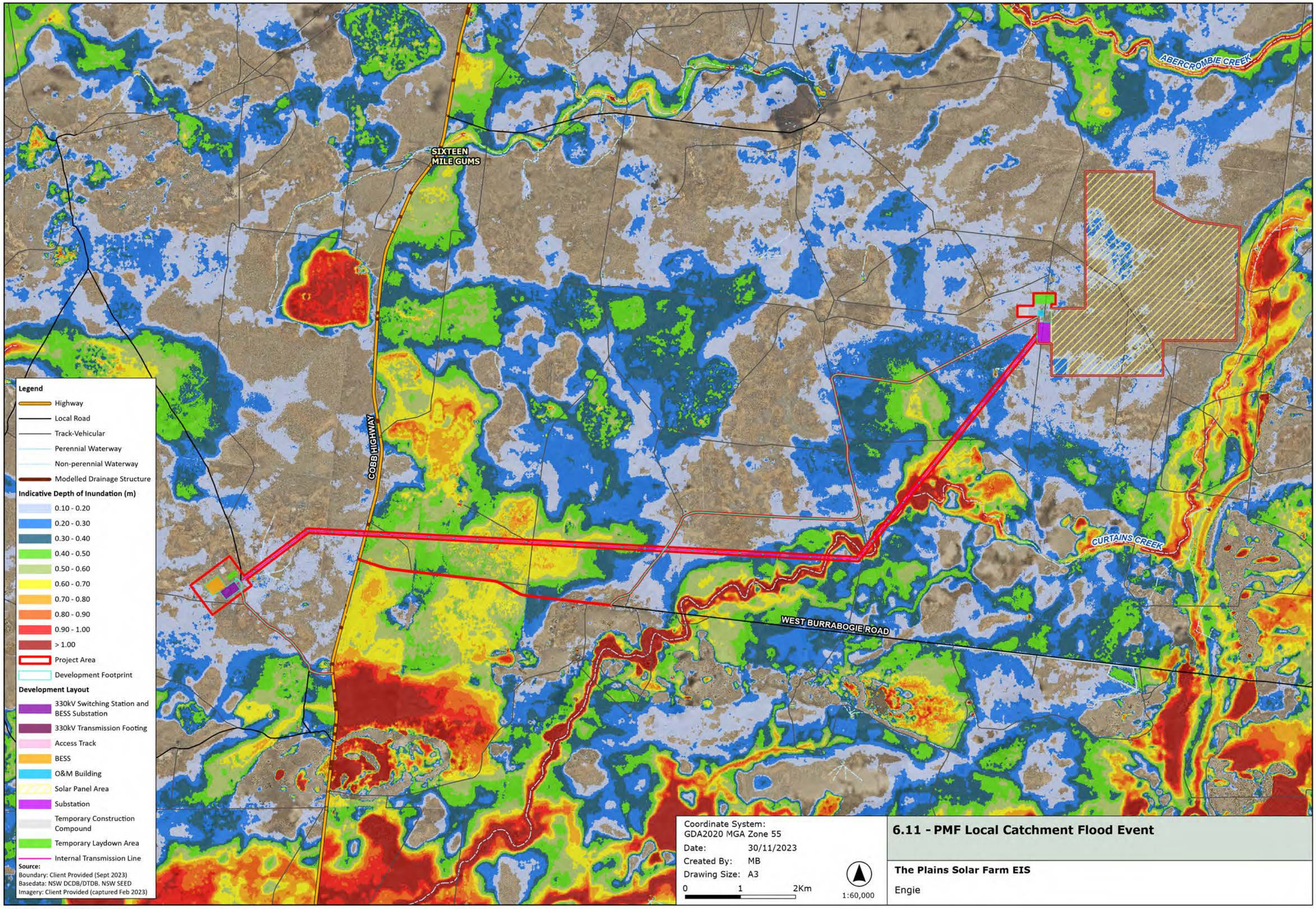

6.11 - PMF Local Catchment Flood Event

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6.8.2 IMPACT ASSESSMENT

6.8.2.1 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 (39.6 ML/y) has been estimated based on these activities and the anticipated construction schedule (refer **Section 3**). Potential impacts to water resources and water courses from construction are outlined in **Table 6.37**. Impacts to groundwater are not expected as construction activities will not be to a depth that will intersect groundwater aquifers.

TABLE 6.37 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; and
- Obstruct the passage of floodwater and overland flow, which in turn could exacerbate flooding conditions in areas located outside the construction footprint.

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.

6.8.2.2 OPERATION

Water Resources and Hydrology

Water demand during the operation of the Project is expected to be minimal, with solar module cleaning being the largest water requirement during operations. 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 6.38**.

TABLE 6.38 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 • 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:

- Local erosion as a result of concentration of rainfall drip line along the lower side of the solar panel alignment and adjacent reach of Curtains Creek;
- Potential flood risk to the transmission line infrastructure situated within the inbank area of Curtains Creek subject to maximum PMF flood events as described in **Table 6.39**. Floodwater levels or velocities in Curtains Creek are unlikely to be impacted due to the relatively small sectional area of the transmission line infrastructure; and
- Frequent inundation at the section of access track which runs west of the solar panel area, if not raised by a sufficient height.

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).

6.8.2.3 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 L**) 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 6.39 summarises the outputs of the modelling. The pre-Project 0.5% and 0.2% AEP Local Catchment modelled scenarios are presented in **Figure 6.9** and **Figure 6.10** respectively.

TABLE 6.39 RIVERINE AND LOCAL CATCHMENT FLOOD BEHAVIOUR - O.5% AND 0.2% AEP FLOOD EVENTS

0.5% AEP	0.2% AEP
Murrumbidgee River	
• The Project Area including the solar panel, internal transmission line and substation areas are not impacted by riverine based flooding from the Murrumbidgee River.	• The Project Area including the solar panel and substation area are not directly impacted by riverine type flooding; • The internal transmission line would also be subject to increased flooding where it crosses Curtains Creek, with depths of inundation and flow velocities of up to 0.3 m and 0.2 $m.s^{-1}$, respectively; and • The western boundary of the Project Area would be encroached by shallow overbank inundation at depths of up to 0.2 m.

0.5% AEP	0.2% AEP
Local Catchment	
• The solar panel and substation areas are generally not impacted by local catchment flooding. However, shallow ponding may occur beneath the solar panel area at depths up to about 0.3 m and local ponding of surface water is expected across the wider Project Area; • Existing roads are inundated to depths of up to 0.4 m;	
• 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 $m.s^{-1}$; and • Standing surface water is predicted beneath the Project's transmission line corridor at several locations at depths of up to 0.3 m within the area 5 km east of the Cobb Highway.	• The inbank area of Curtains Creek where transmission line infrastructure of the Project is located would reach a maximum depth of 1.2 m and flow velocities of 0.5 $m.s^{-1}$; and • Standing surface water is predicted beneath the Project's transmission line corridor at several locations at depths of up to 0.4 m within the area 5 km east of the Cobb Highway.

The impact of the Project on flood behaviour under future climate change conditions was assesses 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.

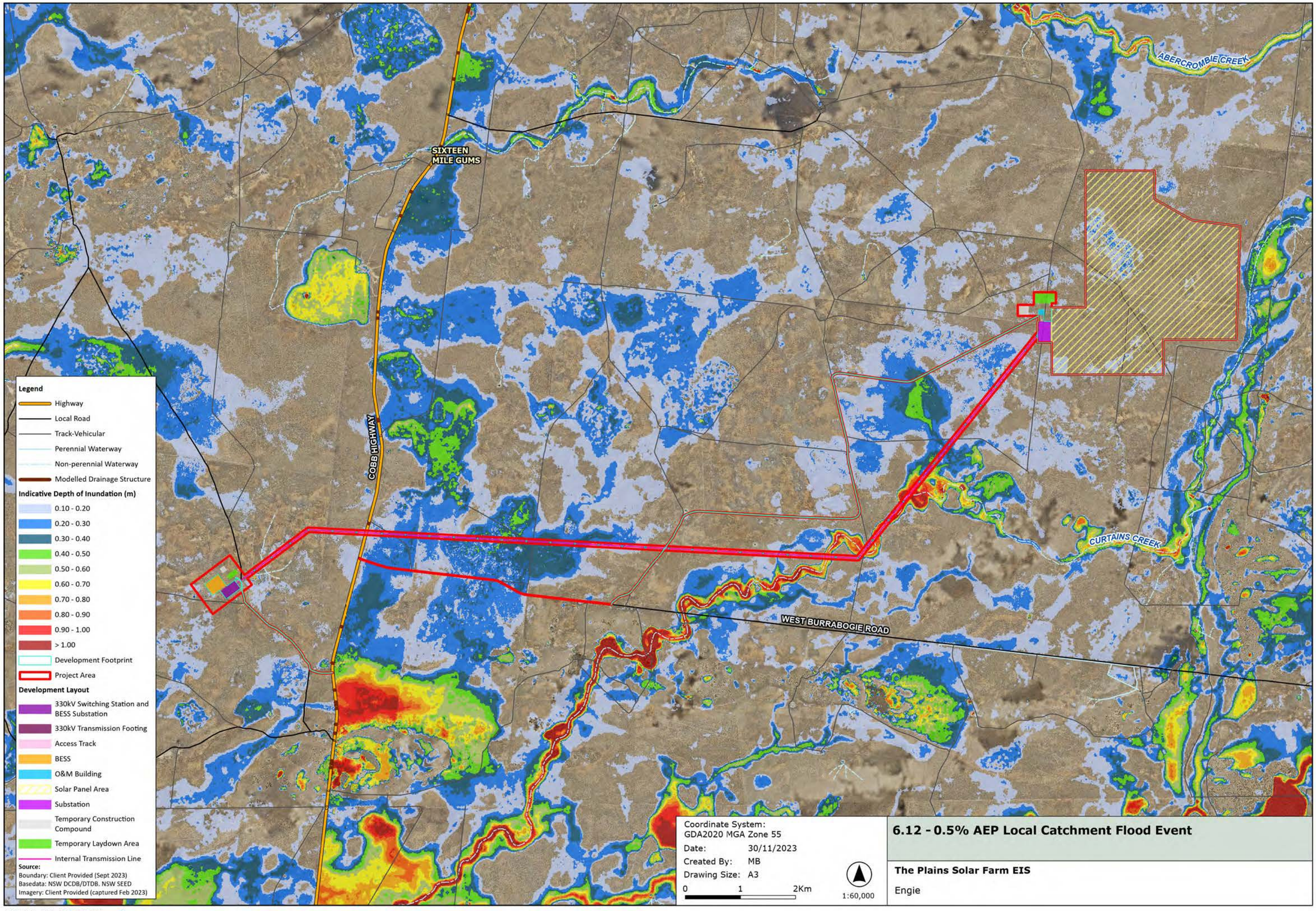
6.8.3 MITIGATION AND MANAGEMENT

Management measures that will be employed to minimise the Project impacts are included in **Table 6.40**.

TABLE 6.40 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 (ESC) 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	A CEMP will be prepared and include measures to minimise the risk of contamination from chemical spills in waterways.

Aspect	ID	Mitigation Measures
	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 Curtains 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 will be located outside high flood hazard areas based on a 1% AEP flood.
	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 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.



6.12 - 0.5% AEP Local Catchment Flood Event

The Plains Solar Farm EIS

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SIXTEEN MILE GUMS

COBB HIGHWAY

ABERCROMBIE CREEK

CURTAINS CREEK

WEST BURRABOGIE ROAD

Legend

- Highway
- Local Road
- Track-Vehicular
- Perennial Waterway
- Non-perennial Waterway
- Modelled Drainage Structure

Indicative Depth of Inundation (m)

- 0.10 - 0.20
- 0.20 - 0.30
- 0.30 - 0.40
- 0.40 - 0.50
- 0.50 - 0.60
- 0.60 - 0.70
- 0.70 - 0.80
- 0.80 - 0.90
- 0.90 - 1.00
- > 1.00
- Project Area
- Development Footprint

Development Layout

- 330kV Switching Station and BESS Substation
- 330kV Transmission Footing
- Access Track
- BESS
- O&M Building
- Solar Panel Area
- Substation
- Temporary Construction Compound
- Temporary Laydown Area
- Internal Transmission Line

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 30/11/2023
Created By: MB
Drawing Size: A3

0 1 2Km

1:60,000

6.13 - 0.2% AEP Local Catchment Flood Event

The Plains Solar Farm EIS

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6.9 TRAFFIC

A Traffic Impact Assessment (TIA) was undertaken to evaluate the potential construction, operational, and decommissioning traffic and transport impacts, and the access arrangements for the Project (Amber Organisation, 2024; **Appendix M**). 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**) and has been undertaken in accordance with the RTA Guide to Traffic Generating Developments and relevant Austroads Guidelines. The TIA was also prepared in consultation with Transport for NSW and Hay Shire Council and has considered relevant outcomes of stakeholder engagement as described in **Section 5**.

The TIA included the following scope of work:

- Review of existing traffic and road safety data, including road accident history (crash data) and historical traffic count data;
- Site inspection of the road network and proposed vehicular access routes to the Project, which focused on the intersection design, sight distances, and suitability of the proposed routes;
- Assessment of traffic impacts during all phases of the Project, with consideration of vehicle types, transport routes, traffic volumes, and site access arrangements;
- An assessment of potential road impacts relating to heavy vehicle and OSOM vehicle movements from the Port of Adelaide;
- An assessment of the swept path for the largest Restricted Access Vehicle (RAV) required to access the site, to identify any access constraints, including detailing any road upgrade works required from the Port of Geelong;
- Consultation with key stakeholders;
- A cumulative impact assessment of traffic from nearby developments; and
- Measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades, road dilapidation surveys, road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road authorities.

6.9.1 BACKGROUND

6.9.1.1 EXISTING ROAD NETWORK

The existing road network serving the Project comprises of state and municipal roads. **Figure 6.14** 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 is 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.

No incidents were recorded within 2 km of the Project Area on either the Cobb Highway or West Burrabogie Road between 2017 and 2021.

6.9.1.2 TRAFFIC VOLUMES

Intersection Volumes

A turning movement count survey was undertaken at the Cobb Highway / West Burrabogie Road intersection to determine the existing traffic conditions at the intersection. The survey was undertaken on Tuesday 14 November 2023 from 6:00am-9:00am and 4:30pm-6:30pm.

The survey results indicate the intersection currently carries a very low level of traffic in the order of 27 and 22 vehicles in the morning and evening peak hour, respectively. Most vehicle trips during the morning and evening peak periods are northbound through traffic along Cobb Highway. No vehicles were recorded turning in or out of West Burrabogie Road during the peak periods. Overall, the results indicate both roads accommodate a very low level of traffic and can accommodate an increase in vehicle trips.

State and Regional Road Network

A tube count was undertaken on Cobb Highway north of West Burrabogie Road to determine the existing road environment. The tube count was undertaken from Monday 13 November to Sunday 19 November 2023. The survey data indicates Cobb Highway currently experiences most vehicles between the hours of 6:00am and 6:00pm. The data also indicates the road experiences a relatively even distribution of traffic across the day in both directions. Overall, the survey results indicate Cobb Highway currently accommodates a low level of traffic for its road classification.

Local Road Network

A tube count was undertaken on West Burrabogie Road near Cobb Highway to determine the existing road environment. The tube count was undertaken from Monday 13 November to Sunday 19 November 2023. The traffic volume data suggests that West Burrabogie Road currently carries a very low level of traffic, which is not surprising given the limited number of properties it services. Overall, the road is well within the operating capacity of the local road network and can accommodate an increase in vehicle trips.

A summary of the traffic volumes is provided in **Table 6.41 .**

TABLE 6.41 TRAFFIC VOLUMES

Survey Location	Direction	Weekday Traffic (vpd)	AM 6:00 (vph)	PM 17:00 (vph)	85th Percentile Speed	Heavy Vehicle Percentage
West Burrabogie Road	West	7	1	1	53.1 km/hr	16%
	East	5	2	1	42.4 km/hr	
	Both	12	3	2	47.8 km/hr	
Cobb Highway	North	199	13	16	108.5 km/hr	36%
	South	193	17	18	107.5 km/hr	
	Both	392	30	34	107.5 km/hr	

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 can accommodate an increase in vehicle movement.

6.9.1.3 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;
- 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.

6.9.2 TRAFFIC GENERATION AND DISTRIBUTION

6.9.2.1 CONSTRUCTION

Traffic accessing the solar farm is proposed to travel along the Cobb Highway and then onto West Burrabogie Road, while traffic accessing the BESS would enter directly from the Cobb Highway. The Project components are expected to be delivered from the Port of Geelong and Port of Adelaide.

Table 6.42 summarises the predicted distribution of vehicles accessing the Project Area during Project construction.

TABLE 6.42 VEHICLE TYPE DISTRIBUTION

Vehicle type		Traffic Distribution
Light Vehicles		
Cars and shuttle buses	Transport construction workforce to and from the Project Area	Light vehicle movements would be associated with the workforce travelling to and from the site. A vehicle occupancy of 2.0 people per car has been adopted to calculate the light vehicle traffic generation noting that a carpooling program would be implemented for the workforce. It is anticipated that 70% would be accommodated in Hay and would travel to/from the north with the remaining 30% traveling 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	These vehicles would predominantly be water trucks and vehicles transporting materials such as concrete and fencing supplies which would likely be sourced within the surrounding area. The Applicant has advised that 50% of movements would be to/from the north and 50% would be to/from the south.
Truck and Dog vehicles	Transport earthwork material to and from the Project Area	These vehicles would transport quarry material, with 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	19 metre long Articulated Vehicles and 26 metre long B-Doubles (AV and B-Double) would be used to transport larger plant. Project elements will travel from Port of Geelong via the Cobb Highway from the south.
OSOM Vehicles		
Restricted Access Vehicles/ OSOM vehicles	Oversize and overmass vehicles would be required to deliver larger plant from the Port of Adelaide.	The project is expected to generate 8 OSOM vehicle movements during construction and 8 OSOM vehicle movements during decommissioning.

It is anticipated that during peak construction, the Project could generate up to 70 heavy and 150 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).

The project is expected to generate approximately 82 vehicle movements during the morning and evening peak hour during the peak construction period, which would reduce to 44 vehicle movements over the typical construction periods.

Much of the peak traffic movements will occur in the morning when light vehicles transporting workforce arrive onsite (between 6:00 am and 7:00 am) and afternoon, when the workforce departs the Project Area (staggered finish times, resulting in peak distribution in the evening between 5.00 pm and 6.00 pm). Heavy vehicle movements will be scattered throughout the day, with even inbound and outbound movements.

TABLE 6.43 TRAFFIC GENERATION DURING CONSTRUCTION

Vehicle Type	Vehicle Size	Average Vehicle Movements		Peak Vehicle Movements	
		Daily	Peak Hour (vph)	Daily	Peak Hour (vph)
Light Vehicle	Light Vehicle (car / 4WD)	80	40	150	75
Heavy Vehicle	MRV/HRV	6	1	10	1
	Truck and Dog	10	1	20	2
	AV	10	1	20	2
	B-Double	10	1	20	2
	Total	**116**	**44**	**220**	**82**

The Project is expected to generate the highest level of traffic during the peak construction period. The assessment presented above indicates that the road network can accommodate the project traffic during peak construction periods, including the cumulative traffic generated by other major projects within the surrounding area.

6.9.2.2 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 8 FTE resulting in a traffic generation of up to 16 vpd. This is expected to have negligible impact to the local traffic environment. There would also be the occasional light commercial vehicles delivering parts to the Project Area but only as required for maintenance.

6.9.2.3 DECOMMISSIONING

Traffic generation during decommissioning would be similar to traffic generation during the average construction period. A comprehensive Traffic Management Plan would be prepared prior to the decommissioning phase in conjunction with the relevant road authorities. This would aim to ensure adequate road safety and road network operations are maintained.

6.9.3 ROUTE ASSESSMENT

6.9.3.1 PORT OF GEELONG

The Port of Geelong has been identified as the location where the majority of the solar farm plant will be imported (excluding OSOM vehicles) as shown in **Figure 6.14**. Construction vehicles will travel along Langdon Street, Corio Quay Road, onto Station Street to Princes Highway, then Kimbolton-Axedale Road in Eppalock, Axedale-Goornong Road to Midland Highway in Goornong, then Northern Highway crossing to NSW onto the Cobb Highway (vehicles accessing the BESS would enter via Cobb Highway), West Burrabogie Road and site access driveway.

This access route uses roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map, and the Victoria's Gazetted B-Double Network map. Accordingly, these routes can accommodate the heavy vehicle movements expected to be generated during construction of the Project.

6.9.3.2 PORT OF ADELAIDE

OSOM vehicles would be required to deliver larger plant such as the substation transformer and earthmoving equipment. The largest component to be delivered to the site is expected to be the main transformer. The Applicant has indicated that the transformer is expected to be a 330kV model with a mass of up to 195 tonnes. The Port of Adelaide has been designated as the location where OSOM components will be imported.

The Project will generate up to 8 OSOM vehicle movements during construction and up to 8 OSOM vehicle movements during decommissioning. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site to avoid classification as OSOM where possible. All OSOM vehicles will travel outside of the peak periods.

The proposed transport route for OSOM deliveries travelling from the Port of Adelaide to the Project will travel along Port River Expressway, South Australia DIT, North-South Motorway, Port Wakefield Highway, Angle Vale Road and Horrocks Highway before crossing from South Australia to NSW and travelling on the Barrier Highway, Cobb Highway West Burrabogie Road and site access driveway.

A total of 24 points of interest for further assessment were identified as part of the assessment of the access route. The assessment identified that the largest OSOM vehicle can access the site with only minor civil works, signage relocation and suitable traffic management measures required.

An overview of the proposed treatments and/or management measures for each point of interest is included within the route assessment (refer to Appendix A of **Appendix M**).

SIXTEEN MILE GUMS

ABERCROMBIE CREEK

HAY SHIRE COUNCIL

COBB HIGHWAY

CURTAINS CREEK

WEST BURRABOGIE ROAD

EDWARD RIVER COUNCIL

CURTAINS CREEK

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse
- Local Government Area
- Port of Geelong Route
- Project Area
- Development Footprint

Development Layout

- 330kV Switching Station and BESS Substation
- 330kV Transmission Footing
- Access Track
- BESS
- O&M Building
- Solar Panel Area
- Substation
- Temporary Construction Compound
- Temporary Laydown Area
- Internal Transmission Line

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 28/11/2023
Created By: MB
Drawing Size: A3
0 1 2Km
1:60,000

6.14 - Road Network and Route

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

6.9.3.3 UNSEALED ROAD NETWORK

West Burrabogie Road has an unsealed carriageway width ranging between 4 m and 9 m, with existing 50 vpd based on the adjoining land use and catchment area. This road is expected to accommodate 126 additional vpd during the peak construction period, resulting in a total of 176 vpd. This expected traffic volume on the road is only temporary, which according to ARRB Guide is considered acceptable for West Burrabogie Road to remain unsealed. To comply with ARRB Guide it is recommended that the carriageway be widened to a general minimum of 7 m to allow two trucks to pass.

The Project's internal access tracks will provide an unsealed surface width of 6 m. Accordingly, the roads along the access route are able to accommodate the loads and type of vehicle movement to be generated during construction of the Project.

6.9.4 INTERSECTION ASSESSMENT

An assessment of the turn treatments and sight distance has been undertaken for the following locations:

- Solar Farm: The intersection of the Cobb Highway and West Burrabogie Road, and the site access off West Burrabogie Road; and
- BESS: The site access off the Cobb Highway.

The expected traffic volumes used for the assessment are based on the existing surveyed traffic volumes at the intersections (2023 data), adjusted by an estimated 1.5% compounded annual growth rate over 5 years to reflect the end of the construction period in 2028.

6.9.4.1 COBB HIGHWAY AND WEST BURRABOGIE ROAD INTERSECTION

The requirement to provide turning treatments at the intersection of the Cobb Highway and West Burrabogie Road is primarily generated during the morning peak hour when the workforce access the site, which occurs from 6:00 am to 7:00 am.

Based on the expected traffic volumes at the intersection and in consideration of the cumulative traffic from nearby SSD projects (refer **Section 6.17.1**), the intersection would require a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment with the proposed design shown in Appendix E of the TIA (**Appendix M**).

A swept path assessment for this intersection has been provided in Appendix F of the TIA (**Appendix M**). This demonstrates that vehicles can suitably turn to/ from the Cobb Highway with the inclusion of the proposed BAR and BAL treatments. An assessment of the Safe Intersection Sight Distance (SISD) demonstrates that vehicles can safely enter the Cobb Highway from West Burrabogie Road.

It is therefore concluded that the intersection has been suitably designed and is able to accommodate the vehicles expected to access the Project Area.

6.9.4.2 WEST BURRABOGIE ROAD

The access location for the Solar Farm is via a connection with the northern side of West Burrabogie Road, as shown in **Figure 3.1**. A swept path assessment has been

undertaken for the access which is provided in Appendix G of the TIA (**Appendix M**) and demonstrates the access location is designed to accommodate passing at the entrance for B-Double vehicles. It is noted that vehicles exiting onto West Burrabogie Road may be required to wait for an entering vehicle to pass, which is considered appropriate to ensure sight lines are maintained.

The sight distance available at the access exceeds the Austroads requirements given the straight and flat alignment of West Burrabogie Road. Accordingly, it is concluded that the intersection has been suitably designed and is able to accommodate the vehicles expected to use this access.

6.9.4.3 COBB HIGHWAY

The access location for the BESS area is via a connection with the western side of the Cobb Highway, as shown in **Figure 3.1**. The access location has been designed with BAL and BAR turn treatments based on the anticipated level of traffic using the access, which would not exceed the traffic volumes assessed for the solar array area.

A swept path assessment demonstrates the access location is designed to accommodate two-way vehicle movement for B-Double vehicles.

The sight distance available at the access exceeds the Austroads requirements given the straight and flat alignment of Cobb Highway.

6.9.5 MITIGATION AND MANAGEMENT

Management measures that will be implement for the Project to minimise traffic impacts are included in **Table 6.44**.

TABLE 6.44 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 6 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; • A community information and awareness program will be implemented prior to construction to assist in managing the traffic impacts; • 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

ID	Mitigation Measures
	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 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; and • Provide BAR and BAL treatments at the site access for the BESS area on the western side of Cobb Highway.

6.10 PRELIMINARY HAZARD ANALYSIS

The hazards and risk associated with the Project have been assessed in a Preliminary Hazard Analysis (PHA) (Riskcon Engineering, 2023; **Appendix N**). The objective of the PHA was to determine any potential offsite impacts that may result from the operation of the BESS, and the risk acceptability of the BESS from a land use safety planning perspective.

The PHA addresses the relevant requirements of the SEARs (**Appendix A**). It has also been undertaken in consideration of all relevant stakeholder engagement as described in **Section 5**.

The following references informed the development of this PHA:

- 'Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 – Hazard Analysis' (DPIE, 2011a) (HIPAP 6);
- 'Hazard Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning' (DPIE, 2011b) (HIPAP 4);
- 'Assessment Guideline – *Multi-level Risk Assessment Guideline*' (Tamworth Regional Council, 2022);
- 'Hazardous and Offensive Development Application Guidelines: Applying SEPP 33' (Applying SEPP 33) (DoP, 2011a);
- 'International Commission on Non-Ionizing Radiation Projection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields' (ICNIRP, 2010);
- *Work Health and Safety Regulation 2017* (WHS Regulation); and
- 'AS/NZS 3000:2007 - Wiring Rules' (Standards Australia, 2007).

The PHA incorporates the requirements of the HIPAP No. 6, which included:

- Determining the level of analysis and risk assessment criteria through the Multi-level Risk Assessment;
- Undertaking a detailed hazard identification for the Project's operations and storage of materials;
- Conducting a detailed consequence analysis for the identified events with offsite impact (note where an incident was identified to not have an offsite impact, and a simple solution was evident and recommended, no further analysis was performed);
- Conducting a frequency analysis of the identified incidents with offsite impact (note if no incident was identified to have potential offsite impact, no further analysis was required); and
- Assessing the estimated risks from identified incidents with offsite impact consequence and frequency analysis to determine acceptability (note if the criteria were exceeded, a review of the major risk contributors was performed, and the risks reassessed incorporating the recommended risk reduction measures).

The Multi-level Risk Assessment considered the location and description of the Project (as detailed in **Section 3**), the quantity and type of Dangerous Goods (DGs) to be stored and used on site, and information relating to the Projects technical and safety management controls. The Multi-level Risk Assessment for the Project determined that a Level 2 PHA (partially quantitative) was required.

The approach of the Level 2 PHA included hazard analysis, consequence analysis, frequency analysis, and risk assessment and reduction, discussed in further detail in **Appendix N**.

6.10.1 HAZARD IDENTIFICATION

A hazard identification table has been developed in accordance with HIPAP No. 6 and provides a summary of the potential hazards, consequences, and safeguards for the Project. The hazard identification table is presented in Appendix A of the PHA (**Appendix N**).

The recommended approach for eliminating hazards from further assessment as detailed in HIPAP 4 was followed in the PHA, which included assessment of:

- Fire impacts – application of the HIPAP 4 maximum permissible heat radiation (4.7 kW/m2) at the site boundary;
- Explosion – application of the HIPAP 4 criterion for the maximum permissible explosion over pressure (7 kPa) at the site boundary (this is conservative as the HIPAP 4 criterion relates to residential areas);
- Toxicity – potential toxic by-products of combustion of project elements (as per the Emergency Response Planning Guidelines);

- Property damage and accidental propagation – application of the HIPAP 4 criterion for the maximum permissible heat radiation /explosion overpressure (23 kW/m2/14 kPa) at the site boundary; and
- Societal risk – consideration of societal risk in accordance with HIPAP 4.

Based on the hazard identification table the following hazardous scenarios were identified:

- Li-ion battery fault, thermal runaway and fire;
- Victorian Big Battery fire review;
- Li-ion battery fire and toxic gas dispersion;
- Electrical equipment failure and fire;
- Transformer internal arcing, oil spill, ignition and bund fire;
- Transformer electrical surge protection failure and explosion;
- Electromagnetic field impacts; and
- A review of the expected types and quantities of DGs to be stored or handled on site, identified that none of the relevant screening thresholds of Applying SEPP 33 as per *State Environmental Planning Policy (Resilience* and *Hazards) 2021* (Resilience and Hazards SEPP) will be exceeded. This included consideration of the BESS, transformer oils, and diesel fuel stored and used on site which is described in Section 3.4 of **Appendix N**.

6.10.2 ASSESSMENT OF POTENTIAL HAZARDS AND RISKS

6.10.2.1 LI-ION BATTERY FAULT, THERMAL RUNWAY FIRE

Despite recent improvements in Li-ion battery technology there are still several degradation mechanisms present which can result in thermal runaway fire. These primarily arise through high discharge, overcharging, or water ingress resulting in the formation of bi-products. To counteract these risks, Li-ion batteries are equipped with several standard safety features. As such, the potential for thermal runaway to occur during normal operation of the BESS is very low. Similarly, the risk of physical damage to a battery initiating an incident is low as Li-ion batteries are contained within modules which are located within a fenced area.

The chemistry of the proposed battery to be installed for the Project is lithium-Ion phosphate (LFP) which are one of the safest battery chemistries in the industry. Compared to other Li-ion batteries, LFP batteries have a very low thermal rise at peak, resulting in a gradual temperature rise that typically does not result in fire. Testing of physical damage (e.g., puncture of a membrane) on LFP batteries has demonstrated that the battery chemistry is protected against shock, and typically do not result in fire. In the event a LFP battery did ignite, the combustion releases carbon dioxide which, in a confined space such as the modules the batteries are housed in, reduces oxygen levels and thus inhibits the propagation of the fire. The modules also have fire suppression systems installed further minimising the risk of fire propagating.

One of the preliminary battery products considered for the purposes of the PHA for the Project is the SolBank modular Energy Storage System (ESS). A UL9540A report has been completed for the SolBank modular ESS (refer Appendix B of **Appendix N**).

Based on data shown from UL9540A reports for similar systems, the results demonstrate that when thermal runaway is triggered in one cell in a BESS container, the heat generated would neither be transferred to all cells within one battery module, nor from the test module to adjacent ones. These results are attributed to the nature of LFP technology. However, although Li-ion technology typically does not result in fire, there are circumstances where modules can catch fire. These include leaking coolant or electrical faults. Should this occur, the fire would likely be contained within the module, particularly with the in-built fire suppression systems, including smoke and thermal sensors, combustible gas detector, pressure relief system, and aerosol E-Stop buttons.

6.10.2.2 LI-ION BATTERY FIRE AND TOXIC GAS DISPERSION

If an LFP BESS were to fail causing a fire, toxic emissions may result including carbon dioxide, carbon monoxide, and fluoride gases. Based on a review of the Victorian Big Battery fire and other literature, the following conclusions are made:

- Carbon dioxide – the formation of carbon dioxide in a BESS fire is unlikely to generate quantities that would result in downwind impacts that could cause injury or fatality; therefore, no further analysis was required;
- Carbon monoxide – there is the potential for the formation of carbon monoxide from a fire in a BESS unit if there is insufficient oxygen to sustain complete combustion. However, it is noted that the combustible load within the BESS which could result in the formation of carbon monoxide is relatively low compared to the available oxygen in the surrounding atmosphere. Therefore, it is considered that the formation of carbon monoxide at levels which would result in a substantial downwind impact are not considered credible and subsequent analysis of, this incident is not required; and
- Fluoride gases – The electrolyte used in Li-ion batteries typically is lithium hexafluorophosphate ($LiPF_6$) or other li-salts containing fluorine. The decomposition of $LiPF_6$ in a fire event is promoted by water/humidity. Bi-products of the combustion of $LiPF_6$ include several fluoride gases. Most of these are reactive immediately except hydrogen fluoride, which is readily dissolved in water forming hydrofluoric acid. Although the toxicity risk from fluorides is high, the risk of fire in a BESS is low, and combined with the stable chemistry of the battery the risk associated with fluorides is considered low.

6.10.2.3 EQUIPMENT FAILURE AND FIRE

The type of equipment used within the Project is not unique. It is used throughout the world and across industry segments and therefore does not present a unique fire scenario. Based on fire development within switch rooms any fire would be slow in growth and would be unlikely to result in substantial impacts in terms of offsite impact or incident propagation. This incident was not carried forward for further analysis.

6.10.2.4 TRANSFORMER INTERNAL ARCING, OIL SPILL, IGNITION AND BUND FIRE

Oil contained within transformers are used to insulate transformers during operation. If arcing occurs within the transformer (e.g., due to a low oil level), the high energy passing through the coolant would vaporise the oil into light hydrocarbons (methane, ethane, acetylene, etc.) resulting in rapid pressurisation within the reservoir.

Notwithstanding the protection systems, if the pressure rise exceeds the structural integrity of the reservoir, and the installed pressure relief devices, the reservoir can rupture allowing the release of oil into the bund. The rupture also allows oxygen to enter the reservoir. The temperature of the gases is above the auto ignition point, but this does not occur until oxygen is present. When oxygen enters the reservoir, the gases auto ignite which generates sufficient heat to ignite the oil in the bund.

However, transformers are ubiquitous units with a low potential for failure and the separation distance to the site boundary and other adjacent units would be unlikely to result in incident propagation and offsite impacts. This incident was not carried forward for further analysis.

6.10.2.5 TRANSFORMER ELECTRICAL SURGE PROTECTION FAILURE AND EXPLOSION

Transformers generate large amounts of heat because of the high electrical currents that pass through them; hence, oil is used as an insulating material within the transformers to protect the mechanical components. However, if an energy surge to the transformer occurs, and the electrical surge protection measures fail, the mineral oil may decompose and vaporise, resulting in gas bubbles of hydrogen and methane. The formation of gases will increase the pressure within the transformer which can result in the transformer structure rupturing which allows the ingress of oxygen. As oxygen enters, the concentration of flammable gases reaches limits above their autoignition temperatures which can ignite resulting in increased formation of hot gaseous products resulting in an explosion. The explosion may generate significant overpressure, sparks and fire and would result in a whole transformer fire.

To protect against overheating and explosions, transformers generally have surge protection devices which shunt electrical surges safely to ground. However, this surge detection and protection devices are not universally installed, nor do they protect against all events. Therefore, there is the potential for an explosion to occur which may result in offsite impacts; however, as previously noted, these units are ubiquitous and have a low potential for failure. Therefore, this incident was not considered further.

6.10.2.6 ELECTROMAGNETIC FIELD IMPACTS

Electric and Magnetic Fields (EMFs) are associated with a wide range of sources. Naturally occurring EMFs, occurring during lightning storms, are generated from Earth's magnetic field. Man-made EMFs are present wherever there is electricity; hence, EMFs are present in almost all built environments where electricity is used.

The BESS, PCU, substations, and other Project elements create EMFs from operational electrical equipment, such as transmission lines, transformers and the electrical components found within BESS units (e.g., inverters), substations and others. These

have the potential to produced Extremely low frequency (ELF) EMFs in the range of 30 to 300 Hz.

There are currently no existing standards in Australia for governing the exposure limits to ELF EMFs; however, the ICNIRP has provided some guidelines around limits for prolonged exposure of 2,000 milligauss (mG) in a 24 hour period.

There are no dwellings immediately adjacent to the area where the Project elements will be developed, which therefore provides substantial distance for attenuation of EMFs. Based upon the typical levels which may be generated by transmission equipment the cumulative effect would not exceed the 2,000 mG limit for prolonged exposure. In addition, the closest residence is over 1 km away from the EMF generating sources at the BESS; hence, the potential for the EMF to exceed the accepted levels is considered negligible.

6.10.3 MITIGATION AND MANAGEMENT

Based on engagement with the DPE/DPHI, to minimise hazards and risks identified in the PHA, the measures identified in **Table 6.45** will be implemented by the Project:

TABLE 6.45 HAZARDS AND RISKS MANAGEMENT AND MITIGATION

ID	Mitigation Measures
HR1	The BESS will be tested in accordance with UL9540A and will be installed in accordance with manufactured an d UL9540A report recommended clearances based on testing.
HR2	The BESS will be tested to demonstrate clearances required to prevent propagation of fires between separated units.
HR3	The BESS will be installed with fire protection systems specified by the manufacturer and UL9540A report.
HR4	Detailed design to validate the system will be installed in the Project Area before construction, while meeting the recommended clearances.
HR5	UL testing information will be made available to the certifying authority.
HR6	Based on lessons learnt from the Victorian Big Battery incident, the following fire safety precautions will be adopted on the design of the Project: • The vent atop the containers will be made of metal / non-combustible material instead of plastic and covered by a metallic mesh shield; and • The placement of the fans shall be such that batteries or flammable materials will not be located directly beneath ventilation openings.

6.11 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 P**. Electrical hazards including battery fires and transformer fires are addressed separately as part of the Preliminary Hazard Assessment and is provided in **Appendix N**.

6.11.1 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.

6.11.1.1 BUSHFIRE PRONE LAND

The need for a Bushfire Risk Assessment was identified within the Secretary's Environmental Assessment Requirements (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.

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 6.15). 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 approximately 4 km and 8 km south of the proposed 330 kV transmission line and solar farm Development Footprint, respectively. Vegetation Category 3 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 20 km southwest of the solar farm Development Footprint. Booroorban is identified as having an unlikely likelihood of a bushfire event; however, a bushfire event would have a moderate consequence.

6.11.1.2 CLIMATE AND FIRE WEATHER

While bushfires can happen at any time of the year in Australia, the time of peak bushfire activity varies across the country with the changes in the seasonal weather patterns. Within the region of the Project, the bushfire season generally runs from October-November through to March-April depending on seasonal conditions (Mid Murray Zone BFMC, 2009). This is consistent with the statutory Bush Fire Danger Period which generally runs from 1 October to 31 March each year.

As described by the Bureau of Meteorology (BOM, 2023), as grass and forests dry during summer and autumn, southeast Australia becomes vulnerable to the threat of bushfire. During late spring and early summer grass and forest fuels hold some moisture but fires can occur on hot days with strong winds. Fuels dry out in mid and late summer, but winds are typically not as strong. Early autumn sees a transition to cooler conditions and generally lighter winds.

Strong gusty winds help fan flames and cause a fire to spread faster across the landscape. Strong winds can carry hot embers long distances - these can start spot fires many kilometres ahead of the main fire front.

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.

Data from the BOM weather stations confirms that both low humidity and high temperature occur within the bushfire season and would contribute to the fire hazard within this region. Bushfire weather conditions are also projected to increase in severity in the future in response to climate change. This will result in:

- An earlier start to the bushfire season;
- Reduced opportunities for fuel reduction burning;
- Management of fire risk to property, people and biodiversity will become increasingly challenging; and
- An increase in the number of extreme fire danger days.

6.11.1.3 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 (17 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 25 km of the Project Area.

6.11.1.4 VEGETATION HAZARD AND INDICATIVE FIRE BEHAVIOUR

Descriptions of the vegetation types including species composition and structural diversity is provided in The Plains Solar Farm BDAR (ERM, 2023) (**Appendix P**).

While not identified as a bushfire prone vegetation community the current bushfire prone land mapping, grassfires should not be underestimated and can start and spread quickly. It should be assumed that, under the most extreme weather, a fire would spread even in heavily grazed grass and embers may breach any APZ. For this reason, we have considered all of the native vegetation communities a bushfire hazard and minimum APZ have been recommended.

The Fire Behaviour Index (FBI) assists operational decision making and provides a scale of potential fire danger (should a fire start) based on the predicted rate of fire spread. Based on the overall fuel load of the vegetation formations, the Solar Farm Project Area has a moderate bushfire danger rating (**Table 6.46** and **Table 6.47**Table 6.47).

TABLE 6.46 FIRE BEHAVIOUR INDEX, GRAZED PASTURE

Vegetation Formation[1]	**Overall Fuel Load[2]**	**Fire Behaviour Index[3]**	**Fire Danger Rating[3]**
Freshwater Wetlands (Inland Floodplain Shrublands)	4.4 t/ha	13	Moderate
Grasslands (Riverine Plain Grassland)	6 t/ha	15	Moderate
Arid Shrublands (Riverine Chenopod Shrublands)	3.2 t/ha	11	Low

1. Keith (2004) From ocean shores to desert dunes: the vegetation of New South Wales and the ACT.
2. Fuel loads are expressed in tonnes per hectare as per NSW RFS – Comprehensive Vegetation Fuel Loads (NSW RFS 2019)
3. CSIRO Grassland Fire Spread Model available online https://aurora.landgate.wa.gov.au/fbc/#!/csiro-grass. Input values: grass continuity: continuous; temperature 30 °c; relative humidity 30%; windspeed at 10m height 20 km/h; curing 60%; slope 0 degrees.

TABLE 6.47 GRASSLAND, FIRE BEHAVIOUR INDEX

Fire Behaviour Index	Fire Danger Rating[3]	Fire Suppression and Containment	Potential for Impact
0-5	Low	Fire difficult to ignite and sustain. Fires generally unlikely to spread and likely to self-extinguish.	Community losses are unlikely.
6-11	Low	Fire easily sustained. Typically wind driven fires that can spread quickly. Fires usually contained within road networks and fuel breaks	Community losses are unlikely however unattended infrastructure may be at risk.
12-23	Moderate	Typically wind driven and rapidly spreading fires with the potential to gain size quickly. Fires typically controlled within established road networks and fuel breaks together with using direct, indirect or parallel attack suppression strategies.	Possible agricultural/ pasture/crop/stock losses together with loss of rural assets such as fencing, machinery and buildings. Unattended infrastructure may be at risk.
24-49	High	Wind driven, rapidly spreading fires with potential for development into large fire area/size and with the potential for short distance spotting and long flame lengths. Increasing focus on defensive suppression strategies.	High likelihood of agricultural/pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing, machinery and buildings.
50-99	Extreme	Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. High levels of threat to life and property. Elevated risk to firefighter safety	Increasingly high likelihood of agricultural/pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing, machinery and buildings. Limited visibility due to smoke and dust. High risk to the community related to inappropriate pre-considered plans, inadequate sheltering. Strong winds are likely to impact infrastructure increasing the likelihood of obstructed roads and power outages.
100+	Catastrophic	Extremely rapid fire growth and high likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Fire control is extremely difficult and unlikely until conditions ease.	High probability of loss of life and property

Source: https://www.afac.com.au/docs/default-source/afdrs/afdrs-quick-guide---grassland.pdf

SIXTEEN MILE GUMS

HAY SHIRE COUNCIL

ABERCROMBIE CREEK

COBB HIGHWAY

CURTAINS CREEK

WEST BURRABOGIE ROAD

CURTAINS CREEK

EDWARD RIVER COUNCIL

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse
- 220kV Transmission Line
- Local Government Area

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 3
- Vegetation Buffer
- Project Area

Development Layout

- 330kV Switching Station and BESS Substation
- 330kV Transmission Footing
- Access Track
- BESS
- O&M Building
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Created By: MB

Drawing Size: A3

0 1 2Km

1:60,000

6.15 - Bushfire Prone Land and History

The Plains Solar Farm EIS

Engie

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6.11.2 IMPACT ASSESSMENT

6.11.2.1 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 PV panels will be made of glass with aluminium frames. All electrical components are required to be manufactured in material that does not allow self-combustion and ignition and should self-extinguish. The risk of a fire spreading widely from panel to panel is likely to be low because of the panel construction materials (e.g., fire resistance rating) and the time of flame exposure to ignite these materials.

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 solar 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 solar 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.

6.11.2.2 CUMULATIVE 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.

SIXTEEN MILE GUMS

ABERCROMBIE CREEK

COBB HIGHWAY

CURTAINS CREEK

WEST BURRABOGIE ROAD

CURTAINS CREEK

Legend

- Highway
- Local Road
- Track-Vehicular
- Watercourse
- 220kV Transmission Line

Vegetation Formation

- Arid Shrublands (Aeolian Chenopod Shrublands)
- Arid Shrublands (Riverine Chenopod Shrublands)
- Freshwater Wetlands (Inland Floodplain Shrublands)
- Grasslands (Riverine Plain Grassland)
- Existing Infrastructure
- Project Area

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

Coordinate System:
GDA2020 MGA Zone 55
Date: 28/11/2023
Created By: MB
Drawing Size: A3

0 1 2Km

1:60,000

6.16 - Vegetation Classification

The Plains Solar Farm EIS

Engie

0667692_PlainsSF_EIS_R01.mxd

6.11.2.3 IMPACT STATEMENT

The risk that the solar farm itself will cause a fire is considered low given the application of appropriate protection measures (refer **Section 6.11.30**). The proposed development is also 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.

If a fire does breach containment lines and threatens the solar farm assets, it is possible that the solar farm 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. It is important that key assets such as the switching station, substations, BESS and O&M buildings all have adequate defendable space all sides.

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 solar farm would result in additional assets that would need to be protected.

6.11.3 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 solar farm and the community. 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.

The detailed mitigation measures outlined in the Bushfire Risk Assessment (**Appendix P**) 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 solar 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 6.48** below.

TABLE 6.48 SUMMARY OF RECOMMENDED 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 around the perimeter of the solar arrays, and on all sides of the substations, switching station, BESS and O&M Buildings.
		BR2	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.

Mitigation Strategy	Section of Bushfire Risk Assessment	ID	Action
Solar farm construction	6.2	BR3	The APZ and access road will be constructed prior to the installation of any solar panels or related infrastructure.
		BR4	Ensure that appropriate permits have been issued for work during the Fire Danger Period, and th.at any conditions on permits are adhered to.
Solar farm ongoing operations	6.3	BR5	Vegetation fuels throughout the solar 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	BR6	Prior to construction, an Emergency Management and Operations Plan should be prepared for the solar farm that provides the following: • A site plan showing infrastructure, site access and the internal road layout; • Hazard reduction strategies; • Fire suppression equipment details; • Location of all fire control advantages and APZ; • Flammable materials storage requirements; • Control and coordination arrangements for emergency response; • Minimum evacuation zone distances • Fire reporting and response to formal emergency alerts; and • Any other risk control measures required to be followed by firefighters.
		BR7	A Fire Safety Study should also be prepared in accordance with the HIPAP No 2 prior to construction. This study will be used to inform the Emergency Management and Operations Plan to ensure that the proposed fire prevention, detection fand protection measures are appropriate for the final design.
Maintain emergency access/egress for fire fighters and site personnel	6.4	BR8	Access to the Project Area is proposed via Cobb Highway to the west of the Solar Farm. The ongoing maintenance of the Project will be accessed through internal access tracks 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.
		BR9	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 while emergency service personnel are arriving to undertake firefighting operations.

Mitigation Strategy	Section of Bushfire Risk Assessment	ID	Action
Water storage	6.5	BR10	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.
		BR11	The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels.

6.12 AVIATION, GLINT AND GLARE

An Aviation Impact and Solar Glare Analysis (AGA) has been prepared to assess the potential impacts related to the Project in relation to existing aircraft approach paths and nearby receivers, including residences and roads (Aviation Projects, 2023); **Appendix O**).

The AGA responds to the SEARs (**Appendix A**) and considers all relevant stakeholder engagement outcomes discussed in **Section 5**.

The AGA has considered the following guidelines and regulation:

- Appendix C of the Solar Guidelines (Glint and Glare Assessment Requirements) (DPE, 2022a);
- Hay LEP;
- 'National Airports Safeguarding Framework - Guideline E: Managing the *Risk of* Distractions to Pilots from Lighting in the Vicinity of Airports' (DITRDCA, 2014)*;*
- Airservices Australia, Aeronautical Information Package (AIP), which included AIP Book, Departure and Approach Procedures, and En Route Supplement Australia;
- 'Part 139 (Aerodromes) Manual of Standards 2019';
- *Part 139 of the Civil Aviation Safety Regulations* (CASR); and
- 'Federal Aviation Administration Policy: Review of Solar Energy System Projects on Federally-Obligated Airports' (FFA, 2021).

6.12.1 BACKGROUND

Solar PV panels can produce glint (a momentary flash of bright light) and glare (a continuous source of bright light), which can affect receivers such as pilots, air traffic controllers, residents, road users, and rail operators.

The Project locality is sparsely populated with the nearest residential building located 4.5 km to the northeast of the Project. While there are no residences within 3 km of the solar array, the Project has considered the 12 dwellings and structures identified to be within 10 km of the Project Area.

There are no sealed or regularly used public roads within 1 km of the solar panels. However, 6 route receivers (roads) were established for existing nearby unsealed roads within 1 km around the Project Area. Two roads (Route 5 and Route 6) are identified as public (Crown owned) roads, the remainder are access tracks on private properties. The nearest sealed public roads are Jerilderie Road located approximately 9.7 km to the north and the Cobb Highway at approximately 11.5 km to the west. Several unsealed roads and dirt tracks around the Project Area have therefore been considered by Aviation Projects as identified in Figure 7 of **Appendix O**.

There are no traffic control towers and/ or take off/landing approaches to any runway or landing strip within 5 km of the solar array. However, the AGA has considered the runway approaches for the nearest certified airport Hay Airport (YHAY), located approximately 25 km north of the solar panel area. There is no air traffic control tower at Hay Airport. Four runway approaches were identified to end at Hay Airport (RWY 04, 15, 22 and 33).

6.12.2 IMPACT ASSESSMENT

The glare assessment was undertaken for the Project utilising the ForgeSolar application tool. The tool was used to evaluate glare resulting from the Project's solar array for each receiver (includes dwellings, roads and aviation), based on proximity, orientation and specifications of the PV modules.

Glint and glare impacts were calculated based on the following factors:

- Position of the sun over time with respect to the location of the Project;
- Assessment is based on a worst-case scenario assuming clear weather all year round (e.g., no cloud coverage); and
- Backtracking configuration including tracking axis tilt, tracking axis orientation and properties of the PV modules.

Modelling has been conducted in consideration of five scenarios of backtracking configuration system and stowing angle of the PV panels.

The nature of glare that can be expected at each potential receiver was classified into three categories and colours:

- Green: Low potential to cause after image (flash blindness);
- Yellow: Potential to cause temporary after-image; and
- Red: Potential to cause retinal burn (permanent eye damage).

Table 6.49 provides a summary of the predicted glare for each backtracking configuration. The solar glare analysis for each configuration is provided in full in **Appendix O**.

TABLE 6.49 BACKTRACKING CONFIGURATION AND GLARE ASSESSMENT

Backtracking		Glare Assessment at receivers
System	**Description**	
None	PV modules rotate to track the sun through the range of rotation determined by the maximum tracking angle. The modules will not rotate beyond this limit and will not backtrack. This option effectively disables backtracking for single axis tracking systems.	No green or yellow glare experienced for any receiver.
Shade-slope	Non-slope-aware temporal strategy assumes that panels are on flat ground. This option may lose accuracy for systems built on a slope, which may include vertical offsets between rows.	No green or yellow glare experienced for any receiver.
Shade	Non-slope-aware temporal strategy assumes that panels are on flat ground.	No green or yellow glare experienced for any receiver.
Interval	Step-based method that discretely backtracks the PV modules over time.	No green or yellow glare experienced for any receiver.
Instant	PV modules immediately revert to the rest position, defined by the rest angle input, whenever the sun is outside the range of rotation.	• Dwellings: 15 minutes of annual green glare at highest panel elevation of 5 m at an associated structure (OP12); • Roads: 16 minutes of annual green glare, and 165 minutes of annual yellow glare at lowest panel elevation of 2.6 m at a private access road adjacent to the Project Area; and • Aviation: No green or yellow glare experienced for any receiver.

6.12.3 MITIGATION AND MANAGEMENT

The Glare analysis deemed the considered solar panel configurations to have low or no impacts to aviation, road users or residences and associated structures. The Solar Guidelines defines less than 10 hours annually as low glare impact with no mitigation required. Therefore, no specific mitigation measures are deemed required for the Project.

6.13 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.

6.13.1 BACKGROUND

6.13.1.1 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 closest residential receiver to the Project is the associated dwelling AD_3 at approximately 4.5 km to the northeast of the Project Area (refer **Section 2.4.1.3)**. Hay town is located 25 km 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), it is located about 20 km to the southwest of the Project Area.

6.13.1.2 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 24 km to the north of the Project (direct-line). **Figure 6.17** and **Table 6.50** 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 6.17 MEAN RAINFALL AT HAY AIRPORT WEATHER STATION 2007-2023

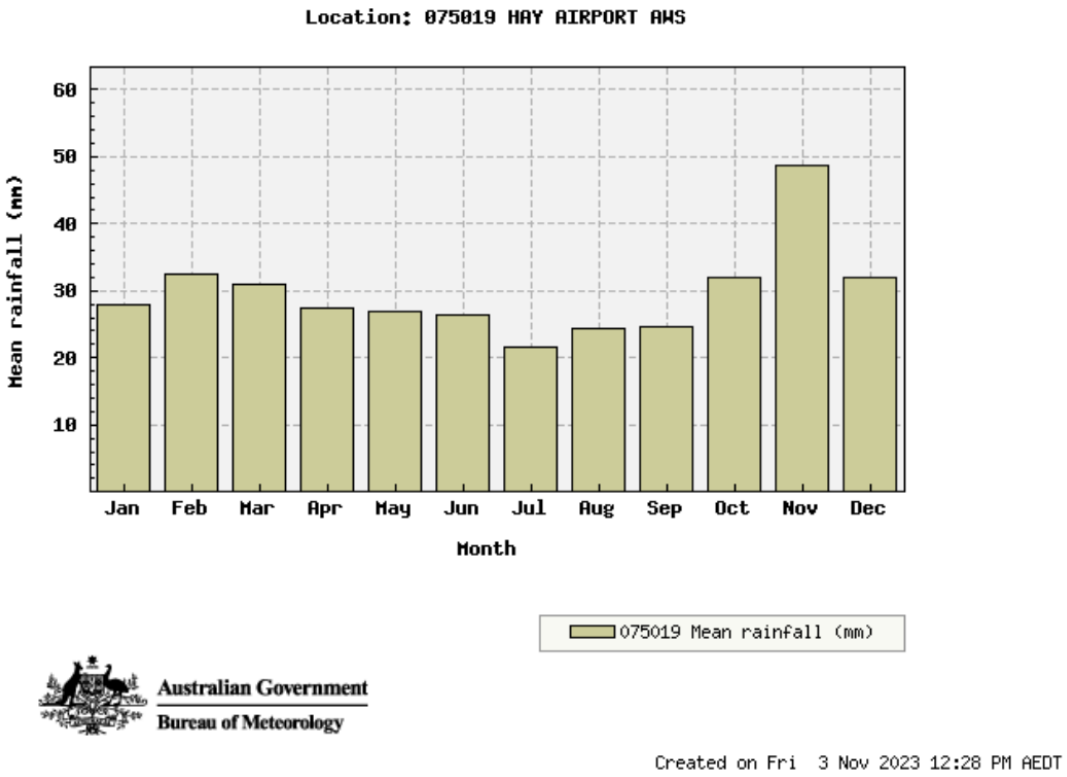


TABLE 6.50 MEAN RAINFALL AT HAY AIRPORT WEATHER STATION 2007-2023

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 6.18 illustrates how to interpret a wind rose and **Figure 6.19** 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 (refer **Figure 6.19**). Wind annual observations indicate that at 9 am 16% of the wind is calm and at 3 pm 12% is calm.

FIGURE 6.18 GUIDE TO INTERPRETING THE WIND ROSE

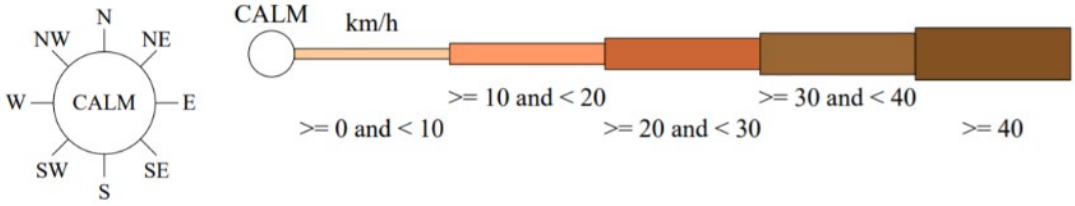
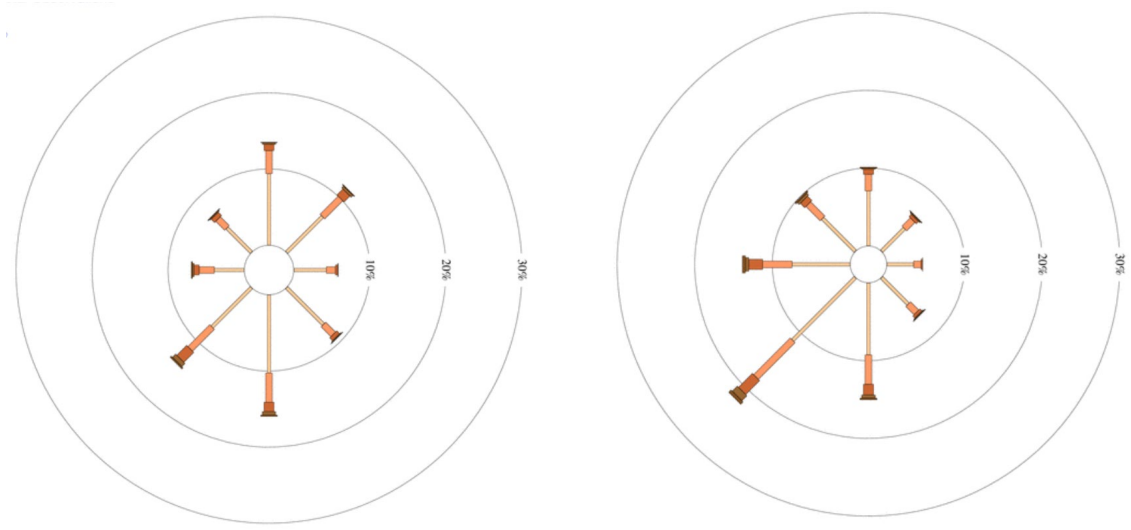


FIGURE 6.19 HAY WIND ANNUAL OBSERVATIONS 1957-2015



9 am - 16% Calm 3 am - 12% Calm

Source: Bureau of Meteorology (BoM, 2023)

6.13.1.3 LOCAL AIR QUALITY

Air quality of the Project locality is influenced by land use. Land use in and around the Project Area 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, Rural air quality network - Live air quality data, 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, 2021b).

6.13.2 IMPACT ASSESSMENT

6.13.2.1 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 18 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;
- Transport of material and equipment and haulage activities along unsealed roads;
- Processing and handling of material;
- Transfer points;
- Loading and unloading of material; and
- 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 6.13.3** will ensure that the Project can be constructed without any significant impact to local and regional air quality.

6.13.2.2 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 185,453 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 solar 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.

6.13.2.3 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.

6.13.3 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. 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.

Table 6.51 provides a summary of the measures to be included in the EMS, where appropriate.

TABLE 6.51 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.
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.

6.14 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 on-site:

- 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.

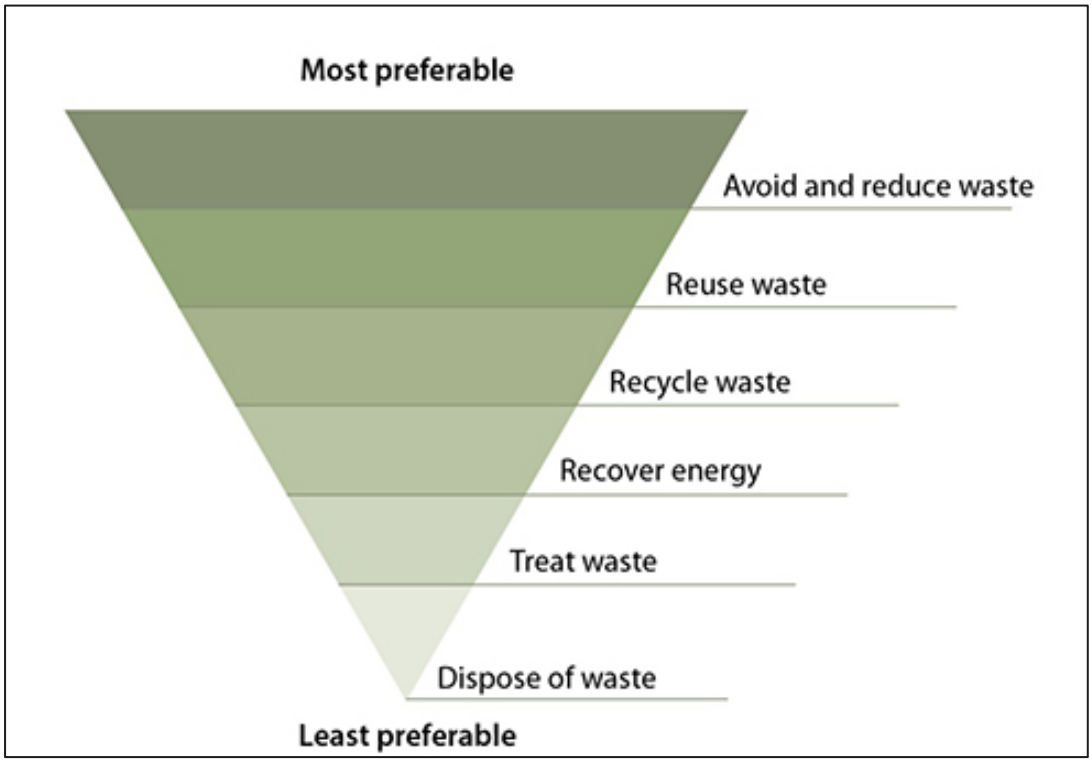
Best practice for waste management was considered in this assessment to implement the waste hierarchy principles (refer **Figure 6.20**), in accordance with the WARR Act and the principles of ESD:

- 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 6.20 WASTE HIERARCHY



Source: (NSW EPA, 2022)

6.14.1 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 6.52.**

TABLE 6.52 EXISTING WASTE MANAGEMENT FACILITIES

Waste Management Facility	Location	Distance to Project
Booroorban Landfill	Cobb Highway, Booroorban	15 km
Wanganella Landfill	Wanganella Tip Road, Wanganella	48 km
Hay Tip Site	Thelangerin Road, Hay	49 km
Pretty Pine Landfill	Pretty Pine Tip Road, Pretty Pine	74 km
Deniliquin Resource Recovery Centre (RRC)	Hay Road, Deniliquin	82 km
Maude Landfill	Maude Moulamein Road, Maude	88 km
Conargo Landfill	McKenzie Street, Congaro	97 km
Moulamein Landfill	152 Tchelery Road, Moulamein	99 km

6.14.2 IMPACT ASSESSMENT

6.14.2.1 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 6.53 details the anticipated waste types, volume and classification as a result of site preparation and activities from the entire Project construction phase.

TABLE 6.53 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	130 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	42 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)

Waste Type	Indicative Quantities	Waste Stream	Source	Classification
Cable	159 t	Recyclable (nearly all), General solid waste (minimal)	Offcuts and damaged items	General solid waste (non-putrescible)
Metal	296 t	Recyclable	Offcuts and damaged items	General solid waste (non-putrescible)
Concrete	116 t	Recyclable	Construction waste	General solid waste (non-putrescible)
Electronics and electrical infrastructure	32 t	Reuse, Recyclable, General solid waste	Offcuts and damaged items	General solid waste (non-putrescible)
Oil spill clean-up material	500 kg	Hazardous waste	Construction waste, store, and workshop	General solid waste (non-putrescible)
Recyclable domestic waste	24 t	Recyclable	Recyclable domestic waste during construction	General solid waste (non-putrescible)
Domestic wastes	61 m^3	General solid waste	Domestic waste during construction	General solid waste (putrescible)
Septic tank waste	336 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 6.54 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 6.54 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)
Metal	29 t	Recyclable	Offcuts, damaged items during site maintenance	General solid waste (non-putrescible)
Electronics and electrical infrastructure	283 t	Reuse, Recyclable, General solid waste	Repairs, offcuts, damaged items, site maintenance	General solid waste (non-putrescible)
Oil spill clean-up material	16 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	40 t	Recyclable	Recyclable domestic waste during operations	General solid waste (non-putrescible)
Domestic wastes	101 m^3	General solid waste	Domestic waste from offices during operations	General solid waste (putrescible)
Septic tank waste	323 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 6.55** 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 6.55 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)
Solar panels and mounting system	22,000 t	Recyclable (nearly all), General solid waste (minimal)	Decommissioning of solar panels and tracker mounting systems (excluding piles)	General solid waste (non-putrescible)
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)
Dangerous goods	3,220 tonnes	Reuse, Recyclable, Hazardous waste	Decommissioning of lithium-ion cell and batteries	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	11,600 t	Recyclable	Infrastructure demolishment	General solid waste (non-putrescible)
Recyclable domestic waste	5 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	531 t	Hazardous waste	De-tanking of transformer insulating oil	General solid waste (non-putrescible)
Domestic wastes	13 m^3	General solid waste	Domestic waste from offices during decommissioning	General solid waste (putrescible)
Septic tank waste	63 kL	Sewage	Ablutions during decommissioning	Liquid waste

6.14.2.2 WASTE DISPOSAL OPTIONS

Table 6.56 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 6.57** and **Table 6.58.**

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 6.56 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); • Liquid waste (oil); and • Special waste (tyres).
Hay Tip Site	• Refer Table 6.57 .
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 6.58.
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 6.57 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 6.58 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			

Deniliquin Waste Disposal Depot			
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. The quantity of clinical waste disposed of at the premises must not exceed 200kg at any one time.

6.14.3 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 6.59 summarises specific measures to be included in the WMP of the Project for each phase (C - construction; O - operation; D – decommissioning).

TABLE 6.59 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 on-site prior to being transported to waste facility.*			
WM9	*Investigate opportunities for recycling of wastes prior to sending to landfill.*			

ID	Measures	Phase		
		C	*O*	*D*
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.*			

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 6.60.**

TABLE 6.60 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.

ID	Waste Type	Management Strategies
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.
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).

6.15 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 (**Appendix Q**). 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;
- Impact on the regional economy from the construction and operation of the Project;

- 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. There are 2 key steps in IO analysis, which includes:
  - IO table development: to identify the economic structure of the region and multipliers for each existing sector of the economy; and
  - 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:
  - Output: the gross value of business turnover;
  - 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. These costs exclude wage costs;
  - Income: the wages paid to employees including imputed wages for self-employed and business owners;
  - Production induced flow-on effects: the number of people employed (including self-employed, full-time, and part-time), occur in a near-proportional way within a region; and
  - Consumption induced flow-on effects: only occur in a proportional way if workers and their families are in the region or migrate into the region. Where workers commute from outside the region, some of the consumption-induced flow-on effects leak from the region;
- Assessment of agricultural economic activity reduction from the construction and operation footprint;
- A cumulative impact assessment of other relevant future developments on economic activity; and
- Measures to mitigate and/ or manage potential economic impacts.

6.15.1 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 6.61 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 6.61 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).
Population Growth	• The population of the Study Area has been growing at an average annual rate of 0.05% since 2006, approximately 4% of the rate of NSW, which is 1.3% for the same period. • 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 Grifith 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.

Aspects	Study Area Summary
Exporting Industries	• Exporting sectors are key drivers of regional economies and reflect a region's endowments and competitive advantages. Using the IO industry sector classifications, the largest four exporting industries in the Study accounts for $2.4 billion in total or 61% of the total exports. These industries are: ◦ Manufacturing ($1.2 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.

6.15.2 IMPACT ASSESSMENT

6.15.2.1 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 2.80 for income up to 3.21 for value added.

During operation, the Type 11A ratio multipliers for the Project's impact on the Study Area economy range from 1.54 for output up to 3.36 for employment. Whilst the NSW Type 11A ratio multipliers for the Project range from 2.50 for output up to 9.14 for employment.

6.15.2.2 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 1.5 year construction phase of the Project is estimated at 150 FTE.

Based on the IO coefficients of the above construction sectors in the regional IO table, $55M 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 6.62 summarises the estimated direct and indirect economic impact of $55 M expenditure in the regional and NSW economy.

TABLE 6.62 ANNUAL ECONOMIC IMPACTS OF THE PROJECT

Impacts	***Total Effect***				**Phase**
	Study Area		***NSW***		
	Direct	***Indirect***	***Direct***	**Indirect**	
Output	$55M	$35M	$55M	$110M	Construction
	$10M	$5M	$10M	$15M	Operation
Value-added	$22M	$11M	$22M	$48M	Construction
	$2M	$2M	$2M	$8M	Operation
Household income	$11M	$5M	$16M	$29M	Construction
	$1M	$1M	$1M	$4M	Operation
Jobs	150	81	150	325	Construction
	5	12	5	41	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 6.62** has been adjusted to only include 50% of consumption induced flow-ons 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.

6.15.2.3 IMPACT ON SECTORS

Table 6.63 summarises the sectors of the Study Area likely to be impacted because of the Project.

TABLE 6.63 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 6.64 summarises the sectors of the NSW economy likely to be impacted from the development of the Project.

TABLE 6.64 NSW ECONOMY MAIN SECTORS AFFECTED

Sectors Impacted	Phase
Output, value-added, income and employment production induced flow-on effects	
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

6.15.2.4 IMPACT ON AGRICULTURE

Construction of the Project will result in a reduction of up to 1,129.62 ha of agricultural land that is currently used for sheep. Operation of the Project was assumed to result in between 56 ha and 928 ha of land being unavailable for agriculture depending on whether grazing will continue in the solar panel area (refer **Table 6.31**). The AIA identified an annual loss of income of $72,563.58 during construction and between $3,315.00 and $60,812.80 during operation, depending on whether grazing will continue in the solar panel area.

Table 6.65 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 6.65 ANNUAL ECONOMIC IMPACTS OF FOREGONE AGRICULTURE

Impacts	*Total Effect*		Phase
	Study Area	***NSW***	
Direct and indirect output	$0.12M	$0.20M	Construction
	$0.10M	$0.17M	Operation
Direct and indirect value-added	$0.05M	$0.09M	Construction
	$0.04M	$0.08M	Operation
Direct and indirect household income	$0.02M	$0.05M	Construction
	$0.02M	$0.04M	Operation
Direct and indirect jobs	0.37 jobs	0.62 jobs	Construction
	0.31 jobs	0.52 jobs	Operation

6.15.2.5 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 150 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.

6.15.3 MITIGATION AND MANAGEMENT

Table 6.66 provides the economic impact mitigation and management measures for the Project.

TABLE 6.66 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 utilise boarding style houses in Hay to reduce impacts on the regional labour market (wage increases and labour shortages) and accommodation market (price/rent increases).

6.16 SOCIAL

An assessment of the Project's potential to create social impacts, and how these social impacts are managed and monitored has been undertaken. The Social Impact Assessment (SIA) is provided in **Appendix R**.

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,) and the 'Technical Supplement: Social Impact Assessment Guideline for State Significant Projects' (SIA Technical Supplement) (DPE,). 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 6.21 outlines the steps taken to complete the SIA, which are described in the following sections.

FIGURE 6.21 SIA PROCESS

The phases adopted by the SIA are as follows:

- Phase 1: Scoping aimed to capture and characterise the potential social impacts to inform Project planning and ensuring level of assessment is proportionate to the scale and nature of the potential 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.

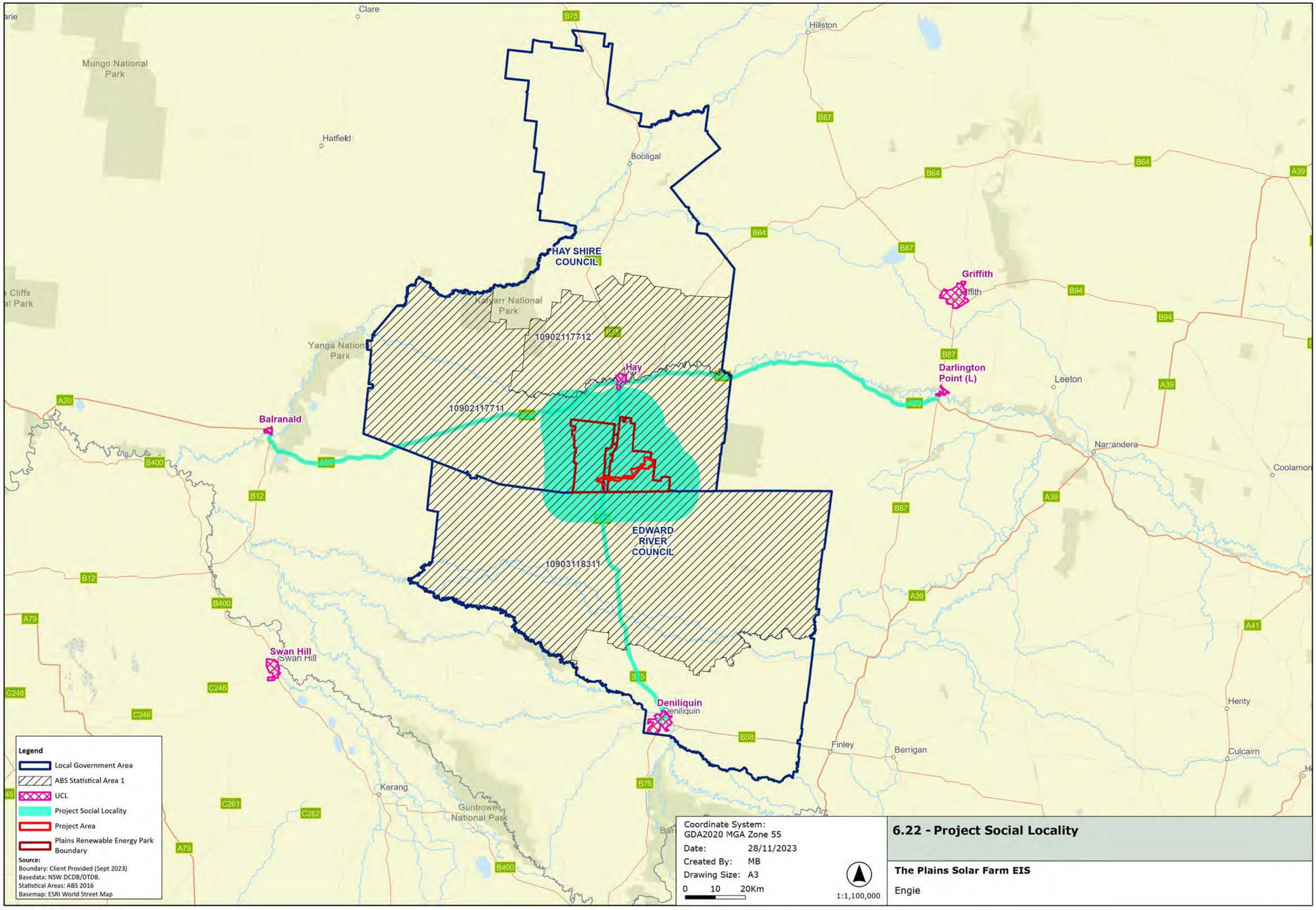
6.16.1 BACKGROUND

6.16.1.1 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 6.22**), 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 haulage 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 Regional LGA. LGA level data for the Hay LGA and adjacent 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.



6.22 - Project Social Locality

The Plains Solar Farm EIS

Engie

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6.16.1.2 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 R**) 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

Housing vacancy rate data draws on a combination of ABS data and online data from monitoring major property listing sites to provide a time-series analysis on a monthly and postcode scale (SQM Research 2022). A review of rental properties housing vacancy data exhibited that Postcode 2711's (containing Hay) highest residential vacancy rate was in May 2020 at 6.3%, by November 2020 the rate had dropped to 3.9% and by December 2022 the vacancy rate was at 0.3% (SQM Research, 2022). Postcode 2710's (containing Deniliquin) highest vacancy rate was in March 2009 at 6.7%, and by July 2020 the vacancy had dropped to 0.3% and has ranged between 0.0% and 0.3% until April 2023 (SQM Research, 2022). Postcode 2680's vacancy rate peaked in August 2009 and has fluctuated between 1.9% and 0.2% between June 2010 and April 2023 (SQM Research, 2022).

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 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.

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.

6.16.2 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; 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 6.67 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 6.67 IMPACT ISSUES

Impact Issue	Host Landowners	Project Neighbours	Wider Community	Livelihoods	Health and Wellbeing	Local Workforce	Local Businesses	Regional Visitors	Traditional Owners and Culture	Phase of the Project
Stakeholder and Community										
Adequacy and transparency of stakeholder engagement		✓	✓							Construction
Establishment of the CEF			✓							Operation
Perceived health impacts	✓	✓			✓					Operation
Impacts to community cohesion		✓	✓							Operation
Employment and Procurement										
Direct and indirect employment opportunities				✓		✓				Construction and Operation
Increased demand for labour contributes to skills shortages				✓			✓			Construction
Increased demand for goods and services				✓			✓			Construction and Operation
Diversification of income streams	✓			✓						Operation
Local Disruptions										
Increased disruption, congestion and wear and tear on local roads	✓	✓	✓		✓			✓		Construction
Interruptions such as traffic changes, school buses, mail deliveries, utilities interruptions	✓	✓	✓	✓						Construction
Construction environmental impacts	✓	✓	✓		✓	✓		✓		Construction
Accommodation and Worker Influx										
Increased demand for accommodation				✓			✓	✓		Construction
Increased demand for local services			✓	✓						Construction

Impact Issue	Host Landowners	Project Neighbours	Wider Community	Livelihoods	Health and Wellbeing	Local Workforce	Local Businesses	Regional Visitors	Traditional Owners and Culture	Phase of the Project
Land Use and Landscape										
Impacts on neighbouring land values	✓	✓		✓						Operation
Visual amenity impacts	✓	✓	✓					✓		Operation
Impacts to tangible and intangible Aboriginal heritage									✓	Operation
Cumulative Impact										
Cumulative traffic and road impacts			✓							Construction
Cumulative increase in demand for accommodation			✓	✓			✓	✓		Construction
Cumulative increased demand for social and emergency services and recreational facilities			✓							Construction and Operation
Cumulative visual amenity impacts			✓							Operation

6.16.3 MITIGATION MEASURES

A range of social management and mitigation measures to be adopted for the Project is summarised in **Table 6.68** (further detailed in **Appendix R**) .

TABLE 6.68 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 (LEP) 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 Traffic Management Plan (TMP) 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.

6.17 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, 2021a).

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.

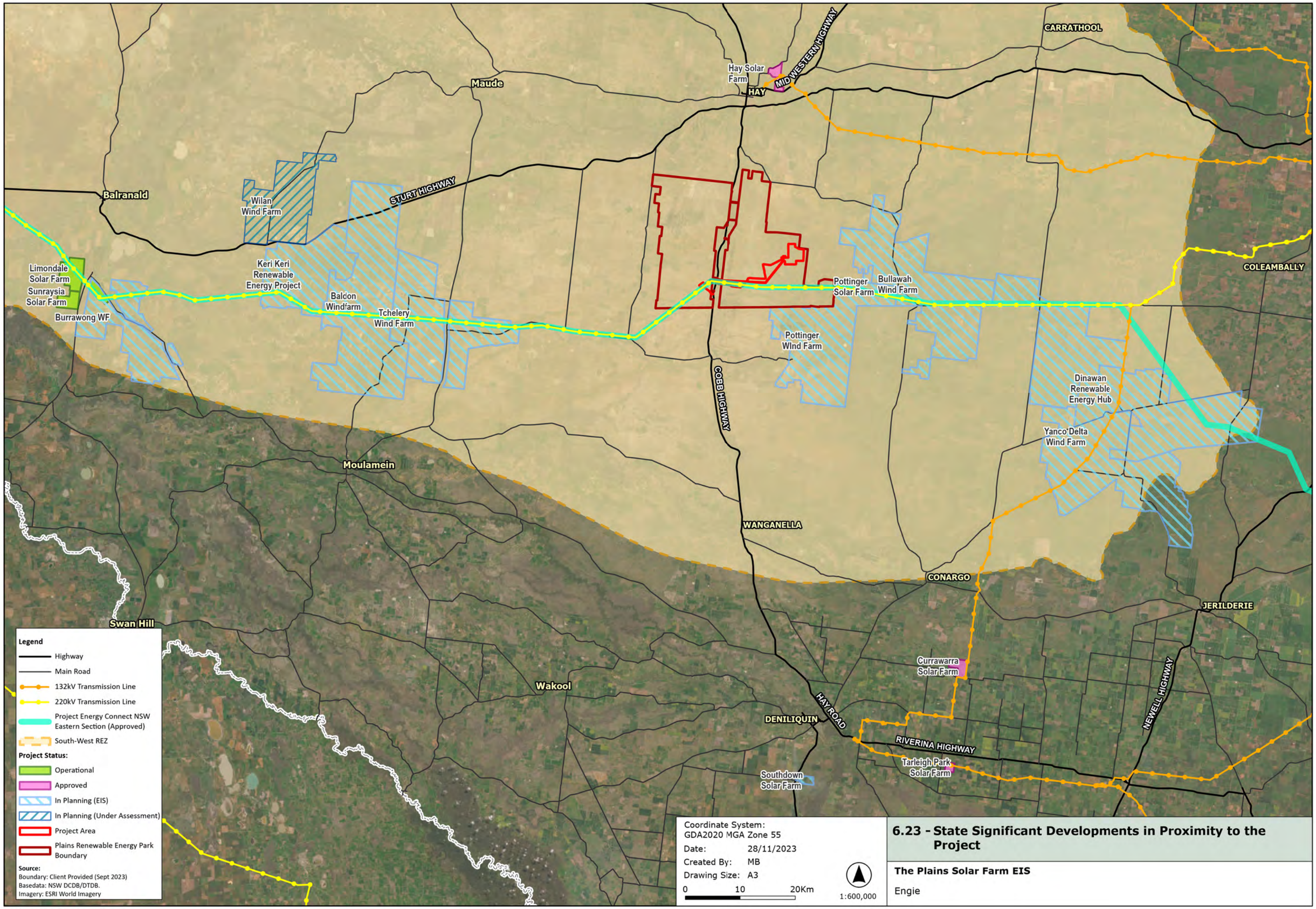
This section draws on the relevant aspect-specific assessments undertaken as part of the preparation of this EIS, which have identified and addressed potential cumulative impacts related to that aspect.

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.

6.17.1 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 6.23** and summarised in **Table 6.69**. As shown, most of these developments are renewable energy projects.



6.23 - State Significant Developments in Proximity to the Project

The Plains Solar Farm EIS

Engie

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TABLE 6.69 PROXIMATE SSD WITH CUMULATIVE POTENTIAL

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
Wind Energy Developments								
The Plains Wind Farm *(In Planning (Prepare EIS)*	• Nominal generating capacity of 1,350 MW • Up to 188 WTGs, ancillary infrastructure. • Peak construction workforce: up to 700 FTE employees • Operational workforce: up to 46 FTE employees • Temporary workers accommodation, located onsite.	0 km (overlaps with the Project Area)	• Construction estimated to commence in 2027. • Construction period approximately 3 years. • Commissioning expected 2029.	• Construction may overlap. • Traffic generated from both projects may interact along Cobb Highway and/or Sturt Highway.	• Plan to connect to existing 220 kV transmission line (TransGrid) or the new Project EnergyConnect.	• Construction may overlap. • Minor cumulative construction noise impacts associated with use of construction machinery, vehicle movements etc. • Cumulative operational noise sources include substation, BESS, wind turbines. • Cumulative noise impacts will be managed through staging and a construction management plan.	• 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 unimpacted by the project, the impacts on agriculture would be low. • Cumulative impact 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.	6.5 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 and/or Sturt Highway.	• Plans to connect to new Project EnergyConnect.	• Cumulative noise impacts are not anticipated relating to operations and on-site construction activities. • May be some cumulative construction traffic related noise; however, this is expected to be minor.	• 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.

[11] *Indicative direct-line distances from the Project boundary.*

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
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.	4.5 km south	• 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 Sturt 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 new 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. • Unlikely that both projects will be visible within the Study Area due to the distance between the projects. • 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.
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.	33 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 the new 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.
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.	54 km west	• Construction expected to commence Q4 2024. • Construction period about 23 to 27 months. • Commissioning expected Q4 2026.	• The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to existing Darlington Point-Balranald 220 kV Transmission line, or the new Project EnergyConnect.	Nil	Nil	• 59 km from the Project and currently used for sheep grazing. • Small loss of agricultural production. • Cumulative impact is expected to be negligible to minor.

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
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 . • Workforce accommodation is expected to rely on available rental, motel and other accommodation in surrounding townships and regional centres.	35 km southeast	• Construction expected to commence 2025. • Construction period about 36 months. • Commissioning expected 2028.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to the existing overhead 132 kV (TransGrid) transmission line.	Nil	Nil	• 70 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. • 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.	62 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. • The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• 72 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.
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.	50 km southeast	• Construction expected to commence 2024-2025. • Construction period about 36 months. • Commissioning expected 2028.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to Project EnergyConnect.	Nil	Nil	• 72 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.

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
Wilan Wind Farm (In Planning (Prepare EIS)	• Nominal generating capacity of up to 800 MW. • 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.	70 km west	• Construction expected to commence early 2025. • Construction period about 24 to 30 months. • Commissioning expected 2027-2028.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to the new Project EnergyConnect.	Nil	Nil	• 74 km from the Project and is mainly used for grazing with some areas of dryland and irrigated crops. • Negligible impact to these activities once the project is in operation. • Cumulative impact expected to be negligible.
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.	104 km west	• No current information available regarding construction.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Sturt Highway.	• 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								
Hay Solar Farm *(Approved - December 2017)*	• Generating capacity 110 MW. • 300,000 panels. • Area across 660 ha. • Currently under construction. • 150 FTE during peak construction and between 2 and 5 FTE during operation.	28 km	• 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.

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
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.	11 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 Sturt 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 new 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. • Small loss of area of agricultural production. • Cumulative impact expected to be minor.
Keri Keri Solar Farm *(In Planning (Prepare EIS)*	• Generating capacity 400 MW. • BESS and ancillary infrastructure. • Peak construction workforce of 300 FTE. • Temporary workforce accommodation to be investigated.	70 km west	• Construction expected to commence in 2024-2025. • Construction period about18-24 months including commissioning.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Sturt Highway.	• Plans to connect to new 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. • 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.	76 km south	• Construction period about 18 months. • Construction has not commenced.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact within the township of Deniliquin.	• Plans to connects via TransGrid 132 kV transmission line.	Nil	Nil	• 75 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.
Southdown Solar Farm *(In Planning (Prepare EIS)*	• Generating capacity 70 MW. • Associated infrastructure. • Workforce of up to 200 FTE during construction.	89 km south	• Construction expected to commence in 2022. • Construction period about 15 months.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact along Cobb Highway.	• Plans to connect to 66kV transmission line, operated by Essential Energy.	Nil	Nil	• 90 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.

Project	Description	Distance (km) [11]	Construction Period / Timeline	Potential Cumulative Impacts				
				Access (Traffic)	Grid Connection	Amenity- Noise	Amenity - Visual	Agriculture
Tarleigh Park Solar Farm *(Approved -May 2018)*	• Generating capacity 90 MW. • Associated infrastructure. • Workforce of approximately 150 FTE during construction and 3-4 FTE during operations.	93 km south	• Construction period about 15 months. • Construction has not commenced.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact within the township of Deniliquin.	• Plans to connect to TransGrid 132 kV transmission line.	Nil	Nil	• 95 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.
Sunraysia Solar Farm *(Operational)*	• Generating capacity 200 MW. • Ancillary infrastructure. • Peak construction workforce of 250 FTE and operational workforce of at least 2 FTE.	112 km west	• Currently operational.	Nil	• It is connected to the overhead 220 kV transmission line.	Nil	Nil	Nil
Limondale Solar Farm *(Operational)*	• Generating capacity 250 MW. • BESS and ancillary infrastructure. • Peak construction workforce of 40 FTE and operational workforce of 20 FTE.	107 km west	• Currently operational. • Additional construction expected to commence between Q3 2022 and Q4 2024. • Construction period about 15 months.	Nil	• Plans to connect to the TransGrid 220 kV electricity distribution network that originates at the Balranald Substation.	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 to construction activities.	Nil	• Much of Project EnergyConnect is distant from the Project and would impact different parts of NSW. • Cumulative impact is expected to be minor.
Deniliquin East Battery Energy Storage System	• 100 MW / 200 MW battery energy storage facility with associated infrastructure	85 km south	• Unknown construction start.	• Potential for construction of both projects to overlap. • The traffic generated from both projects may interact within the township of Deniliquin.	• Plans to connect to the Deniliquin Substation	• Low risk of cumulative noise impacts relating to operational noise sources of substation and BESS.	Nil.	• 85 km from the Project and small impact adjacent to existing electricity infrastructure. • Cumulative impact is expected to be minor.

6.17.2 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 align with the relevant objectives of the:

- United Nations Sustainable Development Goals;
- UNFCCC COP26 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.

6.17.3 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.

6.17.3.1 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, consultation between Engie and Hay LALC in August 2023 resulted in 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.

6.17.3.2 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 Wind Farm and Project EnergyConnect (NSW – Eastern Section) located within the Project Area, as shown in **Figure 6.23**.

The key noise sources covered by the NPI are ancillary infrastructure such as substations and BESSs. The cumulative noise assessment considered:

- The Plains Wind Farm: Operation noise from wind farms is assessed under the 'NSW Wind Energy: Noise Assessment Bulletin', different to that of the NPI and as such have not been considered in the noise from the Project.
- 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 10 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.

6.17.3.3 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.

Of the SSDs listed in **Table 6.69**, Plains Wind Farm, Pottinger Solar Farm and Wind Farm, and Bullawah Wind Farm would have the potential to be visible at the same time as the Project. 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.

6.17.3.4 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.

For the relevant future wind farm projects, the cumulative amount of agricultural land that will be lost is small in relation to the total area of the respective project sites, and even smaller relative to the total area of agricultural land in the region. Consequently, the effect on regional agricultural production would be negligible to minor. There are also expected to be no impacts to the number of people employed in the agricultural sector.

Solar 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 negligible to 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.

6.17.3.5 CUMULATIVE FLOODING IMPACTS

A flooding investigation was undertaken for The Plains Wind Farm, which demonstrated that the project would have only a localised impact on both riverine and local catchment type flooding. Provided both projects implement appropriate mitigation and management measures (refer **Section 6.8**), it is expected that their construction would not result in adverse flooding conditions within or outside the Project Area.

6.17.3.6 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 6.69**). 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 and The Plains Wind Farm projects would have the potential to generate additional vehicle movements along Cobb Highway, at approximately 35 vph and 70 vph, respectively. 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. **Section 6.17.3.6** has also included allowance for the cumulative traffic movements on the broader road network generated by other SSD projects in the surroundings.

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 is able to 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.

6.17.3.7 CUMULATIVE ECONOMIC IMPACTS

The cumulative impacts of the Project together with other relevant future SSDs on the economic activity include:

- Generate large demand for a suitably qualified construction workforce in the region and surrounds, which can help address the jobs growth imbalance between Australia's biggest cities and regions;
- Provide opportunities for the existing and future regional workforces, attracting middle skilled and high skilled workers and families to regional areas, reducing outmigration of the regional workforce to look for employment in cities, 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; and
- Rise 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.

6.17.3.8 CUMULATIVE SOCIAL IMPACTS

Solar 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: Several 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 6.67**); 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.

6.18 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**. A such, the irregular shape of the Project Area and Development Footprint is 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 Solar Farm Scoping Report (ERM, 2022)) is shown in **Figure 2.5** and has included:

- A reduction of the Project Area from 3,181 ha (including optional solar area) to 1,129.62 ha, largely to avoid impacts to biodiversity values, including remnant woodland vegetation, TECs and Important Mapped Areas for the Plains-wanderer;
- A reduction in the Development Footprint from 3,181 ha (including optional solar area) to 928.07 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;
- Consideration of minor operational constraints on PV module tracking algorithms to avoid glint and glare impacts, albeit during rare scenarios; and
- The location of the solar farm considered proximity to the Cobb Highway and community feedback on having the solar farm located further than 2 km from the highway.

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;
- Improve security and reliability of the electricity system in the NEM, by providing additional energy generation of approximately 400 MWn, and dispatchable energy storage of 400 MW / 1.6 GWh, 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 150 FTE jobs during construction and 17 direct and indirect operational jobs in the region and 46 direct and indirect operational jobs in NSW;
- Generate economic stimulus to the regional and NSW economy of:
    - During construction: Up to $89 million in direct and indirect wages to the regional economy and up to $165 million to NSW economy; and
    - During operations: Up to $15 million in direct and indirect wages to the regional economy and up to $24 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 neighbourhood-level initiatives that have strong community support;
- Provide 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, as described in **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 5.5**).

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 a distinct lack of remnant treed vegetation. The Project layout has been designed to maximise the use of existing disturbed areas and to avoid and/or minimise impacts to identified biodiversity and Aboriginal sites and surrounding receivers. Progressive design iterations for the solar farm, BESS, 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 relevant technical assessments have assessed the potential impacts of the Project to various environmental aspects, these are 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*) – 0.19 ha; • A Spear-grass (*Austrostipa wakoolica)* – 109.6 ha; • Winged Pepper-cress (*Lepidium monoplocoides*) – 9.37 ha; • Chariot Wheels (*Maireana cheelii*) – 871.04 ha; • Mossgiel Daisy (*Brachyscome papillosa)* – 874.63 ha; • A burr-daisy (*Calotis moorei*) – 1.51 ha; • Lanky Buttons (*Leptorhynchos orientalis*,) – 32.10 ha; • Turnip Copperburr (*Sclerolaena napiformis)* – 29.70 ha; • Slender Darling Pea (*Swainsona murrayana)* – 874.63 ha; • Red Darling Pea (*Swainsona plagiotropis)* – 29.70 ha; and • Silky Swainson-pea (*Swainsona sericea)* – 29.70 ha. Two (2) of the above species; Plains-wanderer and A Burr-daisy 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.
Aboriginal Cultural Heritage	Avoidance of Aboriginal cultural heritage values have been considered in the Project refinement process. Two (2) previously registered Aboriginal sites were within the Project Area. The survey undertaken as part of the ACHAR (**Appendix H**) identified 16 new Aboriginal sites with similar features within the Project Area. Based on the Development Footprint potential harm to 12 of these Aboriginal sites were 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.

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 one (1) associated dwelling within 4 km of the Project and no viewpoints from public roads and rail lines within 2.5 km, being the 16 Mile Gums Rest Area the closest public viewpoint located 11 km of the Project Area. A photomontage was prepared for this public viewpoint, which was identified as 'low' visual impact. This is primarily due to distance, existing topographic differences and intervening vegetation between 16 Mile Gums Rest Area and the Project. However, there is a potential cumulative visual impact of the project with other nearby SSDs, including Plains Wind 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.
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 $270,000 over a 20-month construction period and during operations it is approximately $61,600 per annum with no grazing on the solar panel area, and $3,300 per annum with full grazing on solar panel area. 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 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 the footings and the erection of the internal transmission line towers which are located within the inbank area of Curtains Creek. While during operations the impact is limited to that floodwater would have on these 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.
Traffic	A new site access via Cobb Highway and West Burrabogie Road have been designed to allow access to the Project Area. The intersection of Cobb Highway and West Burrabogie Road and the access to the BESS will be provided with a BAR and BAL treatments 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.
Preliminary Hazards	The qualitative review of the potential incidents of the Project indicates that offsite impacts would not be expected to occur. Hence it is concluded that the risks at the Project boundary are not considered to exceed the acceptable risk criteria.

Aspects	Environmental Impacts
Bushfire	Although the Project is not located within a bushfire prone landscape and there is a minimal risk of solar farm 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.
Aviation, Glint and Glare	The solar glare analysis determined the Project will have no aviation impact. While for non-aviation receivers, considering the instant backtracking configuration (worst case scenario) is used, only one associated structure (not a residence) may experience a minimal amount of green glare (15 minutes annually) and one perimeter road (private access road only) adjacent to the Project site may experience a minimal amount of yellow glare (165 minutes annually). Therefore, no mitigation is required. There are no public access roads (Crown owned) or residences impacted by solar glare.
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. 18-months), the Project will generate around 150 FTE jobs and the impact on the regional economy is estimated at up to $90 M in direct and indirect output, $33 M in direct and indirect value added, $16 M in direct and indirect household income, and 150 direct jobs and 81 indirect jobs. Further, the construction impacts of the Project on the NSW economy are estimated at up to $165 M in direct and indirect output, $70 M in direct and indirect value added, $45 M in direct and indirect household income, and 150 direct jobs and 325 indirect jobs. The Project will create demand for regional labour resources and regional inputs to production. No impacts of the Project on wage or price increases or production shortages are anticipated.

During operations, the Project will create a total annual contribution to the regional economy of $15 M in direct and indirect output, $4 M in direct and indirect value added, $2 M in direct and indirect household income, and 17 direct and indirect jobs. In the NSW economy, the Project is estimated to make a total annual contribution of $25 M in direct and indirect output, $10 M in direct and indirect value added, $5 M in direct and indirect household income, and 46 direct and 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 6.17.3.7**.

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 Q1 2024. Funds will be awarded to local projects and programs that are successful in the applications/proposal process (refer to **Section 2.4.2**). 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**;
- 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. 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 solar farm, BESS and associated infrastructure 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 185,453 CO_2^{e-} of GHG annually, which is an action against climate change that will benefit future generations.

Additionally, 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. The Project will implement agrisolar activities which 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, solar 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 155 FTE jobs during construction and 17 FTE direct and indirect 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 PV solar facility with a capacity of up to 400 MWn, BESS with a capacity of 400 MW / 1.6 GWh 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	
Project	The Plains Solar Farm
Applicant	Engie Australia Pty Ltd
Project Area	The 1,129.62 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	The 928.07 ha development footprint represents the expected impacts associated with the construction and operation of the Project
Temporary Disturbance	The area of land that will be temporarily disturbed during construction of the Project, and later rehabilitated.
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 928.06 ha
Acts	
ALRA 1984	New South Wales Aboriginal Land Rights Act 1984
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
BFRMP	Bush Fire Risk Management Plan
CEMP	Construction Environmental Management Plan
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan
ESCP	Erosion and Sediment Control Plan
ESCP	Erosion and Sediment Control Plan
LEP	Local Employment Plan

Name	Description
NMP	Noise Management 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
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
CIA Guidelines	Cumulative Impact Assessment Guidelines for State Significant Projects 2021
Consultation Requirements	Aboriginal Cultural Heritage Consultation Requirements for Applicants 2010
Engagement Guidelines	Undertaking Engagement Guidelines for State Significant Projects 2022
EPBC Regulations	Environment Protection and Biodiversity Conservation Regulations 2000
FRMM	Flood Risk Management Manual
HIPAP	Hazardous Industry Planning Advisory Paper
HIPAP 4	Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning'
HIPAP 6	Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'
ICNG	Interim Construction Noise Guidelines
ICNIRP	International Commission on Non-Ionizing Radiation Projection Guidelines 2010
Landscape and Visual Technical Supplement	Technical Supplement - Landscape and Visual Impact Assessment
LUCRA Guide	Land Use Conflict Risk Assessment Guide
Noise Bulletin	Wind Energy: Noise Assessment Bulletin (2016)
NPI	Noise Policy for Industry (2017)
PBP 2019	Planning for Bushfire Protection 2019

Name	Description
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SIA Guidelines	Social Impact Assessment Guideline for State Significant Projects 2023
SIA Technical Supplement	Technical Supplement: Social Impact Assessment Guideline for State Significant Projects
Solar Guidelines	Large Scale Solar Energy Guidelines 2022
SRLUP	Strategic Regional Land Use Policy 2011
T&I SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
WARR Strategy	NSW EPA Waste Avoidance and Resource Recovery Strategy 2014-2021
WHS Regulation	Work Health and Safety Regulation 2017
Abbreviations - General	
°C	Celsius degrees
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEMO	Australian Energy Market Operator's
AEP	Annual Exceedance Probability
AGA	Aviation Impact and Solar Glare Analysis
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AIA	Agricultural Impact Assessment
AIP	Aeronautical Information Package
ALA	Aircraft Landing Area
ANZECC	Australian and New Zealand Environment Conservation Council
ANZSIC	Australian and New Zealand Industry Classification
APZ	Asset Protection Zone
ARR	Australian Rainfall and Runoff
AS	Australian Standard
ASC	Australian Soil Classification
AV	Articulated Vehicle
BAL	Basic Left Turn
BAM	Biodiversity Assessment Method
BAM Plots	Vegetation Integrity Plots

Name	Description
BAR	Basic Right Turn
BCS	Biodiversity and Conservation and Science, part of the Department of Climate Change, Energy, the Environment and Water, NSW
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BFMC	Bushfire Management Committee
Blue Book	Managing Urban Stormwater: Soils and Construction- Volume 1 (Landcom, 2004)
BOM	Bureau of Meteorology
BOS	NSW Biodiversity Offset Scheme
BSAL	Biophysical Strategic Agricultural Land
BUS	Bird Utilisation Surveys
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation
CCC	Community Consultative Committee
CEF	Community Enhancement Fund
CIA	Cumulative Impact Assessment
CIV	Capital Investment Value
COP26	UNFCCC Conference of Parties 26
CPI	Consumer Price Index
dB	Decibel
dB(A)	A-weighted Decibels
DCCEEW	Department of Climate Change, Energy, the Environment and Water, NSW
DCP	Development Control Plan
DGs	Dangerous Goods
DGV	Default Guideline Values
DIDO	Drive-in drive-out
DP	Deposited Plan
DPE	former Department of Planning and Environment, now Department of Planning, Housing and Infrastructure, NSW
DPHI	Department of Planning, Housing and Infrastructure, NSW (formerly Department of Planning and Environment)
DSE	Dry Sheep Equivalent
EDM	Electronic Direct Mail
EEAP	Energy Efficiency Action Plan

Name	Description
EL	Exploration Licence
ELF	Extremely Low Frequency
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
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 Behaviours Index
FIFO	Fly-in Fly-out
FPL	Flood Planning Level
FRNSW	Fire and Rescue NSW
FTE	Full Time Equivalent
GDE	Groundwater Dependent Ecosystems
GHG	Greenhouse Gas
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

Name	Description
IBRA	Interim Biogeographic Regionalism for Australia
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEC	International Electrotechnical Commission
IO	Input-output
IPA	Inner Protection Area
ISP	Integrated System Plan
km	Kilometre
km2	Square Kilometres
kV	Kilovolt
L	Litres
LCZ	Landscape Character Units
LFP	Lithium-Ion phosphate
LGA	Local Government Area
LGCs	Large-scale Generation Certificates
LiPF6	lithium hexafluorophosphate
LLS	Local Land Services
LoS	Level of Service
LRET	Large-scale Renewable Energy Target
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
MEG	Mining, Exploration and Geoscience
mG	Milligauss
ML	megalitre
mm	millimetres
MNES	Matters of National Environmental Significance
MRV	Medium Rigid Trucks
Mt-CO2e pa	million tonnes CO2 equivalent per annum
MW	Megawatt
MWh	Megawatt hour
MWn	Megawatt nominal
NAD	Non-associated Development

Name	Description
NBSP	Neighbour Benefit Sharing Program
NEM	National Electricity Market
NIA	Noise Impact Assessment
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
NVIA	Noise and Vibration Impact Assessment
NVR	Draft Native Vegetation Regulatory Map
O&M	Operation and Maintenance
OSOM	Oversize and Overmass
PAD	Potential Archaeological Deposits
PANL	Project Amenity Noise Level
PBA	Prelimilary Biodiversity Assessment
PCT	Plant Community Type
PCU	Power Conditioning Unit
PHA	Preliminary Hazard Analysis
PINL	Project Intrusiveness Noise Level
PMF	probably maximum flood
PNTL	Project Noise Trigger Level
PREP	Plains Renewable Energy Project
PV	photovoltaic
PVIA	Preliminary Visual Impact Assessment
RAMJO	Riverina & Murray Joint Organization
RAP	Registered Aboriginal Party
RAV	Restricted Access Vehicles
RBL	Rating Background Level
RDA	Regional Development Australia
REAP	NSW Renewable Energy Action Plan
Regional Plan	Riverina Murray Regional Plan 2041

Name	Description
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RIV	Riverina IBRA Bioregion
RIV02	Murrrumbidgee IBRA subregion
RNE	Register of the National Estate
Roadmap	NSW Electricity Infrastructure Roadmap 2020
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
SEIFA	Socio-Economic Index for Areas
SEPP	State Environmental Planning Policy
SIA	Social Impact Assessment
SISD	Safe Intersection Sight Distance
SSAL	State Significant Agricultural Land
SSD	State Significant Development
STE	State and Territory
t-CO2e pa	tonnes CO2 equivalent per annum
TEC	Threatened Ecological Communities
TfNSW	Transport for NSW
This EIS	Environmental Impact Statement (not "the EIS")
TIA	Traffic Impact Assessment
TRS	Travelling Reserve Stock
UCL	Urban Centres and Localities
UNFCCC	United Nations Framework Convention on Climate Change
Vic	Victoria
VP	View Point
VPA	Voluntary Planning Agreement
vpd	Vehicles Per Day
vph	Vehicles per hour
VRE	Variable Renewable Energy
WAL	Water Access Licence

Name	Description
WF	Wind Farm
WQO	Water Quality Objective
WSP	Water Sharing Plans
WTG	Wind Turbine Generator
ZVI	Zone of Visual Influence
ZVI	Zone of Visual Influence

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APPENDIX A REGULATORY REQUIREMENTS AND WHERE ADDRESSED

TABLE A-9.1 SEARS (SSD- 51219280) AND WHERE ADDRESSED

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 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'.	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 staging of the development; • A high quality site plan at an adequate scale showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process); • A high-quality detailed constraints map identifying the key environmental and other land use constraints that have informed the final design of the development;	Section 3 Appendix F
	A strategic justification of the development focusing on site selection and the suitability of the proposed site with respect to potential land use conflicts with existing and future surrounding land uses (including existing land use, other proposed or approved solar and major projects, rural/residential development, Crown lands within and adjacent to the project site and subdivision potential) having regard to the Solar Guideline;	Section 2
	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, taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice including the 'Solar Guideline and Cumulative Impact Assessment Guideline' (DPIE, 2021); • A description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development (including draft management plans for specific issues as identified below); and	Section 6

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 December 2022)	Where Addressed
	• A description of the measures that would be implemented to monitor and report on the environmental performance of the development;	
	A consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS;	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, including the objects of the Act and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development; • The suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; and • Feasible alternatives to the development and its key components (including opportunities for shared infrastructure with proposed developments in the region), and the consequences of not carrying out the development; and	Section 4 Appendix C
	A detailed consideration of the capability of the project to contribute 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
	The EIS must 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; and	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 Q
	The development application must be accompanied by the consent of the owner/s of the land (as required in Section 23(1) of the 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

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 December 2022)	Where Addressed
Biodiversity	The EIS must include the following: • An assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the *Biodiversity Conservation Act 2016 (NSW)* (BC Act), 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 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; • A cumulative impact assessment of biodiversity values in the region from nearby developments; and • If an offset is required, details of the measures proposed to address the offset obligations.	Section 6.2 Appendix G
Heritage	The EIS must include the following: • An assessment of the impact to Aboriginal cultural heritage items (cultural and archaeological) in accordance with the 'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW' (OEH, 2011) and the 'Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW' (DECCW, 2010), including results of archaeological test excavations (if required); • Provide 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 Applicants* (DECCW, 2010); and • Assess the impact to historic heritage having regard to the NSW Heritage Manual.	Section 6.3 Appendix H
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, having regard to the Solar Guideline;	Section 2 Section 4
	An assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: • Flood prone land, irrigated lands, Crown lands, travelling stock routes, mining, quarries, mineral or petroleum rights;	Section 2.4 Section 6.7 Section 6.8 Appendix K

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 December 2022)	Where Addressed
	• A soil survey to determine the soil characteristics and consider the potential for erosion to occur; and • A cumulative impact assessment of nearby developments;	
	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); and • An assessment of the agricultural impacts in accordance with the Solar Guideline.	Section 3.7 Section 6.7 Appendix K
Landscape and Visual	The EIS must include the following: A landscape and visual impact assessment, prepared in accordance with the Solar Guideline and the 'Technical Supplement – Landscape and Visual Impact Assessment'; A detailed assessment of the likely visual impacts (including night lighting) of all components of the project on surrounding residences (including approved developments, lodged development applications and dwelling entitlements), and key locations, scenic or significant vistas and road corridors in the public domain; and Details of measures to mitigate and/or manage potential impacts (including a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners).	Section 6.6 Appendix J
Glint and Glare	The EIS must provide a glint and glare assessment prepared in accordance with the Solar Guideline.	Section 6.12 Appendix J Appendix O
Noise	The EIS must include an assessment of: • The construction noise impacts of the development in accordance with the 'Interim Construction Noise Guideline' (ICNG); • The operational noise impacts in accordance with the 'NSW Noise Policy for Industry' (2017); • The cumulative noise impacts (considering other developments in the area); and • A draft noise management plan if the assessment shows construction noise is likely to exceed applicable criteria;	Section 6.5 Appendix I

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 December 2022)	Where Addressed
Transport	The EIS must include the following: • An assessment of the peak and average traffic generation, including over-dimensional vehicles/heavy vehicles and construction worker transportation; • An assessment of the likely transport impacts to the site access route(s), site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance; • 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 heavy vehicle and over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road authorities;	Section 6.9 Appendix M
Water	The EIS must include the following: • An assessment of the likely impacts of the development (including flooding and flood modelling) on surrounding watercourses (including their Strahler Stream Order) and groundwater resources and measures proposed to monitor, reduce and mitigate these impacts including water management issues having regard to the Solar Guideline; • A site water balance for the development and details of water requirements and supply arrangements for construction and operation; • Where the project involves works within 40 metres of any river, lake or wetlands (collectively waterfront land), identification of 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' (DPE, 2013); and • A description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).	Section 6.8
Hazards	The EIS must include an assessment of the following: • An assessment of potential hazards and risks including but not limited to fires, spontaneous ignition, electromagnetic fields or the proposed grid connection infrastructure against the 'International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields';	Section 6.10 Appendix N

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 December 2022)	Where Addressed
	• Potential hazards and risks associated with bushfires /use of bushfire prone land including the risks that a solar farm would cause bush fire and demonstrate compliance with *Planning for Bush Fire Protection 2019*.	Section 6.11 Appendix P
	• A preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards); and	
	• Battery Energy Storage System - a Preliminary Hazard Analysis (PHA) prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to on-site and off-site receivers to prevent fire propagation and compliance with Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning (DoP, 2011).	Section 6.10 Appendix N
Social Impact	The EIS must include an assessment of the social impacts in accordance with 'Social Impact Assessment Guideline' (DPIE, 2021) and consideration of construction workforce accommodation.	Section 6.16 Appendix R
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 and provide details of any proposed voluntary benefit sharing programs in accordance with the Solar Guideline.	Section 6.15 Appendix Q
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; and Provide a waste management plan prepared in accordance with the Solar Guideline.	Section 6.14
Plans and Documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Part 8 of the 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 and proposal.	Appendix F

Issues	Secretary's Environmental Assessment Requirements (SSD-51219280, dated 23 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/R apid-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	
Consultation	During the preparation of the EIS, you must: • Consult with the relevant local, State or Commonwealth Government authorities, infrastructure and service providers, community groups, affected landowners and any exploration licence and/or mineral title holders; • Undertake detailed consultation with affected landowners surrounding the development, Hay Shire Council, Edward River Council and relevant government agencies;	Section 5 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, an 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-9.2 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-36651552)		
Biodiversity	Biodiversity impacts related to the proposed (development/project) are to be assessed on accordance with Section 7.9 of the Biodiversity Conservation Act 2017, the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the *Biodiversity Conservation Act 2016* (s6.12), *Biodiversity Conservation Regulation 2017* (s6.8) and Biodiversity Assessment Method 2020, unless Biodiversity and Conservation Division and Planning and Assessment Group determine that the proposed development is not likely to have any significant impacts on biodiversity values.	Appendix G Biodiversity Development Assessment Report
	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 Biodiversity Assessment Method 2020.	
	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 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.*	

Issues	Requirements	Where Addressed
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.	Appendix L
	The EIS must describe the 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 project (including fill) on the flood behaviour under the following scenarios: • Current flood behaviour for a range of design events as identified 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.	
	Modelling in the EIS must consider and document: • Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies. • 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 project 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 of 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.	

Issues	Requirements	Where Addressed
	• 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.	
DPI - Agriculture		
Consideration for impacts to agricultural resources and land	The EIS must include rehabilitation works involving groundcover management should be a priority during and post Construction; A decommissioning management plan with actions to return the land capability to its pre-existing agricultural capacity;	Appendix K Note: No workers accommodation compound is proposed as part do the solar farm application.
	A Land Use Conflict Risk Assessment (LUCRA) should be undertaken in relation to land management issues during and post construction.	
	Although the scoping report does not include any detail on the proposed worker accommodation a site has been identified and mapped. As such specific justification (including a LUCRA) is required for any proposed worker accommodation/extra dwellings on RU1 Primary Production zoned lands remote from towns or villages due to the potential for land use conflict. Benefits to the local community would be enhanced by providing such accommodation in or adjacent to town or village centres which have suitable infrastructure and utilities.	
Biosecurity	The EIS must include 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 risks to livestock, pastures, irrigated crops and the community.	Appendix G Appendix K

Issues	Requirements	Where Addressed
DPE Water and the Natural Resources Access Regulator (NRAR)		
Water Resources	The EIS should include a detailed water balance;	Section 6.8
	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 Applicant.	
	A description of groundwater conditions that provides an understanding of groundwater level across the site under a range of wet and dry conditions;	
	Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landowner 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;	
	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); and	
	Assessment of project against relevant policies and guidelines.	

Issues	Requirements	Where Addressed
Edward River Council		
Project Description	The EIS must provide specific detail on the source location of the construction materials and proposed haulage 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 3.4
	Provide information regarding the commissioning and decommissioning of the Construction Compound. Additional information is required to understand the scale of the sites, the servicing arrangements and the extent of shared infrastructure with the Plains Wind farm. Details of the proposed actions for returning the sites back to pre-development conditions, at the completion of use as a operational solar farm. Details of the decommissioning of the solar farm should ensure that the site is left clear of obsolete infrastructure.	Section 3.6
	Details of potential employment and worker accommodation opportunities for surrounding villages and towns as a result of the development and details of any additional accommodation proposed on site.	Section 3.4.2
	Whilst it is noted that the development is not on Bushfire Prone Land, it adjoins BFPL within the Edward River Council area. Of specific concern is the large expanses of grassland and the remoteness of this area. 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.	Appendix P
	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.	Appendix G
DPE Crown Lands		
Regulatory Context	As per Appendix A – Project Layout Figures (Sheets 1-3) of the Plains Solar Farm Scoping Report, 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, the project layout figures, that internal transmission lines, solar panels, fencing and internal cabling may also be placed on or over Crown roads or land.	Section 4
	For use and access to Crown land The Department will need to be referenced, prior to any use or occupation of any Crown roads or land, during the assessment phase.	Section 4

Issues	Requirements	Where Addressed
	Authority to use, traverse, access or build infrastructure on Crown land is required under the Crown Land Management Act 2016 and/or the Roads Act 1993. It is recommended that the Applicant contact Crown Lands as early as possible to discuss and initiate the processes required to authorise the use of and/or access to Crown land. 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. Further information regarding land owner's consent for Crown land can be found at the following link: Landowner s Consent Landowner s consent application (nsw.gov.au).	
	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. Further information regarding Crown Roads and Enclosure permits can be found at the following link: Access Roads (nsw.gov.au) Enclosure Permits (nsw.gov.au) Long term it is recommended for the adjoining freehold owner to the Crown roads apply to close and purchase the Crown roads within the project area. Further information regarding Crown road purchase can be found at the following link: Purchase Crown Road (nsw.gov.au)	Section 4
	Lineal Infrastructure (e.g., Pipelines and/or Electricity Transmission lines) traversing Crown land/roads 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 Applicant will need to apply for easements. Information regarding the easement process is available at the below link: Easements (nsw.gov.au) As the easement process may be lengthy, it is also recommended that the Applicant 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:	Section 4

Issues	Requirements	Where Addressed
	Licences (nsw.gov.au).	
	Travelling Stock Reserves/Aboriginal Land Claims/Native Title The western solar farm access road passes through Lot 7304 DP 1149704, the eastern solar farm access road passes through Lots 7303 & 7304 DP1149704 and the optional solar farm access passes through Lot 7301 DP 1149704 all are Travelling Stock Reserves. These are managed by Riverina Local Land Services and are currently the subject of undetermined Aboriginal Land Claims (ALC). As such, concurrence 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: Aboriginal Land Claims (nsw.gov.au).	Section 4 Table 4.1
Fire and Rescue NSW (FRNSW)		
Stakeholder Engagement	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.	Appendix D Appendix P
New South Wales Rural Fire Service (NSW RFS)		
Bushfire	A bushfire assessment report shall be prepared which identifies the extent to which the proposed development conforms with or deviates from the relevant provisions of Planning for Bush Fire Protection 2019. The NSW Rural Fire Service advises that the Environmental Impact Statement 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 and the specific matters within section 8.3.5 - Wind and Solar Farms.	Appendix P
Transport for NSW		
Traffic Impact Assessment	The purpose of the Traffic Impact Assessment (TIA) is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project. The requested TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following: • Detailed plans identifying the proposed location of any:	Appendix M

Issues	Requirements	Where Addressed
	○ Project-related infrastructure within and outside of the project boundary. ○ Transmission line infrastructure, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves. ○ Any connection or access to classified roads. • The Scoping Report identifies that ancillary infrastructure and temporary facilities are to be provided onsite including (but not limited to) concrete batching facilities. The TIA should identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials.	
	Cumulative impacts: Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes. An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: • The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects. • The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. • Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development. Consideration should be given to identifying the accommodation (and associated transport) needs and facilities available within the local region, to service the proposed project's staff, in addition to understanding the cumulative impacts of concurrent accommodation (and transport) requirements of staff from other projects.	Section 6.17 Appendix M
	Heavy vehicle and OSOM routes: • Identify the return routes for OSOMs. • National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAV MAP) are to be utilised for the heavy vehicle routes for the proposed development. • The TIA is required to include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of pull-over bays / rest areas along the OSOM routes.	Appendix M
	Project schedule: • Hours and days of work, number of shifts and start and end times, • Phases and stages of the project, including construction, operation and decommissioning	Appendix M
	Traffic volumes including: • Existing background traffic,	Appendix M

Issues	Requirements	Where Addressed
	• Project-related traffic for each phase or stage of the project, • Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.	
	Traffic characteristics including: • Number and ratio of heavy vehicles to light vehicles, • Peak times for existing traffic, • Peak times for project-related traffic including commuter periods, • Proposed hours for transportation and haulage, • Interactions between existing and project-related traffic.	Appendix M
	Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s.	Appendix M
	Identify the height, weight and the origins, destinations, and routes for: • Commuter (employee and contractor) light vehicles and pool vehicles, • Heavy (haulage) vehicles, • OSOM vehicles (identify the height, weight, and width of the largest OSOM components, the route they are travelling from the port and any pinch points such as bridges or other infrastructure within the road corridor that would require modification)	Appendix M
	Road safety assessment of key haulage route/s. Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	Appendix M
	Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary concept drawings should be submitted with the SSD application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with Austroads Guide to Road Design for the existing posted speed limit, including provision of Safe Intersection Sight Distance (SISD). Note: The design needs to comply with TfNSW Strategic design requirements for DAs. To assist you in preparing the designs, please refer to link below: https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planningprinciples/strategic-design-fact-sheet-02-2022.pdf	Appendix M

Issues	Requirements	Where Addressed
	Consideration of the local climate conditions that may affect road safety during the life of the project (e.g., fog, wet and dry weather, icy road conditions).	Appendix M
	The layout of the internal road network, parking facilities and infrastructure.	Appendix M Appendix F
	Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail authority for rail corridors in the vicinity of the site and likely OSOM route is ARTC.	Appendix M
	Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	Appendix M
	Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	Appendix M
	Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.	Appendix M
Hay Shire Council		
Regulatory Context	To consider the proximity and impact on the Hay Aerodrome, located to the north of the proposed project. Council has plans to significantly upgrade and expand the aerodrome (we have a draft Masterplan currently on public exhibition - on our website). We request any impact on the operation of the aerodrome and safe passage of aircraft to be considered.	Appendix O

TABLE A-9.3 LARGE-SCALE SOLAR ENERGY GUIDELINE 2022 AND WHERE ADDRESSED

Issues	Issue	Where Addressed
Community and stakeholder engagement	Applicants must undertake meaningful engagement with stakeholders throughout the environmental impact assessment process and during the construction and operation phases of a project. This consultation must be undertaken in accordance with the 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2021). Applicants are required to: • Provide clear and concise information to the community and stakeholders about projects and their impacts; • Implement activities that encourage and facilitate public participation; • Report back on what was heard and what has or hasn't changed in response to this feedback and why.	Section 5 Appendix D
	The community should be engaged as early as possible to identify potential opportunities and constraints associated with the proposed development. The applicant should identify the elements of the project and the environmental assessment that can be influenced or shaped by the community. These could relate to the design of the project, the characterisation of the area and/or the management and mitigation measures that can be implemented. Examples include: Positioning and siting of the project including any setbacks; Characterisation of the scenic quality and sensitivity of the landscape and viewpoints (see the technical supplement for landscape and visual impact assessment); Visual impacts including mitigation measures.	
	Applicants must also ensure that stakeholders are given the opportunity to participate in the engagement process in a meaningful way. Details of consultation activities undertaken with surrounding residents, community members, relevant authorities and councils should be clearly outlined in the EIS. This should include key matters raised and how feedback was considered and incorporated into the project.	
	Where multiple projects are being proposed in close proximity, applicants may consider conducting combined engagement activities to reduce consultation fatigue and provide greater transparency to the community.	
	Applicants should continue to engage with stakeholders after any development consent has been granted and must have an effective complaint handling system which ensures that community concerns are addressed in a timely manner.	Noted
Site selection	Applicants should undertake a 'constraints mapping' exercise that is informed by early engagement with local communities and councils. This should provide an overview of the key environmental and land use constraints on and around the project site.	Section 2.7 Figure 2.6

Issues	Issue	Where Addressed
	The constraints mapping exercise should include, but not necessarily be limited to: • Nearby residences (including those subject to any impact agreements – see Appendix B); • Rural villages and urban land; • Important agricultural land and soil capability (LSC) class of subject land and surrounding land; • Indigenous and non-indigenous heritage items and places of significance; • Threatened species, native vegetation (including grasses) and endangered ecological communities; • Watercourses; • Flood prone and bushfire prone land; • Existing infrastructure, including transmission infrastructure, airports, and roads; • Existing and approved solar energy developments in the area; • Land use zoning; • View lines of particular significance; • Existing potential visual screening. A final version of the constraints map should be included in the EIS.	
Assessment issues and requirements		
Landscape and visual impacts	This section should be read in conjunction with the supporting Technical supplement for landscape and visual impact assessment.	Section 6.6 Appendix J
	Key principles in determining the significance of impacts and any mitigation measures to reduce visual impacts: • The baseline character of the landscape must be determined through engagement with the community; • Applicants must consider landscape character and visual impacts early in the site selection and design process to minimise impacts and conflicts where possible; • Solar energy projects should be sited and designed to avoid areas with topographical constraints that would increase the visibility of a development; • Where solar energy projects are likely to result in moderate or high visual impacts, mitigation strategies must be adopted to reduce or manage impacts.	
	The applicant must prepare a landscape and visual impact assessment in accordance with the technical supplement which is described briefly below. <u>Landscape character assessment</u> This should be informed by a baseline analysis that establishes the existing character of the area and its sensitivity.	

Issues	Issue	Where Addressed
	It is important that the baseline analysis is prepared in consultation with the community, local council and affected landowners to ensure that landscape values and characteristics are accurately identified. This should be informed by a baseline analysis that establishes the existing character of the area and its sensitivity. It is important that the baseline analysis is prepared in consultation with the community, local council and affected landowners to ensure that landscape values and characteristics are accurately identified. <u>Visual impact assessment</u> An assessment must be completed for all viewpoints that would have the potential to experience moderate or high impacts. The technical supplement includes a preliminary assessment tool that identifies these viewpoints based on distance from the project and the relative height difference. The overall visual impact for each viewpoint must be determined by combining the visual magnitude of the proposed solar energy development and the visual sensitivity of the viewpoint, using the tools available in the technical supplement. These tools consider factors such as: • A view from a residence is more sensitive to change than from a local road where views are more intermittent and less frequent; • A view from a rural residence is more sensitive if it is from principal living spaces and the front and rear of the dwelling than from other areas; • A view is more sensitive to change if it has higher scenic qualities and more valued landscape features; • A distant solar energy development would have a lesser magnitude than one closer; • Magnitude is likely to be higher from areas overlooking a solar array as more of the project would be visible than if the viewer were at a similar elevation. Visual impacts must be assigned a rating from very low to high having regard to these considerations. Applicants must seek to avoid high impacts (unless the impacts can be justified) and ensure effective mitigation is provided for moderate impacts such as vegetation screening.	
Agricultural land use	Key principles in determining the significance of impacts and mitigation measures to reduce impact on agricultural land: • Applicants should consider the agricultural capability of the land during the site selection process; • Applicants should avoid siting solar energy projects on important agricultural land as far as possible; • Agricultural assessment should be proportionate to the quality of the land and the likely impacts of a project; • Mitigation strategies should be adopted to ensure that any significant impacts on agricultural land are minimised.	Section 6.7 Appendix K
	An agricultural impact assessment may be required for a large-scale solar energy project. Appendix A provides detailed guidance to assist applicants to determine the level and content of any agricultural assessment that may be required.	

Issues	Issue	Where Addressed
	The assessment must ensure that applicants, communities and consent authorities have a detailed understanding of: • The agricultural capability and productivity of land subject to the project site; • Potential impacts of the solar energy project on agricultural land and associated industries; • The ways in which potential impacts may be mitigated. If a large-scale solar energy project is located on or adjacent to important agricultural land, or located on moderate capability land (LSC class 4), the applicant must verify the agricultural quality and capability of the land. They should then use the results of this verification process (which includes completion of a soil survey) to design the layout of their project and avoid impacts on productive land. Once the capability of the land is verified, applicants may be required to undertake an assessment of the proposed layout. The triggers for, and level of assessment required, are summarised in Table 1 and explained in further detail in Appendix A.	
Infrastructure contributions	Large-scale solar energy development typically has limited impacts on local infrastructure with the exception of very specific impacts such as the requirement for road upgrades to facilitate site access. Specific impacts of this nature should be addressed through conditions of development consent rather than through local contribution mechanisms or planning agreements. Notwithstanding, a local contribution mechanism or planning agreement can be used if there is a link between the development and the infrastructure to be funded.	Section 2.6.3
Benefit sharing program	Sharing the financial and other benefits of a project can assist in building community support by ensuring that the project delivers positive, tangible and long term social and economic outcomes for the local community. Consequently, the NSW Government strongly supports benefit sharing programs, and will continue to investigate how benefits could be better coordinated for communities. However, benefit sharing programs are voluntary and there is no scheme requiring these programs to be implemented for major projects under the NSW planning system. It is up to applicants to design their own programs and/or enter into planning agreements with local councils to fund community programs and projects. The details of any benefit sharing program should be included in the EIS or be provided during the department's assessment process. They should: Be informed by consultation with the community or community representatives; Produce outcomes that align with the general values and priorities of the public; Have a positive, lasting and meaningful impact for the local community and protect the overall public interest; Be proportionate to the scale of the project and the level of change experienced by the community;	Section 2.6.2

Issues	Issue	Where Addressed
	Include public benefits that are not wholly unrelated to the development.	
	Community benefit sharing involves initiatives that benefit the community as a whole, not individual landowners. If the consent authority finds that a development would have significant impacts on a landowner, it will ensure there are appropriate measures in place to deal with these issues in the conditions of consent. These might include the requirement for vegetation screening or amendments to the design of a project.	Noted
	If benefit sharing will be administered through a planning agreement, that planning agreement must be prepared in accordance with the department's Practice Note on Planning Agreements (February 2021, or latest version). As a general guide, the total funding for benefit sharing (including planning agreements and any other programs facilitated by the applicant) should be between $200 and $300 per megawatt per annum (indexed to CPI) over the life of the development (e.g., until the project is decommissioned). Appropriate projects and initiatives for inclusion in a benefit sharing program might include: recurrent costs of infrastructure, services or facilities additional or better-quality open spaces, public facilities or infrastructure including upgrades to local parks, libraries, galleries, community centres, showgrounds, museums, active transport infrastructure sponsorship of community events (fundraising events, local produce markets, nature walks, community clean-up events, gardening days) or groups (local sporting clubs, biodiversity volunteering groups, community gardens) promotion of available employment opportunities including managing an online register where local contractors and suppliers can be updated on upcoming contract opportunities training programs for local community members for employment opportunities in maintenance, operation and community liaison aspects of projects initiatives delivered in partnership with local organisations including scholarship programs to enable local students to complete courses in specific fields (e.g., engineering, project management) installation or funding of installation for residential solar panels or solar PV facilities for neighbourhood community facilities offering neighbours and/or wider community a share in the equity of a project or other co-ownership arrangements others guide-to-benefit-sharing-options-for-renewable-energy-projects.pdf (cleanenergycouncil.org.au)	Section 2.4.2

Issues	Issue	Where Addressed
Private agreements	Assessment Requirements Where an agreement is in place between an applicant and a landowner/s, the affected residence will be considered an 'associated' residence in the assessment if it relates to the relevant impact/s. Where an agreement is not in place between an applicant and a landowner/s, the affected residence should be identified as 'non-associated' in the EIS as it relates to the relevant impact/s. Applicants should also identify the nature, extent and duration of any impacts covered by way of an agreement and other relevant information including the project elements covered by the agreement and relevant phases to which it relates (construction, operation and decommissioning). Applicants do not need to disclose any commercial terms of these agreements.	Section 2.6.1
Waste management	Key waste management principles: Construction waste from large-scale solar energy projects must be minimised and the use of reusable and recyclable materials should be prioritised where possible. Impacts on local waste management facilities must be minimised as far as practicable during construction, operation and decommissioning. Recycling of photovoltaic panels and associated equipment should be prioritised and maximised as far as possible to avoid landfill.	Section 6.14
	Applicants should clearly demonstrate how waste will be minimised at all stages of the development and how reuse and recycling will be optimised. The EIS must include: • Identification of waste types (including the appropriate waste classification) and estimates of waste expected to be generated at each stage of the project • Identification of end markets for waste materials generated at each stage of the project • Evidence from local councils or facilities that the identified waste classifications and volume can be accepted at the appropriate stage of the project's life cycle • Consideration of circular design principles and strategies to mitigate impacts and reduce waste generation throughout all stages of the project (such as using recycled, reusable and low-impact raw materials where possible) • End-of-life reuse, refurbishment and recycling strategies for PV panels and associated equipment that maximise high recovery methods.	
	The applicant should also consider appropriate mitigation measures that include: • Selecting manufacturers, distributors and installers of PV panels that are members of relevant product stewardship schemes	

Issues	Issue	Where Addressed
	• Selecting manufacturers and distributors of PV panels and associated infrastructure that minimise packaging and/or maximise the recyclable components of packaging • Separating waste streams on site prior to transport to waste management facilities • Ensuring all recyclable materials are sent to the appropriate recycling facilities and minimising waste sent to landfill • Consulting with local councils to ensure that impacts on local waste management facilities are minimised as far as practicable • Developing and implementing strategies that prioritise and maximise waste avoidance and reuse, including exploration of 'second-life' options • Selecting waste management providers that specialise in recycling end-of-life PV panels and associated infrastructure.	
Decommission and rehabilitation	The operational life of a large-scale energy project is likely to range between 20 to 30 years. Large-scale solar energy projects have the potential to operate for a long period of time if solar panels are refurbished regularly or upgraded over time. In most circumstances, the refurbishment of solar panels and infrastructure will not require a new DA or a modification to the existing consent, as refurbishment may be authorised by the terms of the existing consent. Decommissioning involves dismantling and removing solar panels, structures and ancillary infrastructure (cables, inverters, fencing) from the site and recycling, reusing or disposing materials and waste products, and returning the site to its pre-existing use and LSC Class. It also involves disconnecting the development from the electricity network.	Noted
	Decommissioning and rehabilitation principles: The land on which a large-scale solar energy project and supporting infrastructure is developed must be returned to pre-existing use if the project is decommissioned. If operations cease, infrastructure (including underground infrastructure) should be removed unless there is significant justification for retaining it. Land must be rehabilitated and restored to pre-existing use, including the pre-existing LSC class, if previously used for agricultural purposes. The owner or operator of a solar energy project should be responsible for decommissioning and rehabilitation, and this should be reflected in an agreement with the host landowner.	Noted
	EIS must include: • Applicants must identify the decommissioning and rehabilitation activities that will take place and address all relevant issues for decommissioning and rehabilitation in the project EIS.	Section 3.6

Issues	Issue	Where Addressed
	• This may include dust and noise impacts from earthwork activities and vehicles, traffic generation and/or traffic disruptions and risks to biosecurity, particularly related to pests, diseases and weeds.	
Glint and glare	Glint and glare principles: Solar panels should be sited to reduce the likely impacts of glint and glare. Solar panels and other infrastructure should be constructed of materials and/or treated to minimise glint and glare. If a large scale-solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies must be adopted to reduce impacts.	Section 6.12 Appendix J Appendix O
	A glint and glare assessment should be undertaken in accordance with the requirements in Appendix C. This assessment must demonstrate that glint and glare would not pose a significant risk to motorists or pilots and that nuisance from glare is minimised for residential locations in accordance with the objectives outlined in Table 2	
Biodiversity	Where the proposed site contains native vegetation, habitat of threatened species or ecological communities, and requires clearing, an assessment must be undertaken in accordance with the Biodiversity Conservation Act 2016, the Biodiversity Assessment Method and documented in a biodiversity development assessment report (BDAR). The Planning Secretary has the power to waive the requirement for a BDAR if an applicant can demonstrate that the proposed development is not likely to have a significant impact on biodiversity values. Applicants are expected to demonstrate that they have applied principles of avoidance, minimisation and mitigation of impacts in project design.	Section 6.2 Appendix G
Traffic and transport	Applicants should consider whether the local and classified road network can accommodate the traffic generated by the construction of the solar energy project, having regard to any advice from relevant road authorities. Applicants should provide a clear list of road upgrades required and an assessment of the relevant impacts of these upgrades, having regard to advice from relevant road authorities. Applicants must identify whether the road upgrades require landowner's consent.	
Water management	Surface water-related impacts, such as flooding, discharge/run-off and erosion, must be assessed. Appropriate mitigation measures, such as sediment controls, must be proposed where warranted. Applicants should consult with landowners regarding potential surfacewater related impacts of the project on neighbouring properties and any mitigation measures. Any assessment of surface water-related impacts must be informed by a soil survey that considers the potential for erosion.	Section 6.8

Issues	Issue	Where Addressed
	If there is any water take associated with the project, the applicant should identify the source of water (both potable and non-potable) and may need to acquire water access licences if the project is approved.	
Noise and vibration	Construction noise impacts should be assessed in accordance with the Interim Construction Noise Guideline and operational noise impacts in accordance with the NSW Noise Policy for Industry.	Section 6.8
Air quality	Dust suppression measures that will be used during construction and operation, such as water carts during land preparation, temporary wind fences and revegetation of disturbed areas, should be considered.	Section 6.13
Social and economic impacts	A social impact assessment is required for all state significant projects and must be undertaken in accordance with the department's Social Impact Assessment Guideline for State Significant Projects. The assessment will include both positive and negative impacts of the proposed development on potentially affected people and groups, including how the impacts are distributed. This includes workforce accommodation, job creation opportunities and flow-on economic impacts to local communities.	Section 6.16 Appendix R
Aboriginal cultural heritage	The loss of Aboriginal cultural heritage should be avoided. If losses cannot be avoided, impacts must be minimised. An assessment of the likely impacts on Aboriginal cultural heritage must be undertaken and should include consultation with the Aboriginal community undertaken in accordance with the Aboriginal cultural heritage consultation requirements for Applicants and test excavations, if required.	Section 6.3 Appendix H
Non-Aboriginal heritage	An assessment is required of the likely impacts on archaeological objects and places.	Section 6.4 Appendix H
Cumulative impacts	Any cumulative impacts from other developments (proposed, approved and operative), especially biodiversity, socio-economic and construction traffic, must be assessed in accordance with the department's Cumulative Impact Assessment Guidelines for State Significant Projects (July 2021, or its latest version).	Section 6.17
Regulatory	Where an applicant proposes a large-scale solar development within a mapped area in proximity to a regional city, the provisions within the Transport and Infrastructure SEPP should be clearly and comprehensively addressed.	Section 4
Nearby developments	Residential and commercial developments that have been approved (but not yet commenced) should be included when identifying the surrounding urban environment.	Section 2.5

Issues	Issue	Where Addressed
Engagement	The applicant should consult with the relevant council and identify any land identified for future growth in strategic planning documents including local strategic planning statements and housing strategies.	Section 5 Appendix D
Hazards	The location of solar energy infrastructure should avoid any land subject to identified natural hazards (such bushfires, flooding or land instability) and should not contribute to an increase in risk of a natural hazard. Any natural hazards or risks associated with the construction, operation and decommissioning of the solar energy project must be assessed. These include those associated with hazardous materials (for instance, from PV panels and battery storage), and the threat of fire spreading to a solar development or being caused by associated infrastructure such as cables, panels or transmission lines. If the project is located in a bushfire prone area, applicants must prepare a strategic bushfire study in accordance with the NSW Rural Fire Service's Planning for Bush Fire Protection.	Section 6.10 Appendix N Section 6.11 Appendix P
	If the project includes battery energy storage that has a capacity of more than 30 MW, the applicant must undertake a preliminary hazard analysis in accordance with Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety Planning (PDF 367 KB), Hazardous Industry Planning Advisory Paper No 6 – Hazard Analysis and Multi-level Risk Assessment.	Section 6.10 Appendix N
Design	Where a solar energy project is located adjacent to a horticultural or cropping activity, the solar array should be setback from the property boundary by at least 30m to mitigate any heat island effect.	Noted
EMF and Health	Applicants should consider the power frequency and electric and magnetic field exposure guidelines referenced by the Australian Radiation Protection and Nuclear Safety Agency.	Section 6.10.2
ESD Public interest	Applicants should consider an analysis of the public interest, including the public interest in renewable energy, the objects of the EP&A Act and the principles of ecologically sustainable development.	Table 2.3

Issues	Issue	Where Addressed
Strategic context	Applicants should consider whether the project is consistent with local or state planning strategies, and government policies such as climate change and energy policies, including the capability of the project to contribute to energy security and reliability15	Section 2
Stakeholder engagement	Applicants must undertake meaningful engagement with stakeholders throughout the environmental impact assessment process and during the construction and operation phases of a project. This consultation must be undertaken in accordance with the 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2021). Applicants are required to: • Provide clear and concise information to the community and stakeholders about projects and their impacts; • Implement activities that encourage and facilitate public participation; • Report back on what was heard and what has or hasn't changed in response to this feedback and why.	Section 5 Appendix D
	The community should be engaged as early as possible to identify potential opportunities and constraints associated with the proposed development. The applicant should identify the elements of the project and the environmental assessment that can be influenced or shaped by the community. These could relate to the design of the project, the characterisation of the area and/or the management and mitigation measures that can be implemented. Examples include: • Positioning and siting of the project including any setbacks; • Characterisation of the scenic quality and sensitivity of the landscape and viewpoints (see the technical supplement for landscape and visual impact assessment); • Visual impacts including mitigation measures.	

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	Construction timing: Construction work will be restricted to daylight hours to minimise impact on nocturnal species such as the Plains-wanderer, detailed within the CEMP.
Bio4	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.
Bio5	Chemical Protocols: Protocols for the use of spraying exclusion zones around Plains-wanderers and their habitat to be implemented
Bio6	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.
Bio7	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.
Bio8	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.
Bio9	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 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.

ID	Mitigation Measure
Bio10	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.
Bio11	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.
Bio12	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.
Aboriginal 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 should be provided to recorded PADs, and a buffer of 100 m should be provided to recorded hearths. This would affect the following sites: • PREP SOLAR 03: Artefact, Hearth; • PREP SOLAR 04: Artefact, PAD; • PREP SOLAR 07: Artefact, PAD; • PREP SU D 01: PAD; and • PREP SU B 01: Artefact, PAD.
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: • 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.

ID	Mitigation Measure
AH3	The ACHMP will include mechanisms for managing the expected finds of additional Aboriginal cultural material being found during construction activities.
AH4	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 until the outcome of the project is known. However, in response to feedback received from the Department and Heritage NSW the Applicant aims to complete any required test excavations during the RtS phase of the project.
AH5	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; and
AH6	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.
Noise	
N1	Implementation of a construction noise management plan (CNMP).
N2	Establishment of a complaints management system for construction works and site operations.
N3	Revised noise modelling following the finalisation of selected equipment.
N4	Implementation of an operational noise management plan, inclusive of post construction testing at sensitive land uses or at a representative location, to confirm that the noise levels achieve the requirements.
Landscape and Visual	
LV1	Retain the existing vegetation, where possible, within the Study Area and along creek corridors to reduce the overall visual impact.
LV2	Consider the colours of the ancillary structures to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable.
LV3	Consider the height of ancillary structures to ensure the development does not contrast significantly with surrounding landscape.
LV4	Existing vegetation generally present around the Project Investigation Area will be retained and protected to maintain the existing level of screening. In accordance with the Technical Supplement, Moir determined that no additional mitigation would be required.
LV5	Adoption of lighting practices in consideration of the 'Dark Sky Planning Guideline' (DPE,) and 'The National Light Pollution Guidelines for Wildlife' (DEE, 2020) including: • Control the level of lighting by only using lighting for areas that require lighting (e.g., paths and building entry points), and reducing the duration of lighting (e.g., switch off lighting when not required and use of sensors); and • Light design considerations such as lowest intensity, energy efficient bulbs and warm colours, light directed downwards, closer as possible to the ground and not directed at reflective surfaces, use of non-reflective dark coloured surfaces, and use of light shield fittings.

ID	Mitigation Measure
Soils and Agriculture	
SA1	Project Elements: The client has engaged with the landowner to design the project to avoid or minimise impacts to agricultural productivity. During construction, temporary structures will be located or oriented to further avoid or minimise impacts.
SA2	Disruption: 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	Disruption: Use of existing roads, tracks and other existing disturbed areas will be prioritised.
SA4	Disruption: To ensure minimum damage to the surface, vehicular or equipment movement will be confined to one route, where possible.
SA5	Disruption: The placement of infrastructure such as fencing will be determined in consultation with landowners.
SA6	Disruption: Any damage caused by the Applicant during maintenance activities will be repaired promptly.
SA7	Fire: 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	Rehabilitation: Following completion of construction, disturbed areas will be stabilised and rehabilitated in line with approval conditions and contractual agreements with landowners.
SA9	Livestock disturbance: Procedures will be implemented to manage potential impacts on livestock, and in consultation with affected landowners (as described in Table 6.31 of the EIS).
SA10	Biosecurity: Biosecurity protocols will be implemented, including recording of all persons entering the Project Area.
SA11	Biosecurity: All project vehicles to be washed down prior to entering any agricultural areas.
SA12	Biosecurity: All vehicles will be washed down when moving between paddocks with known weed infestations.
SA13	Biosecurity: 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.
SA14	Biosecurity: Infestations (existing or new) of any priority weed species will be reported to the relevant authority.
SA15	Biosecurity: 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	Biosecurity: Where present within the permanent footprint, weeds would be managed in accordance with the Biosecurity Act 2015, the relevant regional strategic weed management plans, and in consultation with the Project landowners.

ID	Mitigation Measure
SA17	Biosecurity: The land around transmission line structures and other project infrastructure would be monitored for the spread of weeds.
SA18	Biosecurity: The Project Area would 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.
SA19	Decommissioning: The Project Area will be rehabilitated the condition agreed with the landowners and as specified in contractual agreements.
SA20	Decommissioning: Underground infrastructure (such as cables and footings) will be removed where practical to a depth of 0.3m millimetres below ground surface.
SA21	Decommissioning: Any contamination or waste would 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 (ESC) 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.
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.

ID	Mitigation Measure
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 Curtains 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.
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 6 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; • A community information and awareness program will be implemented prior to construction to assist in managing the traffic impacts; • 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;

ID	Mitigation Measure
	• 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 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; and Provide BAR and BAL treatments at the site access for the BESS area on the western side of Cobb Highway.
Preliminary Hazard Analysis	
HR1	The BESS will be tested in accordance with UL9540A and will be installed in accordance with manufactured and UL9540A report recommended clearances based on testing.
HR2	The BESS will be tested to demonstrate clearances required to prevent propagation of fires between separated units.
HR3	The BESS will be installed with fire protection systems specified by the manufacturer and UL9540A report.
HR4	Detailed design to validate the system will be installed in the Project Area before construction, while meeting the recommended clearances.
HR5	UL testing information will be made available to the certifying authority.
HR6	Based on lessons learnt from the Victorian Big Battery incident, the following fire safety precautions will be adopted on the design of the Project: • The vent atop the containers will be made of metal / non-combustible material instead of plastic and covered by a metallic mesh shield; and The placement of the fans shall be such that batteries or flammable materials will not be located directly beneath ventilation openings.
Bushfire	
BR1	Asset Protection Zone (APZ): A minimum 10 m APZ is to be established around the perimeter of the solar arrays, and on all sides of the substations, switching station, BESS and O&M Buildings.
BR2	Asset Protection Zone (APZ): 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.
BR3	Solar farm construction: The APZ and access road will be constructed prior to the installation of any solar panels or related infrastructure.
BR4	Solar farm construction: Ensure that appropriate permits have been issued for work during the Fire Danger Period, and th.at any conditions on permits are adhered to.
BR5	Solar farm ongoing operations: Vegetation fuels throughout the solar farm are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required.

ID	Mitigation Measure
BR6	Fire preparedness and response: Prior to construction, an Emergency Management and Operations Plan should be prepared for the solar farm that provides the following: • A site plan showing infrastructure, site access and the internal road layout; • Hazard reduction strategies; • Fire suppression equipment details; • Location of all fire control advantages and APZ; • Flammable materials storage requirements; • Control and coordination arrangements for emergency response; • Minimum evacuation zone distances • Fire reporting and response to formal emergency alerts; and Any other risk control measures required to be followed by firefighters.
BR7	Fire preparedness and response: A Fire Safety Study should also be prepared in accordance with the HIPAP No 2 prior to construction. This study will be used to inform the Emergency Management and Operations Plan to ensure that the proposed fire prevention, detection fand protection measures are appropriate for the final design.
BR8	Maintain emergency access/egress for fire fighters and site personnel: Access to the Project Area is proposed via Cobb Highway to the west of the Solar Farm. The ongoing maintenance of the Project will be accessed through internal access tracks 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.
BR9	Maintain emergency access/egress for fire fighters and site personnel: 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 while emergency service personnel are arriving to undertake firefighting operations.
BR10	Water storage: 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.
BR11	Water storage: The control room, switch room and storage shed will each contain essential fire safety equipment, including fire extinguishers and hose reels.
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.

ID	Mitigation Measure
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.
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 on-site 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.

ID	Mitigation Measure
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).
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 CEF 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 utilise boarding style houses in Hay 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 (LEP) 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 Traffic Management Plan (TMP) 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.

APPENDIX C STATUTORY COMPLIANCE

TABLE C-1 MANDATORY 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.	Table 2.3	✓
	(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, and options for NBSP, CEF and VPA.	Section 6	✓
	(d) to promote the delivery and maintenance of affordable housing,	Not applicable.	-	

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	The Project design has been prepared and refined to avoid impacts on the environment and high value biodiversity, and where impacts could not be avoided, mitigation measures have been provided.	Section 6.2 and Appendix G	✓
	(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 6.3, Section 6.4 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 6.6 and Appendix J	✓
	(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 DPHI. 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	This EIS has considered the outcomes of community participation, which has supported	Section 5	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	environmental planning and assessment.	the Project design and identification of mitigation measures date.		
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.	Table 2.1	✓
	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 2.4.2	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	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. Clause 61 of the EP&A Regulation provides additional matters that consent authority must consider. None of these matters are relevant to the Project.	Table C-2	✓
	(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 solar 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 DPHI 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	Section 2 and Section 7	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
		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; • 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				

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
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				
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 6.10** and **Appendix N** **Section 6.7** and **Appendix K**	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
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 since it is designated as SSD. Therefore, neither SEPP is applicable to the Project. Notwithstanding, Koalas have been considered during the preparation of the BDAR.	Section 6.2 and Appendix G	✓
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 provides greater consistency and flexibility in the development of key transport and infrastructure works. Relevantly, Section 2.36(1) provides	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	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
(T&I SEPP)	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.			
State Environmental Planning Policy (Planning Systems) 2021 *(Planning Systems SEPP)*	The Primary Production SEPP classifies a project as SSD if it requires development consent and is a development for the purpose of electricity generating works that has a capital investment value of more than $30 million.	The Project has met the relevant criteria under the provisions of the Planning System SEPP for it to be classified SSD.	Section 4.1	✓
Hay Local Environmental Plan 2011 (Hay LEP)	The EIS will address relevant components of the Hay LEP, including: • Section 1.2 – Aims of Plan (*2) (a) to encourage the orderly management, development and conservation of natural and other resources within the Tamworth region;* *(d) to promote ecologically sustainable urban and rural development;* *(e) to secure a future for agriculture by expanding Tamworth's economic base and minimising the loss or*	The Project meets the aims of the Hay LEP 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 solar arrays, BESS, 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	Section 6	✓

Statutory Reference	Mandatory Consideration	Project Response	Where Addressed	Compliant
	fragmentation of productive agricultural land.	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 Hay and the broader Riverina Murray region. The Applicant also commits to implementing a CEF for the life of the Project, which will provide investment in buildings and social infrastructure in the township of Hay.		
	Objectives of the RU1 – Primary Production relevant to the Project (Land Use Table): 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	The Project has undertaken technical studies to identify, avoid and mitigate impacts associated with the development of Project. Appropriate 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 .	Section 6	✓
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-2 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	✓
(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		

Requirement	Where Addressed	Compliant
(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 (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,	Section 3 Section 4 Section 6	✓
(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	

Requirement	Where Addressed	Compliant
(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. (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.	Section 7	✓

APPENDIX DSTAKEHOLDER 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**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.
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.

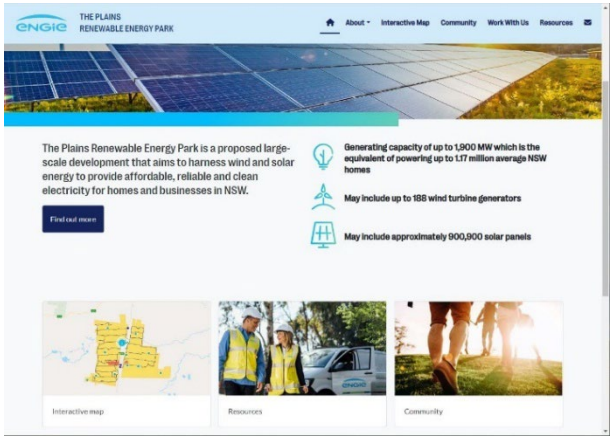

PHOTO D-1 PROJECT WEBSITE

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 156 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 has been open to members of the public from 9:00am to 2.30pm on the 12 and 26 October, 17 November and planned for 28 November and 19 December whilst a Community Assistant is being recruited.	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-2 THE PLAINS RENEWABLE ENERGY PARK - COMMUNITY INFORMATION HUB

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 The Plains Renewable Energy Park **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 Q1 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 will 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, landholders and neighbours. Following feedback from the social research completed in Hay in early May, information about decommissioning and recycling of 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).
Site visits and site tours	Project site visits were undertaken with landholders 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.

PHOTO D-5 THE PLAINS RENEWABLE ENERGY PARK - FACTSHEET

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. Thy 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; and ◦ An invitation to 'Register your interest for a Visual Assessment' flyer was sent to 28 neighbouring property addresses via post during October 2022, with an invitation to 'Register your interest for a Visual Assessment'.	 PHOTO D-6 THE PLAINS RENEWABLE ENERGY PARK - NOVEMBER NEWSLETTER

Activities	Summary	
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  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-10COMMUNITY SPONSORSHIP PROGRAM
	The Applicant has provided funding for a 3-year sponsorship (2023-2025 inclusive) of the Rainbow on The Plains Festival. 14 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-11RAINBOW 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.

Stakeholder	Engagement date/ No.	Summary Engagement
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. • 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.

Stakeholder	Engagement date/ No.	Summary Engagement
		 PHOTO D-12ENGIE WORKSHOP WITH THE HAY LALC, 20 MARCH 2023
		 PHOTO D-13 ENGIE SPONSORSHIP OF NAIDOC WEEK CELEBRATIONS HOSTED BY THE HAY LALC
	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).

Stakeholder	Engagement date/ No.	Summary Engagement
	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
	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
	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.

Regulator	Engagements date	Summary of Engagement
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 (now DPHI) – Planning	15 September 2022	• Meeting with DPE to discuss layout changes, optional solar area, 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 BCS team to discuss survey and assessment of impacts in the BDAR align with BCS expectations.
	November 2023 Videoconference, briefing	• Pre submission meeting with DPE to discuss Solar/BESS 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: • Threatened fauna species recorded within Project Area, the impacts on 2 TECs and how the Project layout has considered biodiversity constraints into design. • 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 – 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.

Regulator	Engagements date	Summary of Engagement
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 and Science (BCS)	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 BCS.
	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. • 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. • BCS 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.

Regulator	Engagements date	Summary of Engagement
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.
	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.
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.

Regulator	Engagements date	Summary of Engagement
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
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

[PLACE HOLDER: Insert Appendix D Community Engagement Strategy_EIS Nov 2023.doc]

APPENDIX E CAPITAL INVESTMENT VALUE

APPENDIX F DETAILED MAPS AND PLANS

APPENDIX G BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

APPENDIX H ABORIGINAL CULTURAL ASSESSMENT REPORT

APPENDIX I NOISE IMPACT ASSESSMENT

APPENDIX J LANDSCAPE AND VISUAL IMPACT ASSESSMENT

APPENDIX K AGRICULTURAL IMPACT ASSESSMENT

APPENDIX L HYDROLOGY ASSESSMENT

APPENDIX M TRAFFIC IMPACT ASSESSMENT

APPENDIX N PRELIMINARY HAZARD ANALYSIS

APPENDIX O AVIATION IMPACT AND SOLAR GLARE ANALYSIS

APPENDIX P BUSHFIRE ASSESSMENT

APPENDIX Q ECONOMIC ASSESSMENT

APPENDIX R SOCIAL IMPACT ASSESSMENT

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