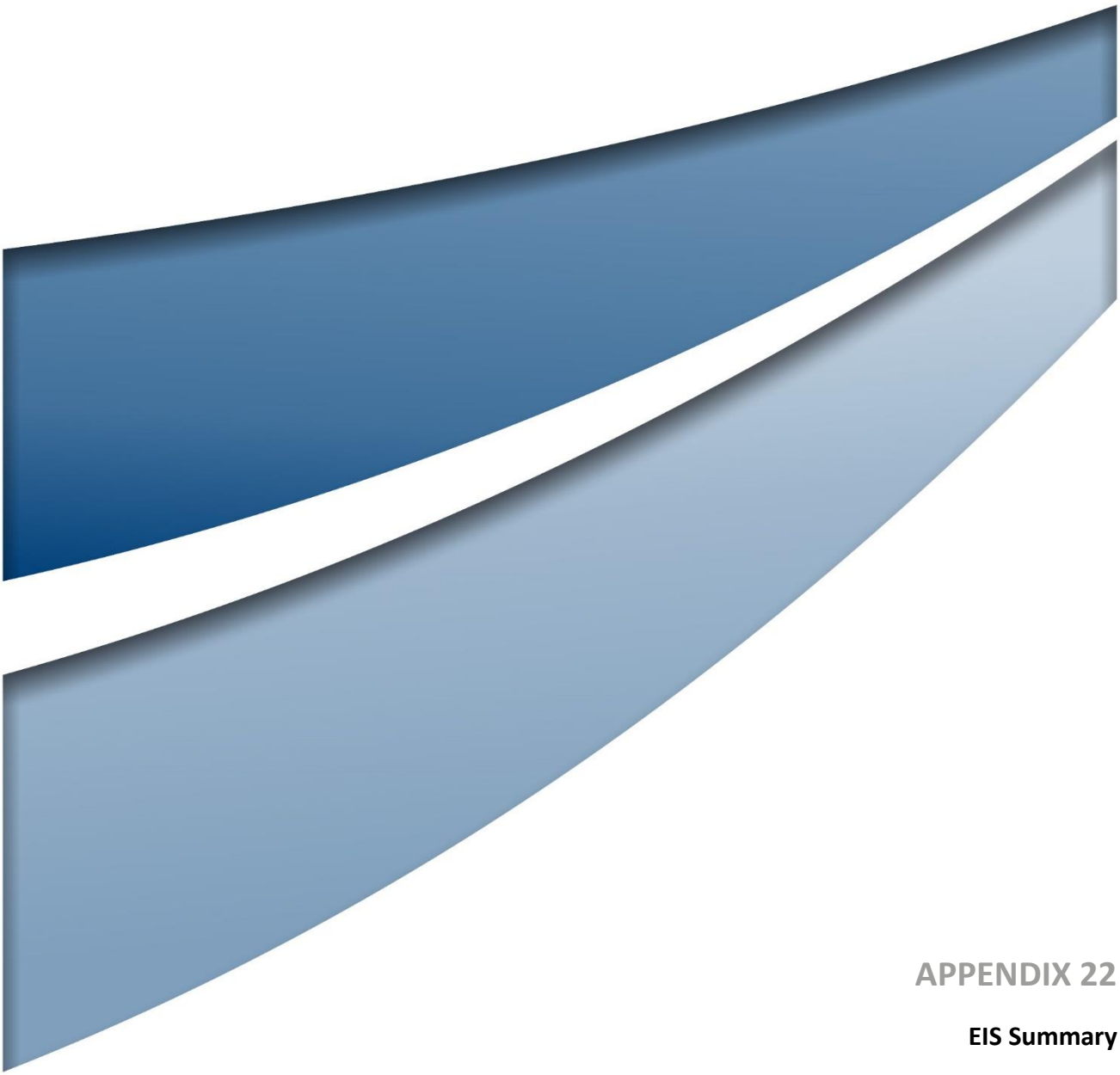


# APPENDIX 22

**EIS Summary**

lightsource bp

bp

# Gundary Solar Farm

## ENVIRONMENTAL IMPACT STATEMENT SUMMARY

umwelt

Safety
Integrity
Respect
Sustainability
Drive

# What is the Project?

The proposed Gundary Solar Farm (the Project) is a 400 megawatt peak (MWp) (DC) solar farm and battery energy storage system (BESS) being developed by Lightsource Development Services Australia Pty Ltd (Lightsource bp) in the Southern Tablelands region of NSW, approximately 10 km southeast of Goulburn. The Project Area comprises five freehold land parcels which are zoned RU1 primary production (under the Goulburn Mulwaree Local Environmental Plan (LEP) 2009), located on the eastern side of Windellama Road in the rural locality of Gundary, NSW (refer to **Figure S1**). The Project Area also includes a small section of Windellama Road for proposed intersection works to upgrade the existing driveway at the Project Area to accommodate heavy vehicles during construction.

The Project will supply affordable and sustainable renewable energy to the National Electricity Market via an onsite connection to existing transmission infrastructure. The Project will generate enough clean energy to power about 133,000 average NSW homes and reduce carbon emissions to the state's energy generation profile by approximately 670,000 tonnes every year.

The Project will involve the construction, operation, maintenance and decommissioning of approximately 660,000 solar photovoltaic modules, a lithium-ion battery energy storage system (BESS), and associated infrastructure including underground cable network, onsite substation/switchyard for connection to existing electricity transmission lines, access tracks and an operations and maintenance facility. The conceptual Project layout is shown in **Figure S2**. This layout has been subject to ongoing refinement, considering feedback from the community and other stakeholders as well as the findings of technical studies. The approach to avoid, minimise, or mitigate environmental, cultural and social impacts has been employed across the project design.

The Project Area covers approximately 702 hectares, within which the Development Footprint (i.e., the area which would contain the solar arrays and associated infrastructure) occupies approximately 512 ha. Exclusion zones and setbacks are provided around the Development Footprint to protect streams, areas prone to flooding, areas that provide habitat for threatened flora and fauna and to provide asset protection zones for bushfire safety.

### WHAT IS A BESS?

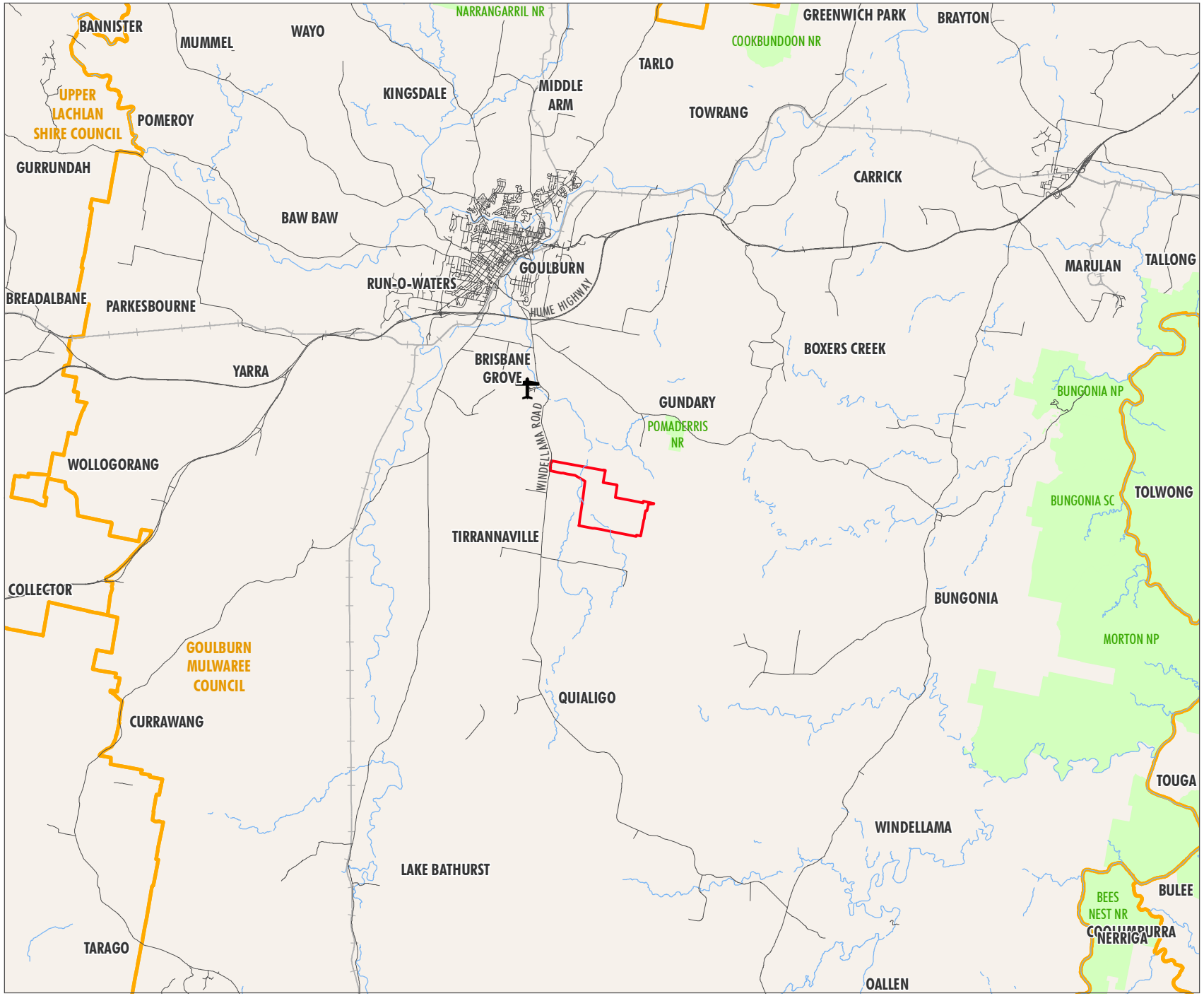
A Battery Energy Storage System (BESS) is an energy storage system that uses a group of batteries to store electrical energy produced by a solar farm during good weather conditions to be released to the grid at times of higher demand. These systems also help to stabilise the grid and manage the variability and intermittency of renewable energy sources.

Battery storage is an essential part of Australia's energy transition to a low carbon future as they support renewable energy generation and contribute to improved reliability for consumers.

Two BESS design and layout options have been proposed for the Project – a decentralised (230MW/920MWh) option where a series of BESS are distributed across the site, or a centralised (325MW/650MWh) option where the BESS units are aggregated in one central location. Approval is being sought for one, or both of these options to be implemented.

# FIGURE ES.1

## Locality and Regional Context




**Legend**

- Project Area
- Goulburn Airport
- Local Government Area
- NPWS Estate
- Roads
- Railway
- Watercourses


0 2.5 5

Kilometers

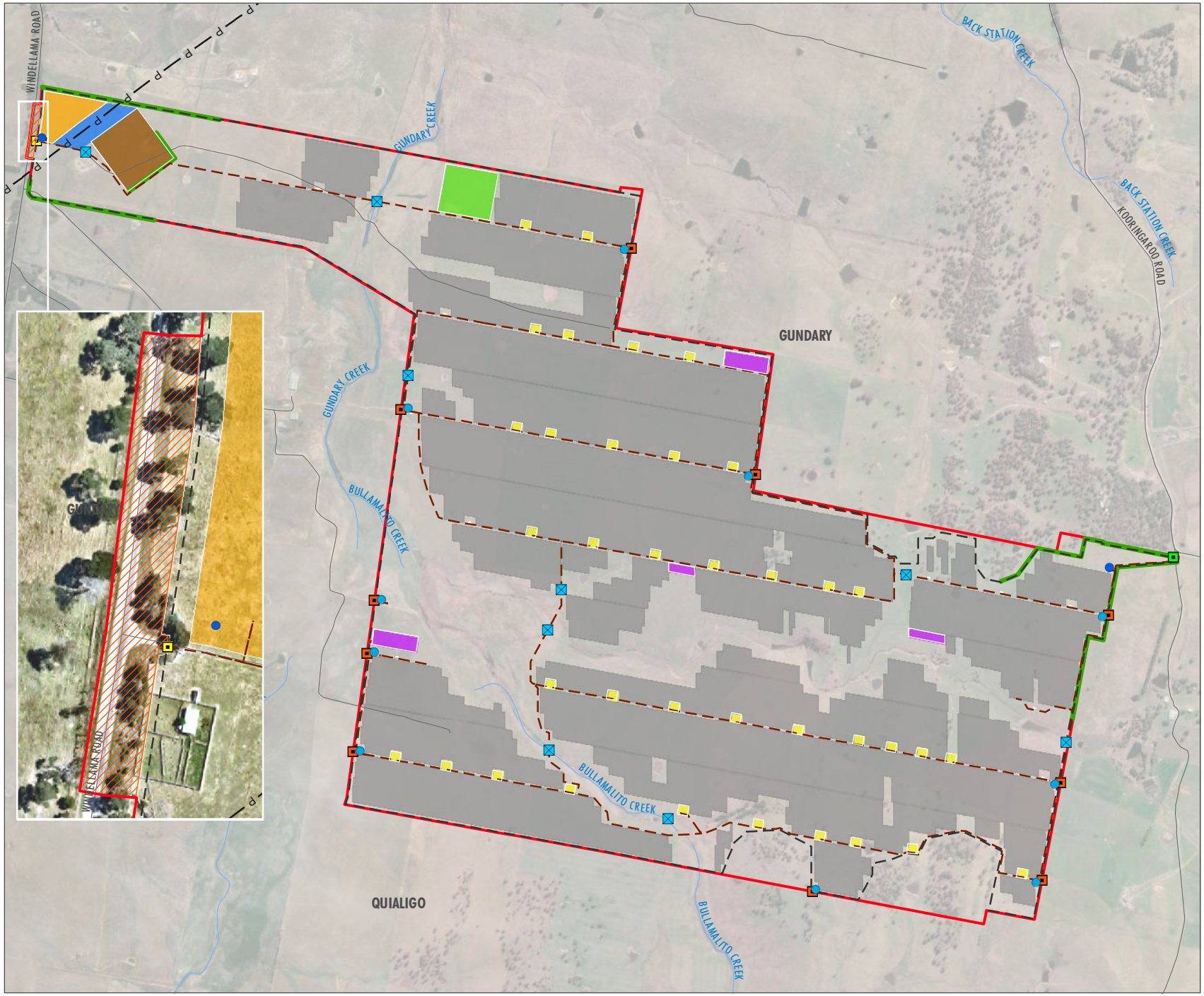
Scale: 1:0 at A4
GDA 1994 MGA Zone 55



**Image Source:** ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

# FIGURE ES.2

## Project Conceptual Layout




**Legend**

- Access Roads
- Security Fence
- P Existing Transmission Line
- Roads
- Watercourses
- Watercourse / Bed Level Crossing
- Water Tank (40,000L)
- Water Tank (10,000L)
- Primary Access
- Emergency Access
- Emergency Gate
- Project Area
- Proposed Road Upgrade
- Solar Panels
- Landscaping Buffer (5m)
- Transgrid Line Works
- Centralised AC
- Substation and O&M Facility Area
- Construction Compound Area
- Decentralised DC BESS
- Temporary Laydown Area


0 500 1,000

Metres

Scale: 1:0 at A4

GDA2020 MGA Zone 55



**Image Source:** ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

# Why is the Project needed?

The development of solar energy projects aligns with both Commonwealth and NSW commitments to increase renewable energy generation and reduce carbon emissions across the NSW and Australian economies. The Project provides for cleaner, more reliable electricity generation while reducing greenhouse gas emissions and the impacts of climate change.

NSW is currently in a transition to build a reliable, affordable and sustainable electricity future to support a growing economy (NSW Government, 2022). The State's existing four coal fired power stations are planned to be progressively closed over the coming years, with the Liddell Power Station closed in April 2023. The closure of the Eraring Power Station has been extended from the end of 2025 to August 2027. These power stations currently provide around three quarters of NSW's electricity supply and two thirds of the capacity required during peak demand periods such as during summer heat waves. In NSW, all four of the remaining operational coal-fired power stations are scheduled to retire by 2043 (AEMO, 2019). The NSW Government is taking action to lead investment in new renewable generation to ensure an orderly transition away from coal (EnergyCo, 2022). The Project will contribute to meeting the NSW Government objectives of providing a secure electricity supply for the people of NSW.

In Australia in 2020-2021, 71% of the total electricity was generated using fossil fuels, including coal (51%), gas (18%) and oil (2%). The share of coal in the electricity sector has declined since the beginning of the century when coal's share of electricity generation exceeded 80%. The contribution of renewable energy to the total national electricity generation increased from 21% in 2019 to 29% in 2020-2021 (DCCEEW, 2022a). In 2022, renewables accounted for 34.8% of Australia's electricity supply (Stockhead, 2023). The share of renewables such as wind and solar in Australia's energy mix is anticipated to continue to increase over the coming years.

NSW has a strong pipeline of renewable energy projects which will contribute to achieving the current Australian and NSW emissions targets, and net zero by 2050.

This, however, requires significant investment from the private sector to achieve sufficient renewable energy supply to support NSW's transition to renewable energy and the retirement of the existing fossil fuel supply. The Project fits within the current strategic direction of NSW and Australian energy generation market and will assist in achieving the planned transition to an increased contribution of renewable energy for Australia's energy needs.

Further, the Project will contribute to regional capital investment, diversify local economies, generate jobs during the construction and operational phases, provide indirect benefits to local services throughout the life of the Project and deliver additional income to the host landholder and associated landowners.

## THE GUNDARY SOLAR FARM IS EXPECTED TO:

- Generate enough electricity to supply the equivalent of approximately 133,000 households on an annual basis in NSW.
- Avoid approximately 670,000 tonnes of CO2 emissions each year.
- Generate a regional capital investment of approximately $650 million during the construction phase, of which approximately $98 million (or 15%) is anticipated to be retained in the Study Area.
- Create up to 400 full time equivalent (FTE) jobs (both direct and indirect) during the peak of the construction phase and four on-site jobs over the 40-year operational lifespan of the Project.
- Potentially support livestock grazing of up to 1,000 sheep.
- Diversify local land use and economies while providing indirect benefits to local service providers.
- Provide additional income to host and associated landholders.
- Provide ongoing financial benefits through the implementation of a Voluntary Planning Agreement with Goulburn-Mulwaree Council, incorporating a Community Benefit Fund to provide financial backing to local sporting, cultural and educational organisations, fund traineeships and generally support the local community.

# What other alternatives were considered?

Lightsource bp has explored a range of alternative options for the Project throughout the design process, with the aim of avoiding, minimising or mitigating environmental, cultural and social impacts while maximising the potential for electricity generation. A range of alternatives were considered, including the 'do nothing' option (i.e., not developing the Project and a range of alternative locations, technologies and Project layouts.

The Project Area is currently used for sheep and cattle grazing and the **'do nothing' option** would allow for its continued use solely for agricultural purposes. The 'do nothing' option would avoid the environmental and social impacts associated with the Project, which have been shown to be manageable and not of significance, but it would also forego the Project's identified benefits and result in a lost opportunity for landholders to diversify their revenue streams.

A range of alternative locations were considered by Lightsource bp, based on proximity to the existing and proposed NSW electricity grid and the solar generation potential. Managing environmental constraints and social aspects, improving infrastructure efficiency and matching localised energy demands were major considerations in the evaluation of alternatives. The Project Area was chosen as it provides the optimal combination of:

- A strong electricity network with multiple high voltage transmission lines providing good system strength and a strong point of connection.
- Good average daily solar exposure levels.
- Proximity to high population and electrical load centres of Goulburn, Canberra and Sydney means that less energy is lost in transmission.
- Existing agricultural land use which is compatible with large-scale solar energy generation and has potential to implement agrivoltaics (the dual use of land for solar energy production and agriculture).
- A flat, largely cleared landscape which minimises land clearing and earthworks required for construction.
- Detailed environmental assessment confirmed environmental constraints present within the Project Area can be avoided by the Project design and with the implementation of the proposed management and mitigation measures, residual impacts can be acceptably managed.

A range of **alternative technologies** with a proven track record of large-scale implementation were investigated including:

- Mounting – fixed vs tracking.
- Solar modules – single-sided or bifacial.
- One-in-portrait (1P) or two-in-portrait (2P) layout.

The final option selected uses a single-axis tracking system which allows for more efficient energy generation than fixed tilt systems while minimising glare from the sun and resulting visual impacts. Bifacial modules were chosen as they allow for more efficient energy generation and have more space between rows of modules which helps reduce visual impacts and facilitates grazing. Finally, in response to community concerns regarding height of the 2P trackers, a 1P system has been chosen as it has only one vertical row of modules rather than two.

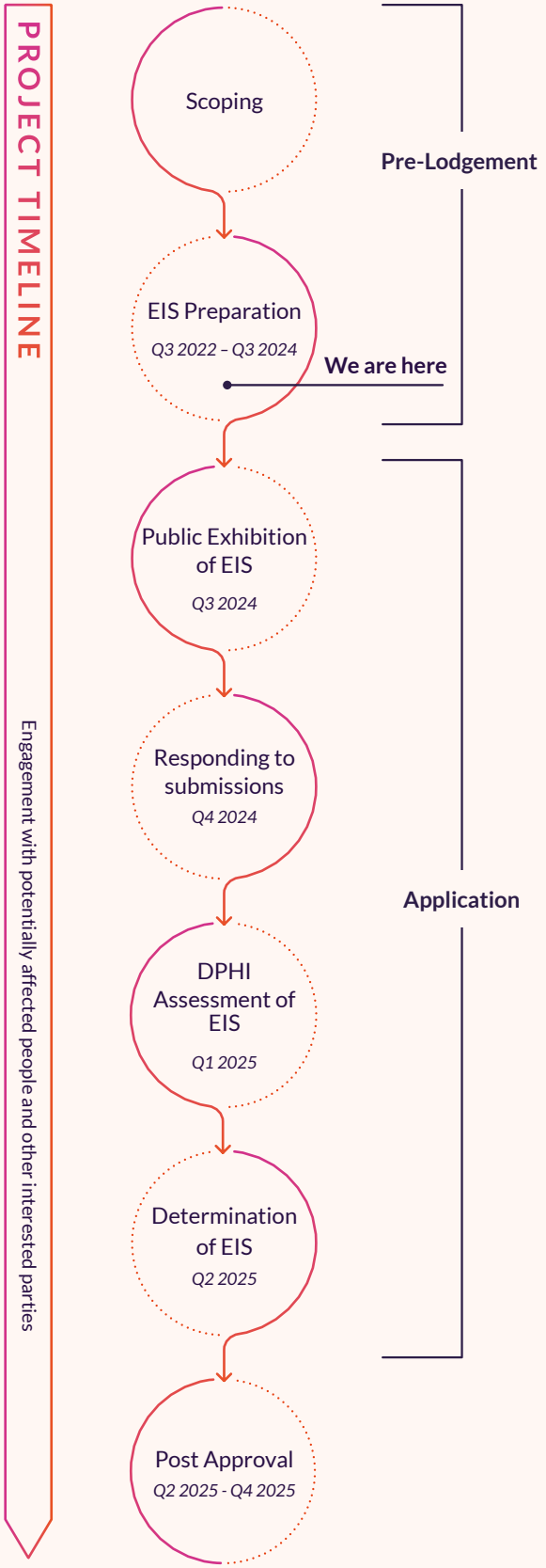
*Typical 1P solar panel configuration*

# What is the planning and approval process?

The Project is classified as State Significant Development (SSD) under NSW planning legislation (per clause 20 of Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021)* and therefore requires approval under Part 4 of the NSW Environmental Planning and Assessment Act 1979 (the EP&A Act). Under the EP&A Act, all SSD projects require development consent from either the Minister for Planning and Public Spaces or the Independent Planning Commission (IPC).

An Environmental Impact Statement (EIS) has been prepared to assess the environmental, social and economic impacts of the Project, both positive and negative, and has been lodged with the NSW Department of Planning, Housing and Infrastructure (DPHI) (formerly the Department of Planning and Environment (DPE)).

In 2023 the Project was referred (EPBC Referral 2023/09492) to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) to determine if it is likely to have a significant impact on any Matters of National Environmental Significance (MNES). Due to its avoidance of impacts to Commonwealth-listed threatened species and vegetation communities, the Project was determined by a delegate of the Commonwealth Minister of the Environment on 13 September 2023 to be 'not a controlled action' and therefore does **not** require approval under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).



# How have key stakeholders been involved?

Lightsource bp recognises the value of early and meaningful engagement with the community and key stakeholders and is a signatory to the Clean Energy Council's Community Engagement Best Practice Charter for Renewable Energy Developments. Through this, Lightsource bp has made a commitment to respectful engagement and sensitivity to environmental and cultural values to bring about positive contributions to the regions in which it operates.

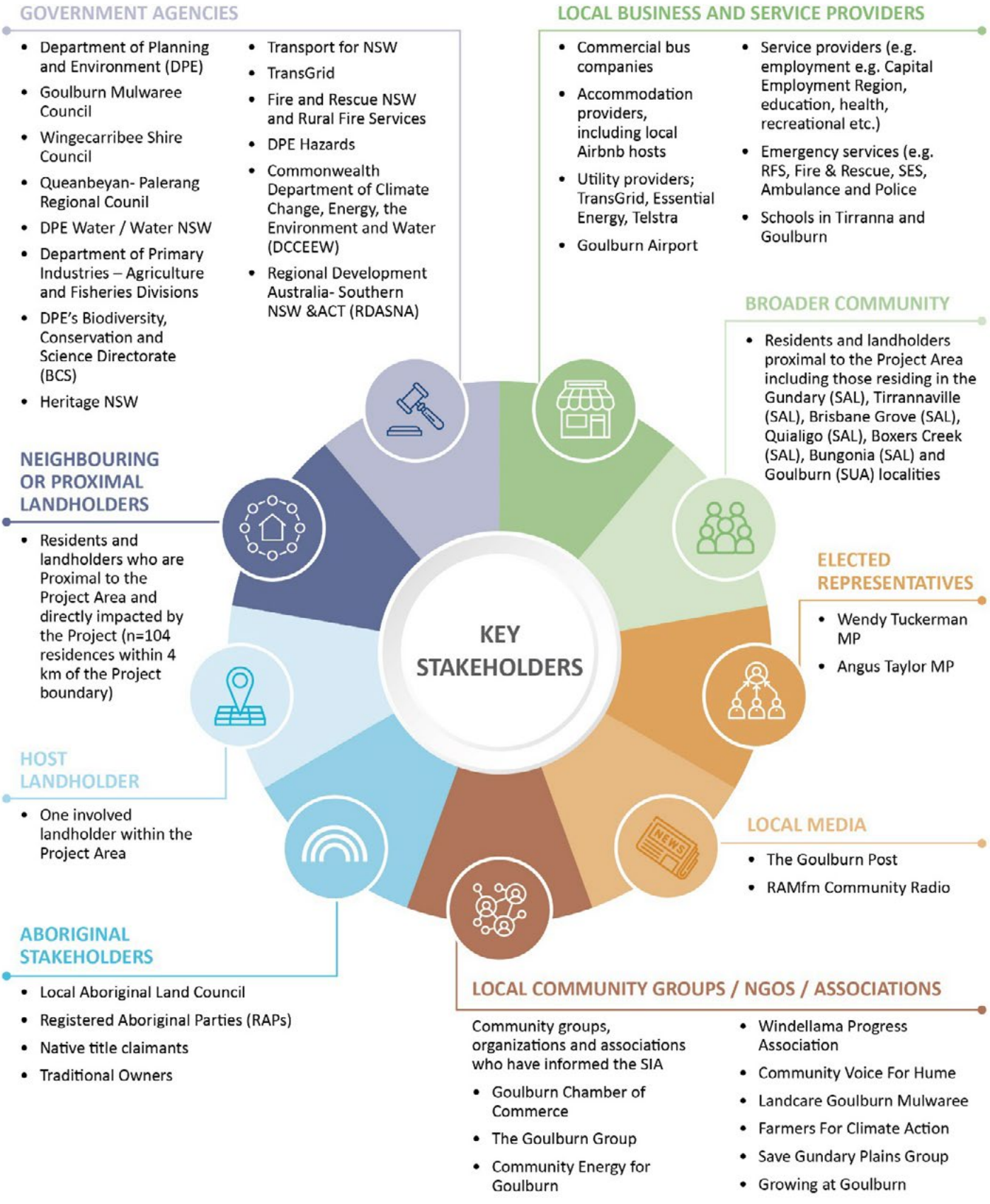
Since 2022 Lightsource bp has been engaging with the local and broader community, seeking to build relationships and an understanding of stakeholder perspectives and needs. This ongoing engagement has resulted in changes to the Project design, as previously noted, and has assisted in the development of management and mitigation measures to reduce impacts.

A Community and Stakeholder Engagement Plan (CSEP) was developed in early 2022 to guide the engagement process and the identification of relevant stakeholders and potential issues. Engagement has been undertaken through a variety of mechanisms including a dedicated Project website and email address, printed information sheets/postcards, personalised letterbox drops, formal briefings, individual meetings/interviews, phone calls and emails, community drop-in sessions and information stalls, and online and telephone surveys.

Key community views raised during the engagement process and how these have been addressed in the development of the Project are summarised below.

| STAKEHOLDER GROUP | CONSULTATION SUMMARY | KEY OUTCOMES |
|---|---|---|
| **Community including:**<br>• Neighbouring and proximal landholders (< 5km).<br>• Local community, special interest groups (< 10km).<br>• Broader Community (> 10 km to 100 km). | **Key issues raised by community during consultation included concerns related to:**<br>• Landscape and visual amenity.<br>• Property Values.<br>• Bushfire risk.<br>• Noise and dust emissions.<br>• Water quality and quantity impacts, including flooding.<br>• Mental health.<br>• Agricultural land.<br>• Biodiversity.<br>• Roads.<br>• Traffic and Transport.<br>• Waste generation and decommissioning.<br>• Cumulative impacts.<br>• Glint and glare impacts.<br>• Land use conflict.<br>**Additionally, community identified potential positive impacts associated with**<br>• Employment opportunities.<br>• Benefit sharing.<br>• Net zero.<br>• Participation in the process. | **Issues raised by the community were considered during the design refinement process including the following design changes:**<br>• Removal of approximately 50 ha of solar arrays in the north-west corner of the Project Area to reduce visual and noise impacts.<br>• Relocation of the centralised BESS approximately 1.2 km to the east, away from sensitive receivers on the north-west.<br>• Removal of 20 decentralised BESS units located nearest to sensitive receivers.<br>• Further refinement of solar arrays to avoid impacts specifically to *Eucalyptus macarthurii*.<br>• Inclusion of a secondary access point via Kooringaroo Road as well as additional emergency access points along the perimeter fencing via gates for emergency access and egress.<br>• Installation of riparian fencing (such as a latched tube watercourse crossing) where the security fence crosses a watercourse or creek.<br>• Solar panels designed with a 500 mm freeboard for the lowest edge above the maximum 1% AEP flood event.<br>• Inclusion of dedicated non-combustible water tanks with a combined capacity of 180,000 L distributed throughout the Project Area.<br>• Strategically located noise attenuation (noise barriers) around loudest Project infrastructure.<br>• Strategically located landscape screening.<br>• Implementing setback distances i.e.<br>◊ a 10 m APZ around the perimeter of the Project, within the security fencing and<br>◊ approximately 20 m to 40 m setbacks around second order and higher streams, in particular where these have biodiversity value.<br>• Implementing exclusion zones i.e.<br>◊ Areas with TECs and habitat for threatened species.<br>◊ Areas prone to flooding (1% Annual Exceedance Probability (AEP)). |
| **Local businesses and industry groups (> 10 km to 100 km).** | **Key issues raised included:**<br>• Accommodation availability in the LGA.<br>• Mechanisms to support local business service the workforce.<br>• Enhancing outcomes for local communities. | **Mitigation measures were developed with consideration of local business and industry feedback including:**<br>• Preparation and implementation of a Social Impact Management Plan<br>• Implementation of the AES, CSEP, Community Shared Benefit Strategy, including a Neighbours Benefit Program and Community Enhancement Program. |

*Further information on community views and social impacts is provided in the Social section below.*



# Environmental, social and economic impact assessments

## REGIONAL CITY

'Regional cities' are identified as being strategically important to the ongoing growth and development of regional NSW, and the NSW Government has policies in place to manage potential land use conflicts associated with utility-scale solar and wind energy developments near regional cities. A portion of the Project Area (i.e. Lot 12 DP1016332 and part of Lot 3 DP1238347) falls within the 'subject land' on the Goulburn Regional Cities Map, and as such additional assessment was undertaken to determine any potential conflict with existing or approved residential or commercial uses of land surrounding the development or potential impacts on Goulburn's capacity for growth, its scenic quality and landscape character, and to develop suitable mitigation measures.

The Project's distance from the city, combined with the relatively low-profile height and dark, visually recessive colour of the solar modules result in a low potential impact to the regional city's scenic quality and landscape character, as experienced from Goulburn's urban precincts, growth fringe precincts, heritage conservation areas and heritage items. The Project would not be visible from the majority of key scenic viewpoints within the city although some distant secondary views may be possible to the south with solar modules affecting a very small part of the available view. Visual impacts to road users on Windellama Road (one of several secondary approaches to the city which is not identified as a scenic or tourist drive) were assessed as low, and a commitment by Lightsource bp to undertake infill planting along this road will further reduce views of the substation and other infrastructure.

Based on the outcomes of the assessment of impacts to the regional city of Goulburn, the Project is not expected to create any significant conflict with existing or approved residential or commercial uses of surrounding land, nor will it impact on future development opportunities for the city as most of the identified urban growth areas lie to the west, north and east of Goulburn from where the Project would not be visible. Further growth or intensification of development within the two closest fringe precincts, Mountain Ash and Brisbane Grove, is unlikely to occur due to significant constraints which have been identified in Goulburn's Urban and Fringe Housing Strategy.

*Goulburn, New South Wales*

## BIODIVERSITY

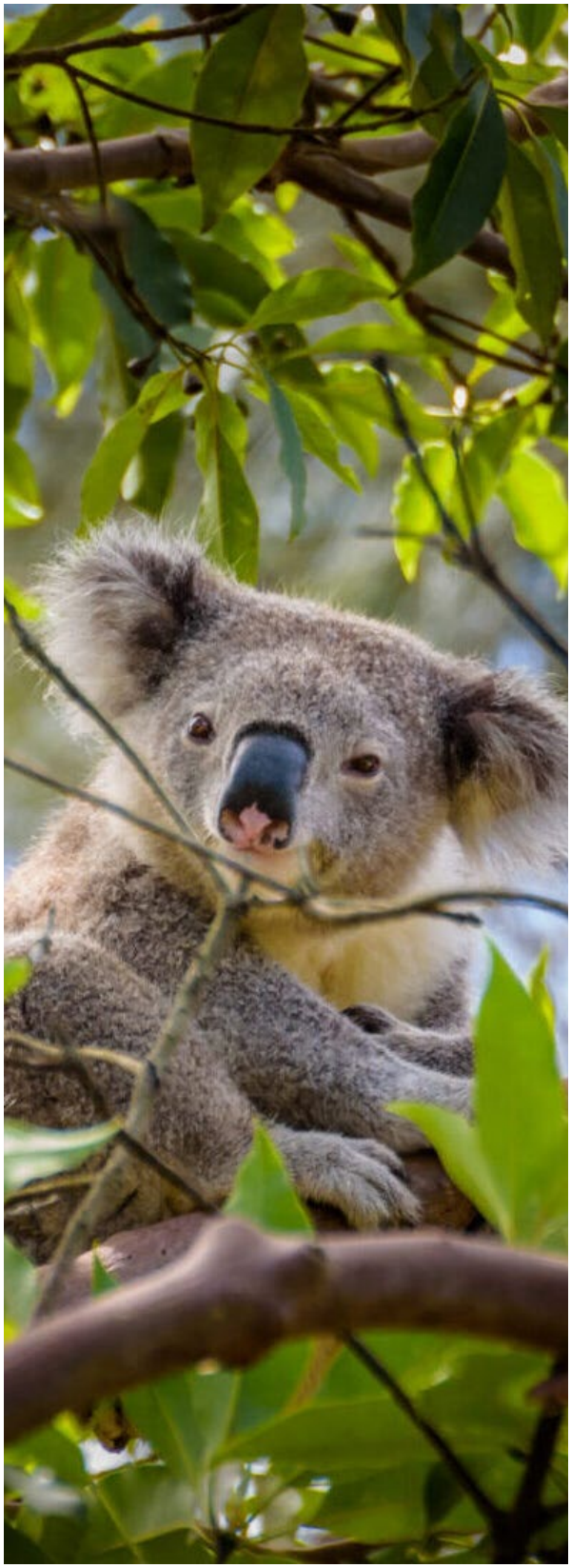
The biodiversity assessment commenced early in the Project design stage to inform the Project layout with the aim of reducing biodiversity impacts, particularly in areas of high biodiversity value. The Project has therefore been designed to take advantage of the most disturbed parts of the Project Area, including land assessed as Category 1 – Exempt Land, which has undergone extensive cultivation and is currently managed for livestock grazing. By doing this, the Project avoids 27.89 ha of NSW listed threatened ecological communities and 37.96 ha of Commonwealth listed ecological communities, and strategically locating the majority of the Development Footprint (97%) within Category 1 exempt land.

Remnant vegetation along the northern and southern boundaries of the Project Area is being retained, to provide connectivity with a much larger area of remnant vegetation located adjacent to the Project boundary. Similarly, the Project design incorporates setback buffers of approximately 20 m to 40 m from second order and higher watercourses within the Project Area to preserve aquatic values and allow the continuation of riparian habitat corridors.

Whilst Lightsource bp has strived to avoid and minimise impacts on biodiversity through the design process, not all impact could be avoided. The Project will require the disturbance of approximately 14.02 ha native vegetation (consisting of native pasture, low condition primary grassland and paddock trees) from within the 702 ha of the Project Area. Vegetation clearing will result in unavoidable impacts to 5.84 ha of vegetation comprising the NSW-listed White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community (CEEC), however field surveys have determined that this area is highly disturbed due to long-term agricultural practices and is subsequently of low quality. Because of this degradation and lack of connectivity the impacted vegetation does not meet the criteria for the CEEC.

Following the application of appropriate avoidance and mitigation measures, the biodiversity assessment concluded that there is no requirement for biodiversity credits to offset the impacts from the Project. Lightsource bp remains committed to the implementation of the following specific control measures (via a Construction Environmental Management Plan) to further minimise any biodiversity impacts:

- Workforce education and training.
- Implementation of vegetation protection zones for areas to be retained.
- Ecologist pre-clearance surveys and supervision of works.
- Erosion and sediment control measures.
- Weed management.
- Fencing, access control and fauna exclusion measures.



## ABORIGINAL CULTURAL HERITAGE

The Project Area is located within the traditional homelands of the Ngunnawal people and falls within the Pejar Local Aboriginal Land Council (LALC) area.

Archaeological investigations undertaken for the Project included both desktop and field surveys and a test excavation program, in consultation with Registered Aboriginal Parties (RAPs). As a result, 19 Aboriginal sites, comprising both surface and subsurface stone artefacts, were identified within the Project Area. The Project will avoid three sites, partially impact seven sites and completely impact nine sites.

The assessment determined that the majority of the sites recorded within the Project Area have a low scientific significance as they are either isolated finds, in disturbed contexts or not particularly rare (in terms of type and cultural material). All but three of these sites would be subject to surface collection of artefacts. Two sites are relatively uncommon and were assessed as having moderate scientific significance and will therefore be subject to staged salvage excavation. This allows archaeologists to gather a representative sample of the local archaeological record for analysis, interpretation, and to benefit the local Aboriginal community as a cultural values education tool. The RAPs have confirmed that with the implementation of these mitigation measures, they would be supportive of the Project proceeding.

An Aboriginal Cultural Heritage Management Plan will be prepared to detail the staged salvage excavation methodology, Aboriginal consultation protocols, community collection, on-site inductions, and protocols for unexpected finds.

## HISTORICAL HERITAGE

Desktop and field inspections determined that the Project Area does not contain any World, Commonwealth, State or local listed heritage items. Due to the land use history of the site, any archaeological remains with the Project Area are likely to be fragmented or previously disturbed and would be unlikely to have research significance.

The nearest listed heritage item to the Project Area is Pelican Homestead, located approximately 3.4 km to the west. The Project will not require any works within the curtilage of this locally-listed heritage item and would not impact on any significant views or vistas here or at any other nearby heritage item.

The assessment determined that the Project would have no physical impacts to the listed heritage items in the vicinity. Furthermore, the Project would not remove any evidence of the historical development of the region, a contributory element to the significance of heritage conservation areas. No indirect (visual) impacts to the heritage significance of the listed heritage items in the vicinity would result from the Project.

## LAND RESOURCES AND LAND USE

The Project Area consists of mostly poor to moderate condition agricultural land in the form of open paddocks, the majority of which have been subject to cultivation over a long history of cattle and sheep grazing. Lightsource bp has an agreement in place with the host landholder to lease the Project Area for the duration of the Project, during which time current agricultural use will cease, resulting in temporary impacts to agricultural production with the region.

Once construction is complete, the establishment of sheep grazing may be used to offset this loss of agricultural production. The dual use of the land for agricultural production and energy generation will be managed through an Operational Environmental Management Plan and Sheep Grazing Vegetation Management Plan, developed in consultation with the landholder and Department of Primary Industries (DPI).

A Land Use Conflict Risk Assessment determined that the Project would be compatible to coexist with the primarily agricultural land uses within the surrounding area and would not affect agricultural productivity in adjacent areas.

Due to the presence of sodic and dispersive soils within the Project Area, excavation of soils and disturbance of groundcover during construction will be limited as much as possible. A range of erosion and sediment control measures will be implemented during construction to avoid soil loss and sediment transfer.

## LANDSCAPE AND VISUAL

A landscape and visual impact assessment was undertaken to assess in detail the potential impacts to public and private viewpoints, and to the regional city of Goulburn. Of the 52 viewpoints assessed, which included public roads, private residences and representative locations for potential future dwellings within 4 km of the Project, only one was found to have a moderate visual impact rating, with the remainder having a low or very low visual impact rating. Photomontages have been prepared from viewpoints where access to properties were possible to illustrate the potential visual impacts associated with the Project.

Under the DPE *Large-Scale Solar Energy Guideline 2022* and the accompanying *Technical Supplement – Landscape and Visual Impact Assessment* no mitigation is required for receivers with low or very low visual impact. Consultation with the landowner at the location with moderate visual impact and all affected landowners within 1 km of the Project has been undertaken by Lightsource bp to discuss potential visual impact mitigation options which may include landscape screening or other agreed measures.

The Project would not be lit at night, except in emergency or security situations therefore the Project would not significantly change the appearance of night lighting within the Gundary Plains landscape.

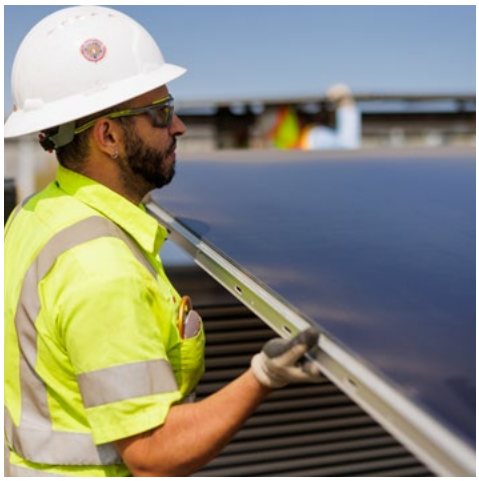
Cumulative visual assessment with the proposed Merino Solar Farm (to be located within 4 km of the Project) found that seven residential viewpoints could potentially view both projects however the views were secondary from most viewpoints (limited by dense vegetation and/or buildings) and no viewpoint would see both solar farms within the same field of view. Proposed landscaping along Windellama Road would reduce potential cumulative visual impacts for drivers.

## GLINT AND GLARE

Glint is generally defined as a momentary flash of bright light while glare is a continuous source of excessive brightness. While glint and glare impacts from solar farms are relatively uncommon, it is important to model and assess these impacts to ensure the safety of sensitive visual receivers such as road users, rail network operators, air traffic controllers and pilots and nearby building occupants.

Based on a worst-case solar glare hazard analysis, which evaluated glare based on proximity to receivers, orientation and specifications of the photovoltaic modules, glare exposure for private residential receivers is below acceptable thresholds and no additional mitigation is required. Kooringaroo Road users were identified as likely to experience glare from the Project in excess of the acceptable threshold of 10 hours per year, and Lightsource bp has committed to screen planting along the eastern and north-eastern boundary, to mitigate these potential glare impacts. No glare impacts were identified for a nearby landing strip or any associated flight paths.

## NOISE AND VIBRATION



The assessment of potential construction noise and vibration impacts found that during some stages of construction, noise impacts are predicted to occur at 21 receivers, but no receiver was predicted to be 'highly noise affected' (i.e. exposed to noise levels greater than 75 dB(A)). Noise mitigation measures will be implemented during construction and will include but not be limited to, the use of non-tonal reversing beepers, the placement of plant away from sensitive receivers, inductions for all workers with information on minimising potential noise impacts and consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures.

Road traffic noise during worst-case peak construction periods may affect one receiver, which is located within 30 m of the road edge, however additional road traffic noise is likely to be negligible for most sensitive receivers in the area. Cumulative construction road traffic noise assessment which also considered the proposed Merino Solar Farm identified two potential receivers that may be impacted, although it is noted that assessments were highly conservative and assumed the simultaneous movement of peak construction traffic volumes for both projects.

The Project is predicted to comply with all applicable noise limits at nearby existing sensitive receivers during operations, with the incorporation of noise control measures (such as strategically located noise barriers around parts of the substation and some decentralised BESS units).

## TRAFFIC AND TRANSPORT

Major solar and BESS components would be delivered to either Port Botany in Sydney or Port Kembla south of Wollongong and transported to the Project Area by truck via the Hume Highway.

Two options for transport of materials from the Hume Highway to the Project Area were assessed, and are:

- **Option 1:** Hume Highway – Sydney Road – Reyolds Street – Grafton Street – Sloane Street – Braidwood Road – Bungonia Road – Windellama Road.
- **Option 2:** Hume Highway – Hume Street – Garroorigang Road – Sloane Street – Braidwood Road – Bungonia Road – Windellama Road.

Both routes can satisfactorily accommodate the swept path movements of the proposed construction vehicle types (up to 38m) without the need to adjust road infrastructure or intersection layouts however Option 2 has been identified by Council as the preferred route. This is due to it passing mainly through rural and industrial land uses. Minor temporary works may be required at the Braidwood Road/Bungonia Road intersection to accommodate the Oversize Over Mass (OSOM) vehicles (i.e. 50m long). These works may include temporary removal of street furniture, streetlighting and/or medians. The road network also has sufficient capacity to accommodate the concurrent movement of construction traffic from the proposed Merino Solar Farm, should this be required.

Vehicle access to the Project will be via an existing driveway on Windellama Road which will be upgraded to accommodate the movement of heavy vehicles. An additional emergency access point will also be provided on Kooringaroo Road.

A Construction Traffic Management Plan will be prepared prior to construction to outline proposed management measures which will minimise the impacts of additional Project traffic on the local road network. The Plan will incorporate specific controls for OSOM vehicle movements, advanced community communication regarding road and transport network changes, the use of a shuttle bus service to reduce workforce traffic movements, and requirements for dilapidation surveys before and after construction to ensure that any damage from construction traffic, excluding normal wear and tear, is repaired.

## WATER RESOURCES

The Project Area is located within the Gundary Creek catchment which is part of the Mulwaree River sub-catchment within the Hawkesbury-Nepean River system, and is part of the Sydney drinking water catchment. Gundary Creek is formed at the confluence of the 5th order Quialigo Creek (perennial) and Bullamalito Creek, immediately to the west of the Project Area, and drains in a northerly direction through the northern portion of the Project Area. Bullamalito Creek (perennial) and an unnamed 4th order tributary of Bullamalito Creek (non-perennial) drain from east to west across the southern portion of the Project Area. Two unnamed 3rd order streams are also present in the Project Area.

Assessments were undertaken to investigate the potential impacts of the Project in relation to surface water quality, flooding, stream stability, water availability, groundwater and aquatic habitat impacts and all impacts can be appropriately mitigated.

During construction, when soils are disturbed through vegetation clearing and earthworks, erosion and sediment controls will be established to divert clean water around the site and prevent the movement of sediment offsite. Ground disturbance will be minimised as much as possible and works near watercourses will be scheduled to avoid periods of high rainfall. While the Project layout has been designed to avoid works on waterfront land, and the Project layout incorporates riparian buffers of approximately 20 m to 40 m around all 2nd order and higher creek lines, some watercourse crossings will be required to facilitate access across the Project Area. These will be designed to minimise impacts on stream stability and fish passage in accordance with relevant guidelines.

As the Project is located within the Sydney drinking water catchment, modelling of pre- and post-development water quality was undertaken to identify whether the neutral or beneficial effect (NorBE) criteria can be achieved. The modelling predicted reductions in all pollutants for the post-development scenario due to the implementation of stormwater treatment measures (e.g., vegetated swales and bioretention basins), however further reductions in total phosphorus concentrations may be required when modelling is repeated at the detailed design stage in order to meet Water NSW improvement criteria. This could require the inclusion of additional treatment measures such as filtration systems, sediment basins and/or gross pollutant traps.

Flood modelling results confirmed that all solar panels and infrastructure are located outside areas of major flood hazard and although peak discharge volumes may increase slightly due to the increase in impervious surfaces across the Project Area, potential impacts to drainage features and downstream watercourses would be minimal.

Water required for the Project will be sourced under agreement with the landholder (either from farm dams or the existing groundwater bore in accordance with licence conditions) and no impacts to surface water or groundwater availability in the vicinity of the Project are anticipated. No additional interaction with the groundwater table is anticipated and no impacts to groundwater dependent ecosystems are expected.

# Hazards and Risks

## PRELIMINARY HAZARD ANALYSIS

A Preliminary Hazard Analysis was undertaken to evaluate the risks posed by the BESS and electrical transformer units. The key outcome of the analysis was that all potentially hazardous components of the Project are located at distances greater than the impact range of any credible hazard event from the nearest non-associated residences.

The Project will implement a range of risk mitigation and management measures, including rigorous design and maintenance practices to reduce the likelihood of any hazardous events occurring. A Final Hazard Analysis, Fire Safety Study and Emergency Plan will be developed as the Project design progresses toward completion.

## BUSHFIRE THREAT ASSESSMENT

Due to the presence of grassland, the majority of the Project Area is identified as 'Category 3' bushfire prone land. This category includes vegetation that poses a 'medium' bushfire risk, such as grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands. Pockets of remnant vegetation in the vicinity of the Project Area are classified as 'Category 1' or 'high' risk vegetation.

A bushfire threat assessment was undertaken in accordance with Rural Fire Service (RFS) guidelines and evaluated the vegetation, topography and environmental features of the Project Area. The assessment concluded that the bushfire threat for the Project is considered low as the landscape is predominantly grazed, which reduces grassland fuel loads and bushfire potential.

Following advice from RFS and FRNSW, the Project incorporates a 10 m Asset Protection Zone (APZ), dedicated non-combustible water tanks with a combined capacity of 180,000 L distributed throughout the site, supplementary access via Kooringaroo Road (for emergencies only) with emergency access points (via gates) along the security fence and access tracks with turning bays across the site to allow for safe movement by emergency services personnel. A Bushfire Emergency Management and Operations Plan will be developed and implemented to identify all relevant risks, mitigation measures and procedures.

## ELECTROMAGNETIC FIELDS (EMF)

While the solar photovoltaic units themselves do not emit EMF, many of the fundamental components of a solar farm (including power conversion units, substations and powerlines) inherently produce varying levels of electromagnetic emissions.

The design, selection and procurement of the electrical equipment for the Project would comply with relevant international and Australian standards for generation of and exposure to EMF. The required electrical safety standards and codes (including provision of fencing, enclosures, and physical distance) will mitigate the risk of potential EMF exposure to the general public from these sources. Additionally, the Project layout has been designed to ensure adequate separation distances between sensitive receivers and Project infrastructure.

It is therefore concluded that with the implementation of recommended management and mitigation measures, the risk of impacts from EMF generated by the Project would be limited.

# Social

As a state significant development, Lightsource bp recognises that the Project may have impacts on people in both positive and negative ways. The Social Impact Assessment has identified and evaluated likely social impacts and proposes responses that aim to provide greater certainty and transparency for the community, while achieving mutually beneficial outcomes.

The social impacts that were identified as being most significant included both negative and positive impacts:

**NEGATIVE**

- Change in sense of place due to loss of visual amenity as a result of industrialisation of the landscape.
- Stress and anxiety associated with Project uncertainties and the cumulative impact of concurrent project development in the locality.
- Perceived inability of local community to inform Project planning and decision-making processes.

**POSITIVE**

- Generation of local employment and procurement opportunities.
- Livelihood enhancement associated with hosting of Project infrastructure.
- Improved social capital for local community infrastructure and initiatives associated with community benefit sharing programs.
- Intergenerational equity and improved liveability due to contribution of the Project to renewable energy generation.

A range of strategies will be implemented in response to the predicted social impacts associated with the Project, and include:

- Social Impact Management Plan – this plan will document the key mitigation and enhancement commitments for the Project and will include a program to monitor and report on their effectiveness.
- Community and Stakeholder Engagement Plan – as previously described, the CSEP guides the engagement process and Lightsource bp will continue to implement and evaluate this plan throughout the construction and operation of the Project.
- Community Benefits Sharing Strategy and Neighbourhood Benefit Sharing Program – continued implementation of these programs to guide the delivery of community benefits to those most impacted by the Project to provide an equitable share in direct financial benefits.
- Accommodation and Employment Strategy –this strategy, which has been developed throughout the EIS process, will ensure sufficient accommodation is available for the incoming Project workforce without compromising local services and infrastructure availability, while maximising employment opportunities for local workers.

## ECONOMIC

The Project will involve a capital investment of approximately $650 million in addition to ongoing expenditure in the operational and decommissioning phases. The Project will contribute the following economic outcomes for the region:

- 155 direct and 245 indirect jobs during the peak of construction, totalling 400 FTE total jobs nationally (over 18-24 months during construction), including 60 FTE jobs for the region.
- 14 FTE total jobs (4 FTE direct and 10 FTE indirect) nationally during operations, including 6 FTE jobs for the region
- Ongoing economic stimulus of approximately $114 million over 40 years (CPI adjusted) relating to operational wage stimulus, community/neighbour payments, increased Council land tax returns.
- Construction workers relocating to the region would be expected to inject approximately $11 million (2024 AUD) in new spending into the economy over the construction phase, supporting approximately 28 FTE jobs in the service sector in the region over this time.

## WASTE MANAGEMENT

An assessment of waste was undertaken to assess the potential risks associated with waste management of the Project. Waste streams are within the capacity of local waste management facilities and for potential exceedances, additional services will be consulted to avoid negative impacts on local waste services.

Suitable facilities for the management of waste have been identified within the EIS.

Waste management during construction, operations and decommissioning will be carried out in accordance with relevant legislation and guidelines and based on the principles of the waste hierarchy:

- Prioritising the avoidance of unnecessary resource consumption.
- Implementing resource recovery where possible.
- Considering responsible disposal as a final option.

A draft Waste Management Plan has been prepared as part of the EIS and will be implemented should the Project be approved. In addition, Goulburn-Mulwaree Council has confirmed that Goulburn Waste Management Centre and Endeavour Industries Goulburn have the capacity to accommodate expected waste types and quantities generated by the Project. Lightsource bp will continue to consult with Council throughout the development and operation of the Project with regard to waste management and disposal.

## AIR QUALITY

The main air emissions during construction of the Project would be dust and air borne particles generated from construction activities, including vegetation clearing and site preparation, as well as vehicle and equipment exhaust emissions. These emission sources would be localised and temporary in nature for the duration of the construction and decommissioning phases. During operations minor emissions would arise from vehicle use on internal unsealed roads.

Mitigation measures to reduce air emissions will be incorporated into the Construction Environmental Management Plan and will include the use of water suppression on unsealed roads and stockpile areas as required, modification of activities during periods of dry and windy weather, vehicle maintenance and operation protocols, and timely rehabilitation of exposed areas.

# Conclusion

The Gundary Solar Farm has been designed with a view to avoiding potential environmental and social impacts wherever possible, consistent with the principles of ecologically sustainable development. An iterative approach to Project design, which has incorporated feedback from the community and results of technical studies, has resulted in refinements to the Project which have reduced impacts and improved environmental and social outcomes. Lightsource bp is committed to continue working with the local community as detailed design progresses.

The Project is justified noting that significant investment from the private sector is required to achieve sufficient renewable energy supply to support NSW's transition to renewable energy and the retirement of the existing fossil fuel supply. Further, the Project is consistent with the strategic objectives of both the Commonwealth and NSW Governments by providing large-scale, renewable electricity generation that is both cost-effective and reliable to assist in the reducing greenhouse gas emissions and the impacts of climate change. The Project will avoid up to 670,000 tonnes per annum of carbon dioxide emissions from energy production in NSW.

The Project Area has been selected due to its suitable location in a region with ideal climatic and physical conditions to support large-scale solar energy generation and its easy access to existing transmission line infrastructure. This minimises energy lost in transmission and also the need for construction works and disturbance associated with additional infrastructure often required to connect large-scale renewable energy projects to the electricity market.

The Project will involve a capital investment of approximately $650 million throughout the regional economy, will create up to 400 FTE jobs during construction, and four jobs over the 40-year operational lifespan. Continued implementation of the Community Benefits Sharing Strategy and Neighbourhood Benefit Sharing Program will provide further assistance to relevant stakeholders.

The assessment findings outlined in the EIS demonstrate that while there will be some environmental and social impacts associated with the Project, these have been avoided, or can be minimised and appropriately managed through the implementation of best practice management and mitigation measures.

Given the significant capital investment and contributions to regional employment and local community benefit schemes, and the commitment to ongoing management of impacts, it is considered that the Project would result in a net benefit to the region and broader community of NSW.

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