Department of Planning, Housing and Infrastructure

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Goulburn River Solar Farm

State Significant Development Assessment Report (SSD-33964533)

August 2024

Acknowledgement of Country

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past and present through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's (the Department) assessment and evaluation of the State significant development (SSD) application for the Goulburn River Solar Farm, located approximately 28 kilometres south-west of Merriwa, lodged by Lightsource Development Services Australia Pty Ltd. The report includes:

- an explanation of why the project is considered SSD and who the consent authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- a recommendation to the decision-maker, along with the reasons for the recommendation, to assist them in making an informed decision about whether development consent for the project should be granted and any conditions that should be imposed.

Executive Summary

Lightsource Development Services Australia Pty Ltd (Lightsource) proposes to develop a 450 megawatt (MW_{AC}) State significant development (SSD) solar farm and associated battery energy storage system (BESS), on an agricultural property approximately 28 kilometres (km) south west of Merriwa, in the Upper Hunter local government area (LGA).

The project is located in close proximity to the Golden Highway and would connect to the existing 500 kilovolt (kV) transmission line that traverses the site. The site is currently primarily used for grazing and some cropping for fodder, with patches of scattered paddock trees.

The Department of Planning, Housing and Infrastructure (the Department) exhibited the Environmental Impact Statement for the project from 13 June 2023 to 10 July 2023 and received 53 unique public submissions (45 objections, 5 in support and 3 providing comment). Upper Hunter Shire Council provided comment and Mid-Western Regional Council provided an objection during the exhibition, citing concerns about traffic and accommodation. Advice was also received from 12 government agencies.

The Department consulted with both councils and relevant government agencies on key issues, and conducted a site inspection. None of the agencies, or utility providers, objected to the project, and they each recommended the implementation of appropriate mitigation and management measures.

In response to agency advice and public submissions, Lightsource amended the project twice to include additional road upgrade works, amendments to the BESS design, construction of a workers accommodation facility onsite, and revised the project area as a means of mitigating potential biodiversity impacts.

The project amendments would lead to better outcomes and address key concerns raised by the Department, agencies and in public submissions by mitigating potential traffic safety concerns, further avoiding impacts on threatened ecological communities and reducing the reliance of the project on local accommodation providers.

The key assessment considerations are energy security, transport and biodiversity. The Department has also undertaken a comprehensive assessment of the full range of other potential impacts and recommended a range of detailed conditions, developed in conjunction with agencies and Councils, to ensure all potential impacts are effectively minimised, managed or offset.

While traffic impacts were of particular concern to members of the local community, Lightsource has committed to a number of avoidance and mitigation measures to manage these impacts.

These include a series of road upgrades, restricting project-related traffic movements to left-only movements from the Golden Highway, ongoing vehicle monitoring, and development of a Traffic Management Plan.

The site has previously been subject to extensive vegetation clearing, grazing, cropping and pasture improvement associated with historic agricultural land uses. The development footprint requires the clearing of 791 hectares (ha) of native vegetation, however the vast majority of this is low quality land that has minimal biodiversity values and does not require offset (only 192.5 ha would require offsetting under the NSW Biodiversity Offset Scheme). The project has been designed and refined to effectively avoid and minimise biodiversity impacts to native vegetation. The Department considers that the biodiversity impacts of the project have been adequately addressed, and are acceptable, subject to a range of mitigation and adaptive management measures and by offsetting the residual biodiversity impacts.

The project is consistent with the Commonwealth's Renewable Energy Target and NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020 – 2030*, as it would contribute 450 MW_{AC} of renewable energy to the National Electricity Market, including a battery with a capacity of 450 MW / 900 MW-hour. Importantly, the battery would enable the project to store energy for dispatch to the grid outside of daylight hours and / or during periods of peak demand, which has the potential to contribute to increased grid stability and energy security.

The Department considers the site appropriate for the project as it has good solar resources, available capacity on the existing electricity network and is consistent with the Department's *Large-Scale Solar Energy Guideline*.

The project would also provide flow-on benefits to the local community, including up to 350 construction jobs and a capital investment of $880 million. A VPA involving annual payments to Council up to approximately $190,000 over the life of the project is also proposed.

The Department considers the project would not result in any significant impacts on the local community or the environment, and any residual impacts can be managed through the implementation of the recommended conditions.

The Department considers that the project would result in benefits to the State of NSW and the local community and is therefore in the public interest and approvable.

Contents

1 Project

Lightsource Development Services Australia Pty Ltd (Lightsource) proposes to develop a 450 megawatt (MW_{AC}) State significant development (SSD) solar farm and associated battery energy storage system (BESS), on an agricultural property approximately 28 kilometres (km) south west of Merriwa, in the Upper Hunter local government area (LGA) (see **Figure 1** and **Figure 2**).

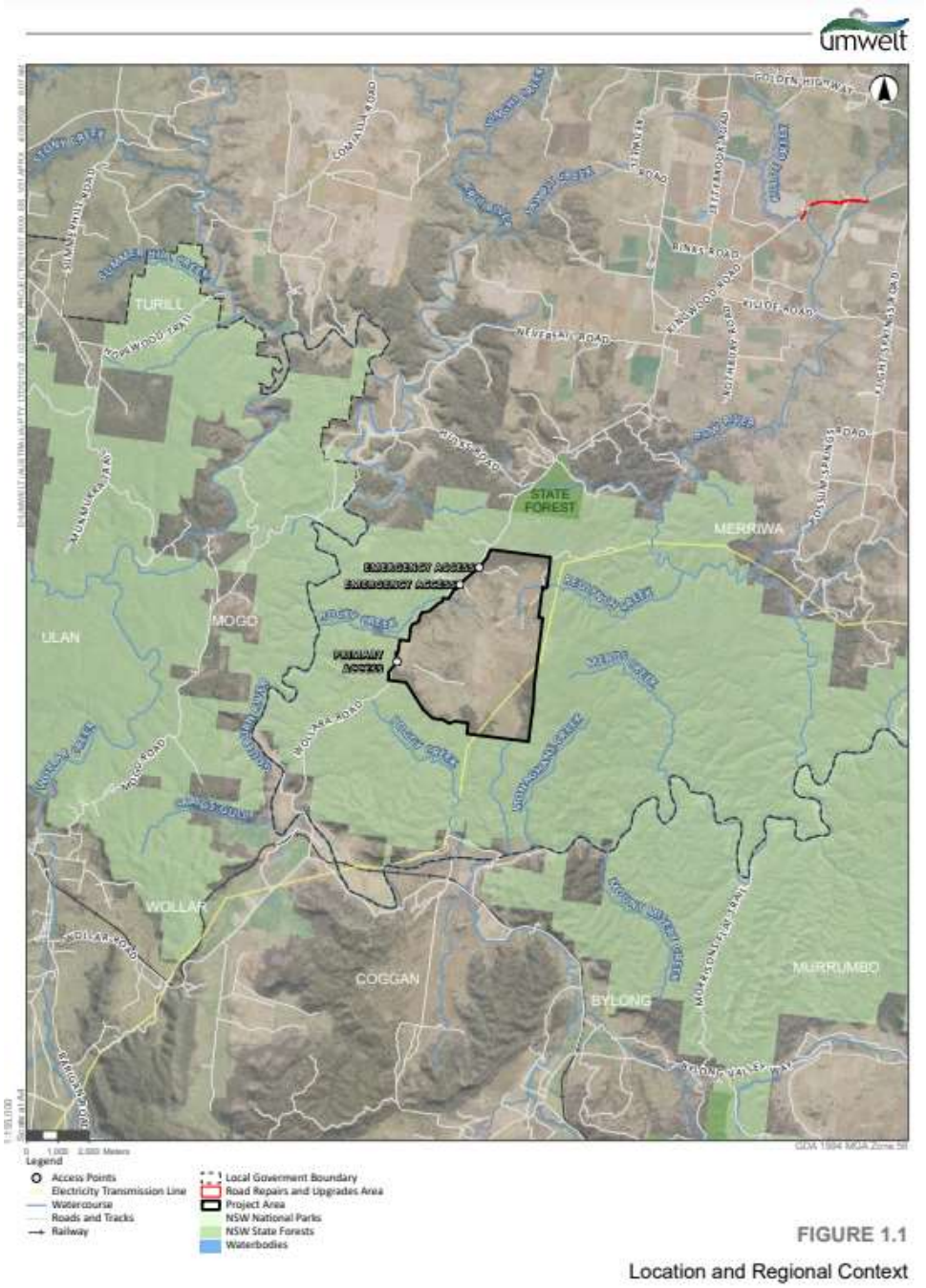


Figure 1 | Regional context map

The project would include a 450 MW / 900 MW-hour (MWh) centralised BESS, a 580 MW / 1,160 MWh decentralised BESS or a combined centralised and decentralised BESS with a total capacity of 1,030 MW / 2,060 MWh. The project would also include a temporary workforce accommodation camp, an onsite substation and connection to an existing 500 kilovolt (kV) transmission line operated by Transgrid that crosses the south east portion of the site (see **Figure 2**).

The key components of the project are summarised in **Table 1**, depicted in **Figure 2**, and described in the Environmental Impact Statement (EIS) and supporting documentation (see **Appendices A to F**).

Table 1 | Main aspects of the project

Aspect	Description
Project summary	The project includes: • a generating capacity of approximately 450 MW_{AC}; • approximately 1 million bifacial solar panels on single axis tracking system (up to 4 m high) supported by power conversion units, inverters, transformers and control equipment; • underground cabling between solar panels and power conversion units, internal access tracks, staff amenities, control and maintenance buildings, offices, laydown areas, car park, watercourse crossings and security fencing; • an onsite substation and connection into Transgrid's 500 kV transmission lines; • a 450 MW / 900 MWh centralised BESS, a 580 MW / 1,160 MWh decentralised BESS or a combined centralised and decentralised BESS with a total capacity of 1,030 MW / 2,060 MWh; and • temporary workers accommodation facility. No subdivision of land is proposed.
Project area	• Site: 2,000 ha • Development footprint: 793 ha
Site entry and access route	• Proposed access route is Golden Highway, Ringwood Road and Wollara Road. • All vehicles would access the site via the existing driveway off Wollara Road.
Road upgrades	Road upgrades proposed: • realignment, widening and sealing of portions of Ringwood Road and Wollara Road; • upgrading the intersection at the Golden Highway and Ringwood Road; and • sealing the throat of Barnett Street.
Construction	• The construction period would be approximately 27 months, with a peak construction period of 7 months. Construction hours would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.

Aspect	Description
Operation, decommissioning and rehabilitation	• The expected operational life of the infrastructure is approximately 40 years. However, the project may involve infrastructure upgrades that may extend the operational life. The solar farm and BESS would operate 24 hours a day, seven days a week. • At the end of the project life, all infrastructure would be removed and the land rehabilitated.
Employment and capital investment	Up to 350 construction jobs and up to 10 operational jobs. CIV is $880m.

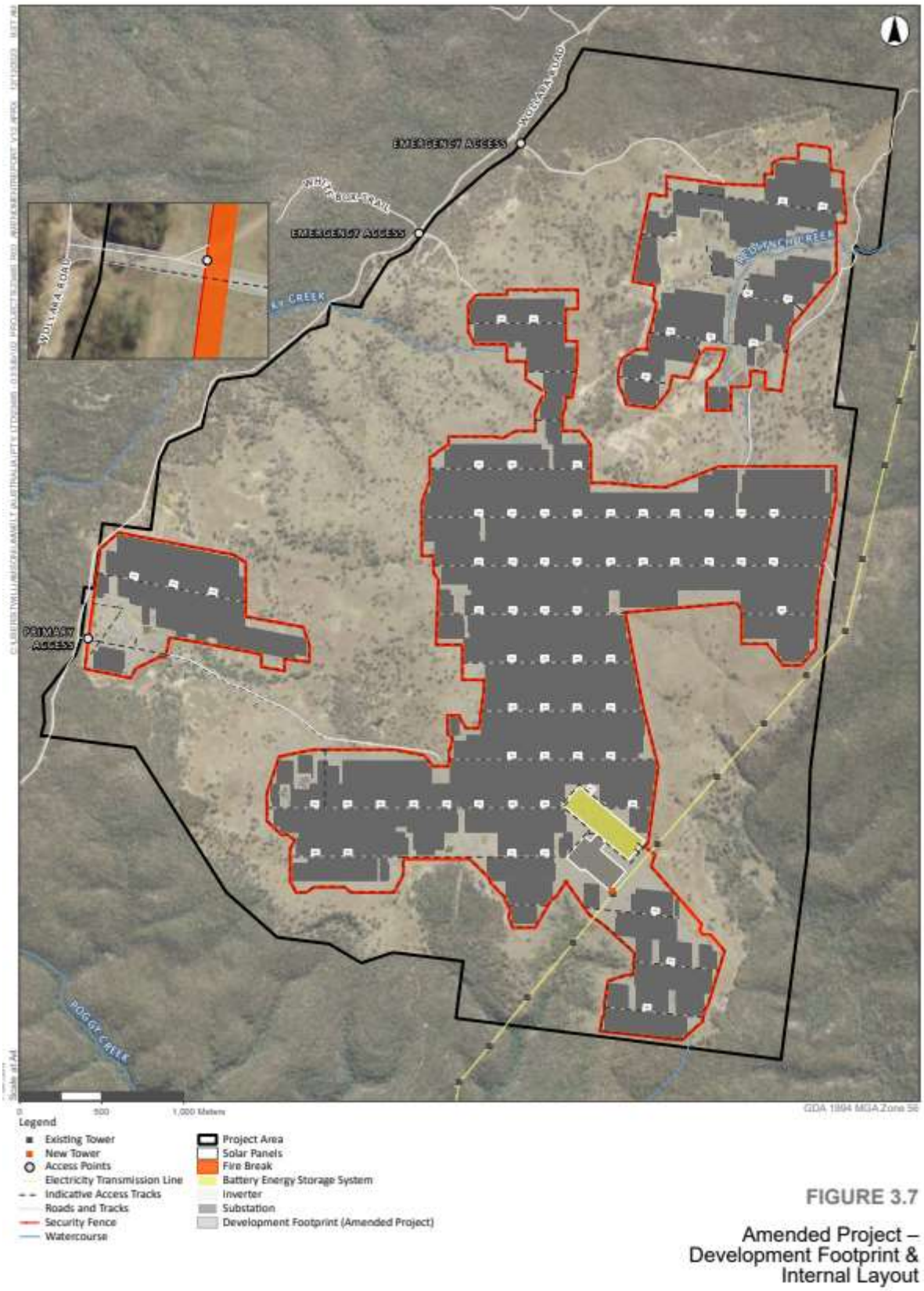


Figure 2 | Project Site

2 Strategic Context

2.1 Site and Surrounds

The site is located on an agricultural property which is surrounded on all sides by the Goulburn River National Park (see **Figure 1**). Importantly, there are no works proposed inside the boundary of the National Park.

The site has previously been subject to extensive vegetation clearing, grazing, cropping and pasture improvement associated with historic agricultural land uses. Currently, the site is primarily used for grazing and some cropping for fodder, with patches of native vegetation and scattered paddock trees.

The site does not contain any mapped Biophysical Strategic Agricultural Land (BSAL), and land within the development footprint comprises a mix of Land and Soil Capability (LSC) Class 4 (i.e. land with moderate to severe limitations) and Class 6 (i.e. land with very severe limitations).

A number of first and second order watercourses traverse the site, along with three third order watercourses which eventually flow into the Goulburn River. All of these watercourses are ephemeral, and most of the riparian zones have been significantly modified by historic agricultural practices, including complete removal of the riparian vegetation in most areas.

The site has no immediate neighbours, however there are several rural properties located to the north of the National Park, with the closest non-associated residence located approximately 6 km away.

The site is bounded on the western side by Wollara Road, which would provide access to the site, and an existing 500 kV transmission line easement traverses the south-eastern corner (see **Figure 2**).

2.2 Other Energy Projects

There are five State significant renewable energy projects within 50 km of the project site (see **Table 2** and **Figure 3**).

Table 2 | Main aspects of the project

Project	Capacity (MW)	Status	Approximate distance from the project (km)
Wollar Solar Farm	290	Construction	22 km south west
Merriwa Solar Farm	550	Proposed	30 km north east
Ulan Solar Farm	90	Proposed	38 km east
Stubbo Solar Farm	400	Construction	47 km east
Narragamba Solar Farm	320	Proposed	50 km east

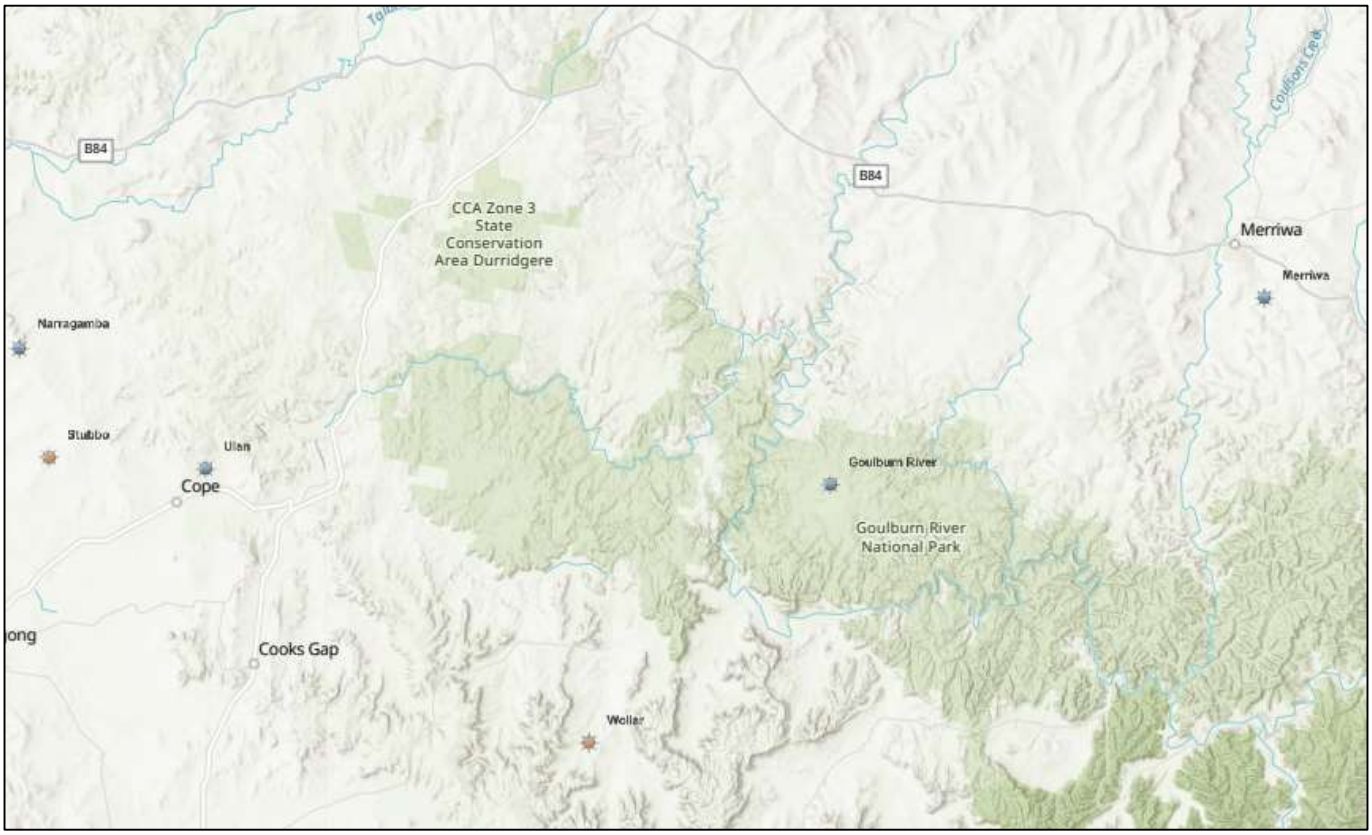


Figure 3 | Nearby SSD Renewable Energy Projects

2.3 Energy Context

The Commonwealth and State energy context is described in **Table 3**.

Table 3 | Energy Context

Policy / Year	Summary
Australia's Long Term Emissions Reduction Plan (2021)	Sets a pathway to net zero emissions by 2050 and affirms Australia's commitment to meeting its revised 2030 target (43% below 2005 levels).
Australian Energy Market Operator's 2022 Integrated System Plan (ISP)	Notes that: • without coal, investment is needed to meet significantly increased electricity demand requiring a nine-fold increase in large-scale variable renewable energy generation (wind and solar); • a mix of solar and wind is needed, and they offer complementary daily and seasonal profiles.

Policy / Year	Summary
NSW: *Climate Change Policy Framework (2016);* *Transmission Infrastructure Strategy (2018);* *Electricity Strategy (2019);* *Electricity Infrastructure Roadmap (2020);* *Net Zero Plan Stage 1: 2020 – 2030 (2020) and Implementation update (2022);* *Hunter Regional Plan 2041*	Relevant aspects of these policy documents include: • aims to achieve net zero emissions in NSW by 2050 and reduce emissions by 70% below 2005 levels by 2035; • notes that all coal fired power plants in NSW are scheduled for closure within the next twenty years; • identifies Renewable Energy Zones (REZ) across NSW aimed at encouraging investment in new electricity infrastructure and unlocking additional generation capacity in order to ensure secure and reliable energy in NSW; and • regional goals to support the State's transition to lower emissions and Council goals to promote renewable energy production.

In 2023, NSW derived approximately 36% of its energy from renewable sources. The rest was derived from fossil fuels, including 61% from coal and 3% from gas. NSW is one of the nation's leaders in large-scale renewables, with 39 major operational projects and 69 under construction or planned to be under construction.

The project's alignment with existing Commonwealth and State policies and strategies are considered in **section 3**.

2.4 NSW Solar Guideline

The Department released the *Large-Scale Solar Energy Guideline* in December 2018 to provide the community, industry, and regulators with guidance on the planning framework for assessing large-scale solar projects and identifying the key planning considerations relevant to solar energy development in NSW.

The Guideline was revised in August 2022 following extensive consultation, to ensure the assessment of large-scale solar energy projects continues to be transparent, consistent and supported by the best available information. While the revised guideline does not strictly apply to this project as it was not listed in the Secretary's Environmental Assessment Requirements (SEARs), the project is broadly consistent with the principles in the revised guideline.

The Guideline recognises that large-scale solar projects could help to reduce reliance on fossil fuels, thereby contributing to reduction in air pollution and greenhouse gas emissions, while also supporting regional NSW through job creation and investment in communities that may not have similar opportunities from other industries.

3 Statutory context

3.1 State significant development

The project is classified as State significant development under Section 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is because it triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (Planning Systems) 2021*, as it is development for the purpose of electricity generating works with a capital investment value of more than $30 million.

Consequently, the Minister for Planning and Public Spaces is the consent authority for the development. However, under the Minister's delegation of 9 March 2022, the Executive Director, Energy, Resources and Industry Assessments, may determine the development application as Upper Hunter Shire Council did not object[1], there were less than 50 objections from the general public and a political donations disclosure statement has not been made.

3.2 Amended application

In accordance with section 37 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), a development application can be amended at any time before the application is determined. Lightsource sought to amend its application, the details of which are summarised in **Section 4.5** of this report. Under the delegation from the consent authority of 9 March 2022, the Director, Energy Assessments can agree to amendments to an application.

The Department accepted the amended application for the following reasons:

- the project amendments did not increase the impacts of the project as a whole;
- the amended application directly responds to the key issues raised in agency advice and submissions received by the Department during the exhibition of the original application;
- Lightsource assessed the impacts of the amended project (see **Appendix E**); and
- the Department made the additional information available online and sent it to the relevant agencies for comment.

[1] Although Mid-Western Regional Council objected to the project during the exhibition period, it is not the "*council of the area in which the development is to be carried out*" (as per Clause 2.7(1)(a) of the Planning Systems SEPP), and therefore this does not trigger referral to the Independent Planning Commission as the consent authority.

3.3 Permissibility

The site is zoned RU1 – Primary Production under the *Upper Hunter Local Environment Plan 2013* (Upper Hunter LEP). The project is permissible because electricity generating works are permissible with consent on any land in a prescribed rural, industrial or special use zone, including land zoned RU1, under clause 2.36 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Infrastructure SEPP).

3.4 Integrated and other approvals

Under Section 4.41 of the EP&A Act, a number of other approvals are integrated into the State significant development approval process, and therefore are not required to be separately obtained for the proposal.

Under Section 4.42 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal (e.g. approvals for any works under the *Roads Act 1993*).

Further authorisations are required under the *Crown Land Management Act 2016*, including a Crown lands licence or easements before infrastructure can traverse Crown lands located within the development footprint.

The Department has consulted with the relevant government agencies responsible for the integrated and other approvals, considered their advice in its assessment of the project, and has recommended conditions of consent to address these matters (see **Appendix G**).

3.5 Mandatory matters for consideration

Section 4.15 of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. The Department has considered all of these matters in its assessment of the project, as well as Lightsource's consideration of environmental planning instruments in its EIS. The Department has also considered relevant provisions of the environmental planning instruments in **Appendix H**.

3.6 Matters of National Environmental Significance

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), assessment and approval is required from the Australian Government if a project is likely to impact on a Matter of National Environmental Significance (MNES), as it is considered to be a 'controlled action'.

On 2 February 2022, a delegate of the Commonwealth Minister for the Environment (Commonwealth Minister) determined that the project was a controlled action under section 75 of the EPBC Act and identified that the project is likely to have a significant impact on MNES relevant to the project. Consequently, the project requires the approval of the Commonwealth Minister for the Environment in addition to any State approvals before the project may proceed.

Under section 45 of the EPBC Act, the assessment process under the EP&A Act has been accredited under a Bilateral Agreement with the Australian Government. Accordingly, the NSW Government has undertaken the assessment of MNES on behalf of the Australian Government.

The assessment of the project's impacts on MNES under the EPBC Act are considered in **Section 5.4** and **Appendix J** of this report.

In accordance with the Bilateral Agreement the Department has provided the Australian Government with the draft copy of this assessment report and the recommended conditions of consent, to which the Australian Government confirmed it had no concerns at this time.

4 Engagement

4.1 Department's engagement

The Department publicly exhibited the EIS from 13 June 2023 to 10 July 2023 (28 days), advertised the exhibition in the *Australian*, *Hunter Valley News* and *Hunter River Times* and notified landowners adjacent to the project boundary. The Department visited the site and surrounds in June 2024.

The Department also consulted with Upper Hunter Shire Council and Mid-Western Regional Council and relevant government agencies throughout the assessment. The Department notified and sought comment from Transgrid and Transport for NSW (TfNSW) in accordance with the Infrastructure SEPP. A copy of all submissions and agency advice is provided in **Appendix B** and **Appendix C**.

4.2 Summary of Council's submissions

During the exhibition of the EIS, Upper Hunter Shire Council provided comment and Mid-Western Regional Council objected to the project.

In response to feedback from both councils regarding the lack of available workforce accommodation, Lightsource provided an amended application that proposed a temporary accommodation camp on the site.

Lightsource also provided additional information through the Submissions Report to address many of the concerns from both councils, including traffic impacts to the local road network, bushfire safety, waste management and the availability of social services.

Upper Hunter Shire Council has agreed to the general terms proposed by Lightsource for a voluntary planning agreement.

The Department consulted with both councils on conditions for the project and received feedback, as discussed in **Section 5** where relevant.

4.3 Summary of advice received from government agencies

A summary of the key matters raised in the government agency advice is provided in **Table 4**. The Department's consideration of the matters raised is provided in **Section 5**. All concerns raised by agencies have been resolved through the Submissions Report provided by Lightsource and the recommended conditions of consent.

Table 4 | Summary of agency advice

Agency	Advice summary
Biodiversity, Conservation and Science Group within NSW DCCEEW (BCS)	• Expressed concern about impacts to potential Serious and Irreversible Impact (SAII) entities, and requested further avoidance and minimisation strategies. • Provided advice around revisions required for inputs into the BDAR, including survey methodology, spatial data and BAMC inputs.
Water Group within NSW DCCEEW	• Requested confirmation works would be setback from mapped watercourses in accordance with the *Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors* (DPE 2022) and further information regarding the availability of water sources for construction of the project which Lightsource has provided.
DPI Agriculture	• Requested further information regarding sheep grazing around solar panels and ground cover management, however did not raise any concerns regarding loss of agricultural land at the site.
DPI Fisheries	• Recommended the implementation of riparian buffer zones and measures to ensure fish passage is maintained. Recommended that development comply with relevant policy, including *Policy and Guidelines for Fish Habitat Conservation and Management* and *Guidelines for Controlled Activities on Waterfront Land*.
Heritage NSW	• Recommended mitigation measures to be detailed in a Heritage Management Plan.
Forestry Corporation of NSW	• Requested details regarding access and ongoing maintenance of Wollara Road (proposed to be upgraded) which Lightsource has resolved directly with Forestry and Council.
Fire and Rescue NSW (FRNSW)	• Recommended mitigation measures including a Fire Safety Study and Emergency Response Plan.
NSW Rural Fire Service (RFS)	• Requested a Fire Management Plan and establishment of an asset protection zone in relation to the solar farm and BESS development footprint with a 10,000 litre water supply tank be sited at the site entrance. This has been included in the recommended conditions. • Subsequently provided recommendations for Asset Protection Zones (APZs) for solar farm infrastructure, construction of internal access roads and the installation of vegetation for landscape screening. The Department has recommended conditions to this effect.

Agency	Advice summary
National Parks and Wildlife Services (NPWS)	• Raised concerns regarding proposed road upgrades within the bounds of the Goulburn River National Park, and the transmission line upgrades proposed to be undertaken by Transgrid to allow operation of the project. • Importantly, the project does not propose any road upgrades within the National Park boundary and NPWS has subsequently acknowledged that any transmission line upgrades proposed by Transgrid can be assessed under Part 5 of the EP&A Act and are not required to be included in the SSD application.
Transport for NSW	• Initial concerns regarding suitability of the proposed transport route without compliant SISD at the Golden Highway / Ringwood Road intersection. Also requested further information regarding cumulative impacts, heavy vehicle and over-size vehicle impacts, traffic volumes and infrastructure upgrades along the proposed transport route. • Following amendments to the project including additional upgrades at the Golden Highway / Ringwood Road intersection and additional traffic management measures to be detailed in a Traffic Management Plan, TfNSW noted their concerns had been substantially addressed.
Siding Springs Observatory	• Satisfied that measures proposed to be implemented would effectively mitigate impacts of night-time lighting on the night sky.

Crown Lands, Mining, Exploration and Geoscience (MEG), Heritage Council of NSW and Transgrid did not raise any concerns with the project.

4.4 Summary of public submissions

During the exhibition of the EIS, the Department received 53 unique public submissions (45 objections, five in support and three comments) from the public, noting that almost 70% of these objections were received from members of the public located more than 100 km from the site. The key issue raised by members of the local community was potential traffic impacts, including safety concerns of increased heavy vehicle traffic on Ringwood Road and Wollara Road and biodiversity impacts.

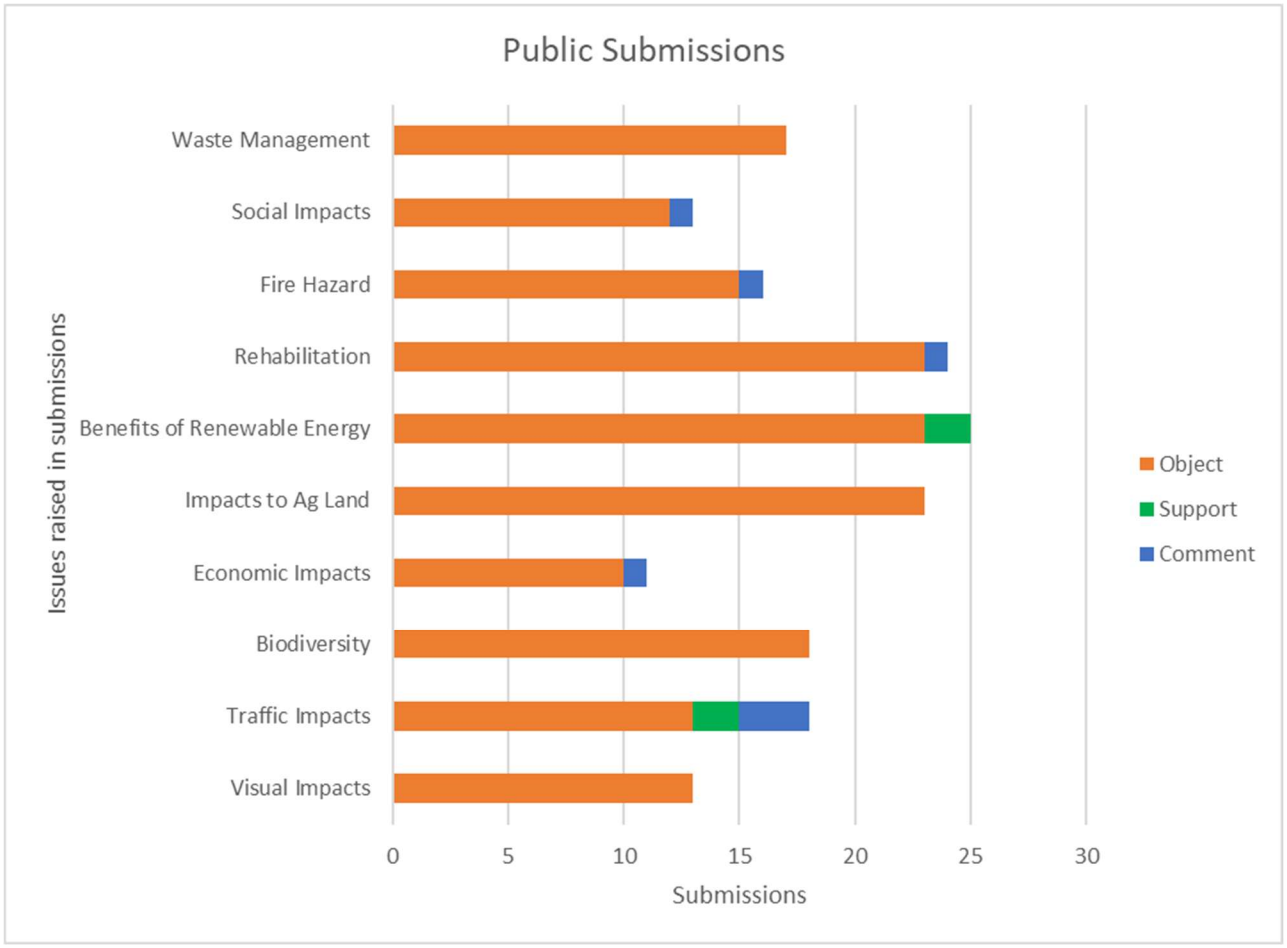
The majority of objections from further afield raised concerns with solar farms more broadly, including:

- scepticisms around the benefits of renewable energy, including reliability and efficiency;
- the decommissioning and rehabilitation of the site at the end of the projects life;
- waste management and recycling of solar panel components; and
- impacts to agricultural land.

Other issues raised in submissions included increased fire risks, visual impacts and social and economic impacts.

Advice was received from 12 government agencies along with submissions from Upper Hunter Shire Council (UHSC) and Mid-Western Regional Council (MWRC) (see **Appendix C**).

Lightsource provided a response to all matters raised and provided additional information during the Department's assessment (see **Appendix B**).



4.5 Amendment report

Following consideration of submissions on the project, Lightsource amended its application, as detailed in the Amendment Report (see **Appendix E**). These amendments are summarised in **Table 5**.

Table 5 | Amendment comparison

Aspect	EIS Project	Amended Project	Difference
BESS Capacity and Configuration	280 MW / 570 MWh centralised BESS	A 450 MW / 900 MW-hour MWh centralised BESS, a 580 MW / 1,160 MWh decentralised BESS or a combined centralised and decentralised BESS with a total capacity of 1,030 MW / 2,060 MWh	+ 170 MW / 300 MWh
Development Footprint	799.5 ha	792.19 ha	- 7.31 ha
Biodiversity Impacts	699.63 ha of Box Gum Woodland 42.30 ha of Regent Honeyeater habitat	693.86 ha of Box Gum Woodland 39.77 ha of Regent Honeyeater habitat	- 5.77 ha of Box Gum Woodland - 2.53 ha of Regent Honeyeater habitat
Road and Intersection Upgrades	Sealing of sections of Wollara Road.	Additional upgrades to 4.7 km of Wollara Road and 1.6 km of Ringwood Road. Upgrade of Golden Highway / Ringwood Road intersection. Sealing of the throat of Barnett Street.	Road upgrades to improve road safety and provide community benefit.
Accommodation	Construction workforce accommodated in the local communities within 60 minute drive of the project site.	Construction of a temporary workforce accommodation facility onsite.	Onsite accommodation to reduce strain on local accommodation resources.

5 Assessment

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues, namely the energy transition (**Section 5.1**), traffic and transport (**Section 5.2**) and biodiversity (**Section 5.3**),

The Department has also considered the full range of other potential impacts associated with the project and has included a summary of the conclusions in **Section 5.4**.

5.1 Energy transition

The project aligns with a range of national and state policies, which identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability.

The project would be located in close proximity to both the Central West Orana Renewable Energy Zone (REZ) and the Hunter REZ, and would have direct access to the electrical grid. With a capacity of 450 MW_{AC}, the project would generate enough electricity to power approximately 190,000 homes. The inclusion of a battery facility would enable the project to store solar energy for dispatch to the grid outside of daylight hours and/or during peak demand, increasing grid stability and energy security. As such, the project would play an important role in:

- increasing renewable energy generation and capacity;
- firming the grid by including 450 MW / 900 MW-hour energy storage or a combined centralised and decentralised BESS with a total capacity of 1,030 MW / 2,060 MWh; and
- contributing to the transition to a cleaner energy system as coal fired generators retire.

Further to this, in December 2023, the BESS component of the project was awarded a Long Duration Storage – Long Term Energy Services Agreement (LTESA) with the New South Wales Government. The LTESA is a contract mechanism which underpins long duration storage in the NSW energy system, and forms a key pillar of the NSW Electricity Infrastructure Roadmap.

The unique centralised and de-centralised design of the BESS proposed as part of this project serves to load shift energy without utilising the transmission network, increasing the utilisation and reducing the strain on the energy network. This functionality is key to allow the State to fully transition to renewable power systems.

Accordingly, the Department considers that the project is consistent with the policy documents outlined above which identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid, while providing energy security and reliability.

5.2 Traffic and transport

Construction of the project involves the delivery of plant, equipment and materials, including the movement of heavy vehicles requiring escort, which has the potential to impact on the local and regional road network primarily during construction. 13 submissions raised concerns about the potential traffic and road safety impacts on local roads during the construction period.

TfNSW and Upper Hunter Shire Council initially raised concerns about development traffic using the intersection of the Golden Highway and Ringwood Road as the minimum safe intersection sight distance (SISD) was unable to be met with a posted speed limit of 100 km/h.

In response to submissions and advice received from Council and TfNSW, Lightsource supplemented its Traffic Impact Assessment (TIA) with an additional assessment of the haulage route, a revised intersection design for the Golden Highway / Ringwood Road intersection, mitigation measures for construction traffic utilising the Golden Highway / Ringwood Road intersection and additional road upgrades on Wollara Road and Ringwood Road.

5.2.1 Traffic routes and site access

Most of the components for the project would be transported from the Port of Newcastle. The haulage route for the project is via the Hunter Expressway, New England Highway, Golden Highway, Ringwood Road and Wollara Road.

All vehicles associated with the project would access the site via the primary site access point on Wollara Road, located at the southwest corner of the site. This includes all traffic to and from the accommodation camp, located inside the western site boundary.

5.2.2 Traffic volumes

The main increase in project related traffic would occur during the 27-month construction period, with a peak period of 7 months. The construction of the accommodation camp would occur prior to the construction of the solar farm and BESS, over a period of approximately 3 months.

The estimated peak daily vehicle movements during construction would be up to 55 heavy vehicles and 60 light vehicles.

Additionally, it is anticipated that there would be a total of 12 movements of heavy vehicles requiring escort during construction of the project. As construction activities would be restricted to daytime hours, construction related vehicles would be using the local road network during the day only. Heavy vehicles up to 19 m in length would be used for transporting materials and components to the site.

Traffic generation during operations would be significantly less than the construction phase (i.e. up to 10 light vehicles per day would be required during operations, with heavy vehicles only occasionally required for replacing larger components of project infrastructure).

5.2.3 Road upgrades and maintenance

TfNSW and councils commented on the proposed transport route, which resulted in revisions to the road upgrades proposed to be undertaken to support the traffic associated with the project. TfNSW and Upper Hunter Shire Council initially did not support the use of the intersection at Golden Highway / Ringwood Road due to deficiencies in the SISD for vehicles on Ringwood Road, looking east along the Golden Highway.

To address these concerns, Lightsource would upgrade the Golden Highway / Ringwood Road intersection with an acceleration lane for vehicles turning left from Ringwood Road onto the Golden Highway, while also committing that all project related traffic would access Ringwood Road by turning left in from the Golden Highway and exit Ringwood Road by turning left onto the Golden Highway (see **Figure 4**). Vehicles departing the project site and needing to travel east along the Golden Highway would be required to use the turnaround point at Barnett Street, which would be sealed by Lightsource (see **Figure 4**).

TfNSW and Upper Hunter Shire Council accepted these management measures and were satisfied they addressed the original concerns relating to SISD at the Golden Highway / Ringwood Road intersection. However TfNSW also requested confirmation that the existing Basic Right (BAR) turn treatment on the Golden Highway was adequate for the project. Lightsource confirmed that the existing intersection design was adequate provided that the peak network traffic volumes during construction did not exceed 380 vehicles during the AM peak period. Accordingly, Lightsource committed to limiting traffic movements in the AM peak period and periodically monitoring traffic volumes to ensure this threshold is not exceeded. TfNSW accepted this approach and the Department has recommended conditions to this effect.

Although not required for project-related traffic, Lightsource has also committed to the realignment, widening and sealing of sections of Ringwood Road and Wollara Road to improve their condition for use by local traffic.

Lightsource has consulted with Upper Hunter Shire Council about the proposed local road upgrades, and has committed to finalising the designs for these works in consultation with Council, along with preparing road dilapidation surveys and repairing any damage resulting from the construction traffic.

Upper Hunter Shire Council provided feedback on the recommended conditions of consent in relation to these road upgrades, noting Council is satisfied the proposed road upgrades are sufficient to address any road safety concerns.

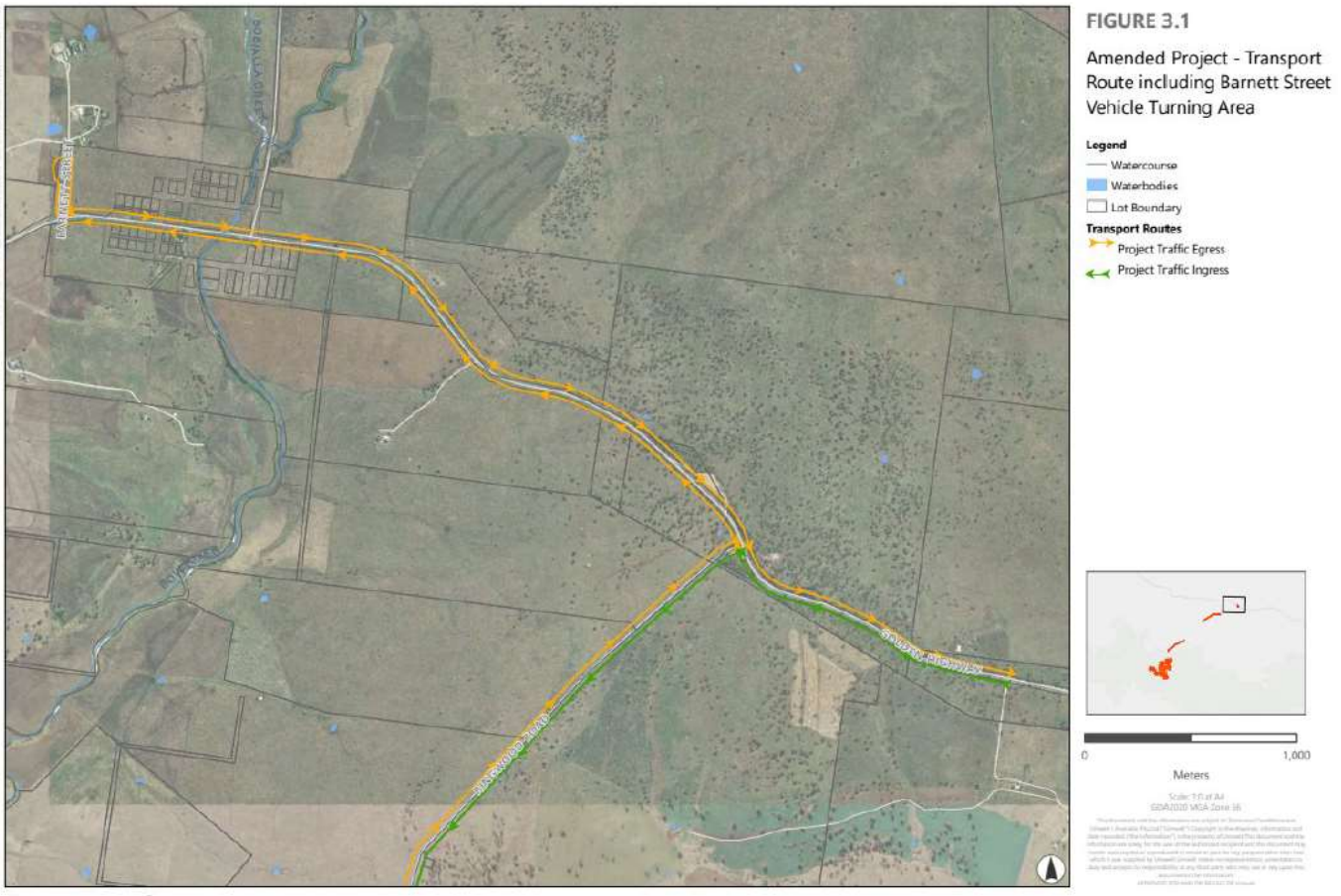


Figure 4 | Vehicle movement restrictions at Golden Highway / Ringwood Road Intersection

5.2.4 Cumulative impacts

There are a number of approved or proposed energy projects in the region, given the projects proximity to the Central West Orana REZ and the Hunter REZ, which would share sections of the proposed transport route. For the majority of these projects, the only shared sections of the transport route would be the Golden Highway. Lightsource's traffic impact assessment noted that the Golden Highway has sufficient capacity to accommodate vehicles generated by other nearby energy projects if construction periods were to overlap.

The Department considers that there would be no material cumulative traffic impacts on the State or local road network as a result of the project. Notwithstanding, the Department has included a requirement in the Traffic Management Plan to minimise potential cumulative traffic impacts.

5.2.5 Recommended conditions

The Department has recommended conditions of consent requiring Lightsource to:

- undertake the relevant road upgrades prior to the commencement of construction;

- restrict project related vehicles to the use of the approved access route only;
- restrict the number of vehicles during construction, upgrading and decommissioning to the peak volumes identified in the EIS;
- ensure the length of vehicles (excluding heavy vehicles requiring escort) does not exceed 19 m; and
- prepare and implement a Traffic Management Plan (TMP) in consultation with TfNSW and Upper Hunter Shire Council, including provisions for dilapidation surveys, details of the measures that would be implemented to address road safety and limiting construction traffic to ensure vehicle movements along the network traffic peak on the Golden Highway does not exceed 380 during the AM peak period.

Overall, the Department and TfNSW consider that adherence to the recommended conditions would ensure that potential traffic impacts (including safety concerns) are adequately mitigated and managed.

5.3 Biodiversity

The project has the potential to impact biodiversity values during construction of the solar farm and associated road upgrades through native vegetation clearing and direct and indirect impacts to listed threatened flora and fauna species and vegetation communities.

While the majority of the project area is used for livestock grazing, there are also patches of native vegetation within the site, which are primarily grassy woodlands.

Two Biodiversity Development Assessment Reports (BDAR) (one for the solar farm site and one for the proposed road upgrade works) were prepared for the project in accordance with the BC Act and Biodiversity Assessment Method (BAM), with revised BDARs prepared in response to issues raised by BCS, and to reflect the project amendments described in **Section 4.4**.

Overall, the Department considers the BDARs adequately assess the biodiversity impacts associated with the project, and generally comply with the requirements of the BAM.

5.3.1 Avoidance and minimisation

Lightsource has focused on avoidance of impacts through site selection and avoidance of higher quality native vegetation and habitat during the preliminary design process for the project, which is consistent with the Large-Scale Solar Energy Guideline's focus on avoiding or minimising impacts during site selection and design.

The initial design for the project, which was presented in the Scoping Report included an approximately 930 ha development footprint, which has been significantly reduced during the assessment process to the final footprint of approximately 793 ha (137 ha reduction in disturbance).

This reduction has focused largely on avoiding impacts to areas of Box Gum Woodland (approximately 120 ha reduction) and mapped important habitat for the Regent Honeyeater (approximately 66 ha reduction).

Overall, Lightsource has designed the project to avoid and minimise impacts on high quality vegetation and habitat, including:

- ensuring landscape scale connectivity between the site and surrounding Goulburn River National Park would be maintained as far as practicable;
- avoiding impacts along Redlynch Creek in the north east of the site by establishing a 60 m corridor that would enable wildlife movement along the riparian corridor;
- minimising impacts to areas of Box Gum Woodland CEEC, including targeting retention of areas of woodland, areas of scattered trees and higher quality derived native grassland (DNG) condition zones;
- alteration of the project design to avoid breeding habitat for the Barking Owl; and
- alteration of the project to entirely avoid impact to PCTs and potential breeding habitat associated with the Large-eared Pied bat and the Eastern Cave Bat.

5.3.2 Native vegetation

The project development footprint covers an area of approximately 793 ha, of which the solar farm comprises approximately 780 ha and the remaining 13 ha is associated with the proposed road upgrade works. Importantly, this land is currently used for agricultural purposes, including grazing and some cropping for fodder.

Of this 793 ha development footprint, approximately 791 ha comprises native vegetation, noting that approximately 674 ha (more than 95%) is DNG and of that, approximately 598.5 ha is of such low condition that it does not require offsetting under the BAM (i.e. it has a vegetation integrity score of less than 15).

Accordingly, the project would clear approximately 192.5 ha of native vegetation that requires assessment under the BAM (less than 25% of the development footprint). This includes 188.5 ha of Box Gum Woodland CEEC (of which 165.36 ha is in DNG form).

A further 506 ha of PCT 483 (which conforms to the Box Gum Woodland CEEC under the BC Act) would be impacted, however this vegetation does not require offsetting under the BAM given its degraded condition.

Table 6 provides a summary of the impacts of the project on native vegetation, and the relevant ecosystem credit liability under the NSW Biodiversity Offset Scheme.

Table 6 | Ecosystem credit requirements

Plant Community Type (PCT)	Formation	Conservation Status under the BC Act	Impact Area (ha)	Ecosystem Credits Required
Solar Farm Site				
PCT 483: Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley	Scattered trees	CE	22.49	1,109
	Moderate DNG	CE	165.36	3,509
	Moderate to low DNG	CE	310.03	0*
	Low DNG	CE	195.98	0*
PCT 1661: Narrow-leaved Ironbark - Black Pine - Sifton Bush heathy open forest on sandstone ranges of the upper Hunter and Sydney Basin	Scattered trees	-	2.66	59
	Moderate DNG	-	37.65	0*
	Low DNG	-	54.98	0*
Road Upgrades				
PCT 483: Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley	Scattered trees	CE	0.2	11
	Exotic dominated grassland	-	3.12	0*
PCT 1691: Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Remnant forest	CE	0.09	4
PCT 3334: Western Hunter Flats Red Gum Sedge Forest	Remnant forest	-	0.04	1
PCT 3388: Central West Valleys White Box Forest	Remnant forest	CE	0.36	12
PCT 3781: Ulan Sandstone Ironbark-Pine Woodland	Remnant forest	-	1.05	32

* this vegetation zone has a vegetation integrity score of less than 15 and as such does not require offsetting under the BAM.

5.3.3 Threatened flora and fauna

The project has the potential to affect flora and fauna species listed in the BC Act and EPBC Act through direct habitat loss from vegetation clearing, and from indirect impacts.

Ecosystem credits

Direct impacts resulting from the development footprint include loss of habitat for 40 threatened species identified or predicted to occur as ecosystem credit species.

Eight of these species were detected within the development site during field surveys (Hooded Robin [*Melanodryas cucullate*], White-throated Needletail [*Hirundapus caudacutus*], Glossy Black-Cockatoo [*Calyptorhynchus lathami*], Dusky Woodswallow [*Artamus cyanopterus cyanopterus*], Brown

Treecreeper [*Climacteris picumnus victoriae*], Diamond Firetail [*Stagonopleura guttata*], Speckled Warbler [*Chthonicola sagittate*] and Little Lorikeet [*Glossopsitta pusilla*]).

Potential impacts on these species would be offset via the ecosystem credit requirements detailed in Table 6.

Species credits

Of the candidate species which were subject to targeted threatened species surveys, only one species was recorded onsite (Barking Owl), while a further 11 species were assumed to be present within the development footprint as survey effort could not confidently rule them out. Table 7 details the conservation significance and the species credit liability for these species.

Table 7 | Species credit requirements

Species	Occurrence on site	Conservation Status		Species credits required
		BC Act	EPBC Act	
Solar farm site				
Regent Honeyeater (*Anthochaera Phrygia*)	Assumed present	CE	CE	1,424
Barking Owl (*Ninox connivens*)	Recorded	V	-	6
Road upgrades				
Flora				
Commersonia rosea	Assumed present	E	E	14
Pine Donkey Orchid (*Diuris tricolor*)	Assumed present	V	-	2
Fauna				
Regent Honeyeater (*Anthochaera Phrygia*)	Assumed present	CE	CE	9
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Assumed present	V	E	85
Giant Burrowing Frog *(Heleioporus australiacus)*	Assumed present	V	V	25
Pale-headed Snake (*Hoplocephalus bitorquatus*)	Assumed present	E	E	3
Broad-headed Snake (*Hoplocephalus bungaroides*)	Assumed present	E	E	64
Barking Owl (*Ninox connivens*)	Assumed present	V	-	13
Common Planigale (*Planigale maculate*)	Assumed present	V	-	3
Stripped Legless Lizard (*Delma impar*)	Assumed present	V	V	27
Eastern Cave Bat (*Vespadelus troughtoni*)	Assumed present	V	-	14

5.3.4 Serious and Irreversible Impacts

BCS has stated that there is likely to be serious and irreversible impacts on two SAII entities, which are Box Gum Woodland and the Regent Honeyeater. Further to this, the project road upgrades would impact on foraging habitat for the Large-eared Pied Bat and Eastern Cave Bat, however BCS has not

formed a view on whether it considers there likely to be serious and irreversible impacts on these two bat species.

The BioNet Threatened Biodiversity Data Collection lists Box Gum Woodland and the Regent Honeyeater as potential entities at risk of SAII based on Principle 1 (in a rapid rate of decline) and Principle 2 (a very small population size). The Large-eared Pied Bat and Eastern Cave Bat are both listed on the basis of Principle 4 (unlikely to respond to measures to improve its habitat and vegetation integrity).

Under clause 6.7 of the *Biodiversity Conservation Regulation 2017* (BC Regulation), 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" on the basis of four principles.

The BCS website notes that impact thresholds for potential SAII entities are available in the BioNet Threatened Biodiversity Data Collection, but there are no impact thresholds for these entities. Further, in its advice on Box Gum Woodland and the Regent Honeyeater, BCS has not provided a quantitative assessment of how much impact would amount to a serious and irreversible impact, or importantly the relevant question of whether the project's impact is likely to contribute significantly to the entity becoming extinct.

Instead, BCS has noted that there would be impacts that relate to the principles for which Box Gum Woodland and the Regent Honeyeater are listed and then stated that "*the project will likely result in serious and irreversible impacts*". While not expressly stated, this would imply that BCS's position is that any impact on a SAII entity, even if very small, is automatically considered to constitute a significant contribution to the risk of extinction.

The Department notes that none of the relevant statutory documents relating to SAII state that 'any loss' of a species or community would necessarily contribute significantly to the risk of extinction.

In terms of forming an opinion about whether there is likely to be a serious and irreversible impact on these SAII entities, the Department has focussed on whether the project is "*likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct*" as required under the BC Regulation.

The current list of SAII entities contains a wide range of ecological communities (53 in total) and species (401 in total) with widely variable population sizes, geographic distributions, rates of decline and responsiveness to mitigation measures. Whether a project would cause SAII to a specific community or species is a matter of fact and degree, and there is no simple 'rule' or 'formula' that can be applied to all communities and species. The risk of extinction for a specific SAII entity must be

assessed on a case-by-case basis, with a particular focus on the relevant principles for which it has been included as a potential entity at risk of SAII.

For both Box Gum Woodland and Regent Honeyeater, it is important to focus on the impacts of the project on the rate of decline and population size, which are the relevant principles for which they have been included as potential entities at risk.

The Department has also carefully considered the five assessment provisions in sections 9.1.1 and 9.1.2 of BAM 2020, and the *'Guidance to assist a decision-maker to determine a serious and irreversible impact* (NSW DPIE – EES, 2019*)'*.

Box Gum Woodland

The Department notes that in 2006, the Threatened Species Scientific Committee estimated that the extent of Box Gum Woodland was 250,729 ha, and the Committee's more recent 2020 advice also refers to that figure. Based on that figure, recent assessments (including the BDAR for the Central West Orana REZ Transmission line) estimate that current extent would now be 234,694 ha when combined with estimated annual losses since then.

There is also a more recent Commonwealth Conservation Advice (AG DCCEEW, 2023), however it is not directly relevant and more conservative, as it is aimed at protecting higher condition remnants listed under the EPBC Act, and it excludes many areas that are included in the NSW listing under the BC Act.

The Department understands that many ecologists consider that the numbers derived from 2006 are out-of-date and likely to substantially underestimate the actual extent of Box Gum Woodland, as listed in NSW. Using the recent State-wide Vegetation Type Map (SVTM) released in 2022, there have been numerous efforts to provide a more up-to-date and accurate estimate of the extent of Box Gum Woodland under the NSW listing.

In particular, Dr Col Driscoll recently provided relevant information in relation to the Moolarben Coal Project, which is based on the recent NSW SVTM and estimates that the *"there is approximately 1,788,703 ha of extant Box-Gum Woodland CEEC within the SVTM in woodland form*". Dr Driscoll also estimated that there is approximately 5,315,040 ha of DNG form, which results in a total of 7,103,743 ha of Box Gum Woodland in NSW.

The project would impact up to 694.5 ha of Box Gum Woodland, which includes approximately 165.36 ha of DNG and 506 ha of degraded vegetation with a Vegetation Integrity score less than 15 that does not trigger a requirement for offsetting under the BAM (i.e. approximately 23 ha of Box Gum Woodland with scattered trees would be impacted by the project).

As Box Gum Woodland is listed on the basis of 'population size' and 'rate of decline', it is particularly relevant to consider the project's potential impacts on Box Gum Woodland against the total area remaining in NSW. While the Department considers the estimates of total area based on the recent SVTM are likely to be more appropriate for the NSW listing, it has also considered the updated 2006 figure for comparative purposes. Using Dr Driscoll's estimate, and the updated estimate from the 2006 Final Determination, the project would represent an impact of 0.009%, and 0.27% of the total remaining area in NSW, respectively.

The Department considers that it would be very difficult to conclude that an impact in the 0.09%-0.27% range is likely to contribute significantly to the extinction of Box Gum Woodland.

It is important to note that, for the purposes of calculating biodiversity offset credits associated with Box Gum Woodland, Lightsource has assumed total clearance of the vegetation within the development footprint. In reality, it is likely that direct impacts to Box Gum Woodland within the development footprint would be limited to an area of only approximately 51 ha associated with construction of the Temporary Workers Accommodation (TWA), panel footings/supports, access tracks, etc. The vast majority of the Box Gum Woodland DNG within the site would be retained and managed as part of the project.

With this in mind, Lightsource is proposing to conduct a vegetation integrity study within the site to assist in better understanding the impacts of solar farms on retained groundcover (in particular Box Gum Woodland DNG), and demonstrate that the assessment provided in the BDAR (and the subsequent retirement of credits) is extremely conservative in its assumption of complete loss.

Further to this, Lightsource has offered additional measures to minimise the impacts on Box Gum Woodland, which involves revegetating an area of approximately 23 ha of Box Gum Woodland DNG within the proposed Biodiversity Stewardship Agreement (BSA) for the purposes of recreating the woodland form of the community (over and above the relevant credit obligations). This would further ensure there is a net benefit for the Box Gum Woodland community from this project. Consequently, the Department is satisfied that the project's impacts would not contribute significantly to the risk of extinction, and would not constitute SAII.

Regent Honeyeater

The Department notes that in 2010 the Threatened Species Scientific Committee estimated that the population of the regent honeyeater in NSW in 1997 was up to 1,000 birds, but had reduced to fewer than 250 mature individuals by 2010. The Committee noted that there had been an "*apparent loss of some of its minor breeding populations (e.g. Warrumbungle National Park, Pilliga forests), as well as declines at its two major breeding sites; Capertee Valley and Bundarra-Barraba.*"

As described above, the project has been designed to avoid and minimise impacts to regent honeyeater habitat. However, the project would result in residual impacts on up to approximately 42 ha of mapped 'important habitat', of which only approximately 17.5 ha contains trees, with the remainder mapped over grassland and cleared areas which do not provide feed trees for the species. Further to this, there are no areas of known breeding habitat on site.

Importantly, Lightsource commissioned Dr Ross Crates (a BCS accredited species expert for the Regent Honeyeater) to prepare a report containing expert assessment of the likely impacts of the project on the species. This report concluded that the potential habitat within the development footprint represents, at best, marginal foraging habitat for the Regent Honeyeater, due to the relatively high elevation, exposed nature of the site and the low density of feed trees. As such, Dr Crates concluded that the habitat within the development footprint would be of low importance to the species.

As the Regent Honeyeater is listed on the basis of 'population size' and 'rate of decline', it is particularly relevant to consider the project's potential impacts on habitat against the total area in NSW. The project's impact area of approximately 42 ha, when compared against the total 173,984 ha of mapped 'important habitat' in NSW, represents approximately 0.024%.

The Department considers that an impact on 0.024% of the mapped important habitat, and no impacts on known breeding habitat, is very unlikely to contribute significantly to the extinction of the Regent Honeyeater.

However, the Department acknowledges that a precautionary approach may be appropriate and notes that Lightsource has proposed further impact minimisation and mitigation measures to benefit the Regent Honeyeater, as recommended by Dr Crates. This includes a financial contribution of $125,000 for one or more of the following programs:

- Noisy Minor management;
- habitat restoration;
- nest protection programs; and/or
- captive breeding and release at Taronga Zoo.

Importantly, the value of the proposed financial contribution ($125,000) was suggested by Dr Crates as he considered that offsite measures would offer the greatest benefit to the species.

Overall, the financial support for one or more of these programs (to be determined in further consultation with the BCS) would ensure that there is support for the conservation of the Regent Honeyeater above and beyond the retirement of biodiversity credits for the species.

Consequently, the Department considers that the project's impacts would not contribute significantly to the risk of extinction, and would not constitute SAII.

Eastern Cave Bat and Large-eared Pied Bat

Female bats give birth and form nursery colonies at maternity sites (also known as 'maternity roosts' or 'maternity camps'). The features of suitable maternity roosts for the Large-eared Pied Bat and Eastern Cave Bat (e.g. caves in scarps, cliffs and rock overhangs as well as disused mines) cannot be re-created and are considered irreplaceable.

For that reason, the relevant SAII principle for these two species is the lack of responsiveness to measures to improve its habitat and vegetation integrity (Principle 4). This is a relatively unique principle that only applies to 18 fauna species on the list of 401 potential SAII species, most of which are bats and frogs that have specific, relatively unusual habitats.

As described in the 2021 BAM Guide for '*Species credit threatened bats and their habitats*', any potential SAII for these two species is related to impacts to its breeding habitat. This requires a particular focus on any impacts to the irreplaceable aspect of the habitat, which is the physical structures containing the maternity roosts (e.g. caves and cliffs).

For this project, potential breeding structures (dilapidated farm sheds) were identified within the study area. Each of these structures were subject to additional survey effort (roost surveys and habitat suitability assessment), and no evidence of breeding was recorded at any of them. Importantly, it was determined that the structures within the development footprint did not provide suitable habitat features (e.g. roof or wall cavities) to provide suitable breeding habitat. As such, no breeding habitat, which is the focus of the SAII Principle 4, would be directly impacted by the project. Consequently, the Department considers that the project's impacts would not contribute significantly to the risk of extinction of these species, and would not constitute SAII.

5.3.5 Significant impacts on Commonwealth-listed species and communities

Lightsource identified and addressed all threatened species and communities included in the Commonwealth Referral Decision (EPBC 2022/9102) (Referral Decision).

Assessments of significance were undertaken for threatened species and communities that were recorded during field surveys or were identified as having a moderate or higher potential to occur within the project area, including one threatened ecological community and 15 threatened fauna species, noting that no threatened flora species were considered likely to occur.

Assessments of significance concluded that the project has the potential to significantly impact one threatened ecological community (White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland) and two threatened fauna species (Regent Honeyeater and Painted Honeyeater).

The Department considered Commonwealth matters in consultation with BCS and the Commonwealth DCCEEW, including consideration of Lightsource's assessments of significance and the relevant approved conservation advice, recovery plans and threat abatement plans (TAPs). A summary of this assessment is provided in **Appendix J**.

5.3.6 Biodiversity offsets

Lightsource has committed to delivering a biodiversity offset strategy that appropriately compensates for the unavoidable loss of ecological values as a result of the project. The biodiversity offset strategy for the project consists of the following:

- establishment of an approximately 1,200 ha Biodiversity Stewardship Agreement (BSA) over the residual parts of the site covering the credit requirement for PCT 1661, Regent Honeyeater and partially covering the credit obligation of PCT 483;
- retirement of residual credits across two existing BSAs; and
- payment into the Biodiversity Conservation Fund (if required).

5.3.7 Recommended conditions

The Department has recommended conditions requiring Lightsource to:

- retire the ecosystem and species credits outlined in **Table 5** and **Table 6** in accordance with the NSW Biodiversity Offsets Scheme prior to the commencement of construction of the project.
- prepare and implement a Biodiversity Management Plan which would include a description of the measures to:
  - avoid the disturbance of native vegetation or fauna habitat located outside the development footprint;
  - implement clearing and operational management protocols;
  - minimise clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;

  - avoid and minimise impacts on potential SAII entities and provide minimisation measures for these entities to mitigate harm to Box Gum Woodland and the Regent Honeyeater;
  - undertake a research program regarding the impacts of the development on the vegetation integrity of the Box Gum Woodland DNG retained onsite;
  - minimise the impacts to fauna on site and implementing fauna management protocols;
  - rehabilitate and restore temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and restoration of the project area;
  - prepare and implement an incidental threatened species finds protocol to avoid and/or minimise and/or offset options to be implemented if additional threatened species are discovered on the site;
  - control weeds; and
- provide a detailed program to monitor and report on the effectiveness of these measures.

With these measures, the Department considers that the project is unlikely to significantly impact the biodiversity values of the locality.

5.4 Other issues

The Department's consideration of other issues is summarised in Table 8 below.

Table 8 | Assessment of other issues

Issue	Recommended conditions
Visual Amenity	
• Some public submissions raised concerns about potential visual impacts of the project, however most of these concerns were regarding visual impacts of energy projects more broadly, rather than specific concerns about this project. • Importantly, the site is entirely surrounded by Goulburn River National Park which provides a densely vegetated backdrop and largely obstructs any public views of the site, which was confirmed during the Department's site visit in June 2024. • Despite this, the site itself is largely comprised of cleared agricultural land, including a number of dilapidated farm structures (e.g. sheds), with limited stands of scattered trees. • Following project amendments, including addition of the TWA, a revised visual assessment was prepared in accordance with the NSW Government's Large-Scale Solar Energy Guideline. • The visual impact assessment concluded that visual impacts to motorists travelling along a short stretch of Wollara Road (approximately 250 m long), immediately adjacent the site, would be moderate given the limited existing roadside vegetation in this location. Although all views of the project from this road would be fleeting, Lightsource has committed to implementing tree screening in this location to mitigate any potential visual impacts. • In relation to residential receivers, visual impacts of the solar farm were considered low from all nearby residences, as the project would be difficult to discern due to distance, intervening vegetation and topography.	• Minimise the off-site visual impacts of the project and to ensure the visual appearance of all infrastructure blends in as far as possible with the surrounding landscape. • Establish and maintain landscape screening as proposed in the EIS at the locations adjacent Wollara Road. • Ensure that external lighting complies with *Australian/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting*, or the latest version.

Issue	Recommended conditions
• In relation to glint and glare, the visual assessment concluded that motorists travelling along the same 250 m stretch of Wollara Road immediately adjacent the site, would have the potential to experience some glare impacts (estimated to be in the order of approximately 11 hours per year) as a result of the project during February/March and October/November in the early hours of the morning. • The proposed screen planting along Wollara Road is considered to appropriately mitigate glare as far as practicable, noting again that impacts on motorists would be fleeting in this location. • While the project is located within the 'Dark Sky Region' covered by the NSW Government's Dark Sky Planning Guideline, given it is approximately 146 km south-east of the Siding Spring Observatory, there would be no permanent night lighting installed and all lighting would be designed in accordance with the *Australian/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting*, or the latest version. • Overall, the Department considers that visual impacts of the project on the surrounding residences and road users would be minimal with the implementation of proposed mitigation measures.	
Land Use Compatibility	
• A number of public submissions raised concerns about potential loss of agricultural land, however these submissions generally focused on loss of agricultural land more broadly, rather than specific concerns about this site. • As outlined earlier in this report (see **Sections 2** and **3**), the project is: – permissible on the site in accordance with clause 2.36 of the Infrastructure SEPP; – consistent with the objectives of the *Hunter Regional Plan 2041* which aim to diversify the Hunter's mining, energy and industrial capacity and achieve net zero emissions in NSW by 2050; and – consistent with the objectives of the *Upper Hunter Local Strategic Planning Statement 2020* which identifies a need to diversify the energy resources sector on rural lands surrounding Merriwa. • The agricultural and soils assessment confirmed that the site is comprised of Land and Soil Capability (LSC) of Class 4 (moderate to severe limitations) to Class 6 (very high limitations).	• Maintain the agricultural capability of the land, including establishing ground cover within 3 months following completion of any construction. • Restore land capability to pre-existing productive capacity following decommissioning.

Issue	Recommended conditions
• Although the project would reduce agricultural productivity within the site by removing marginal cropping land from production and removing cattle grazing, the inherent agricultural capability of the land would not be affected due to the relatively low scale of the development. Further to this, once the project is operational, Lightsource is proposing to conduct sheep grazing on site. • The Department notes that DPI Agriculture did not raise any concerns with the loss of agricultural land at the site. • The Department considers that the project represents a reasonable use of the land that is generally consistent with the broader and specific land use planning objectives for the site and the region under relevant planning instruments and strategies.	
Heritage	
Aboriginal cultural heritage • Site surveys undertaken in consultation with Registered Aboriginal Parties (RAPs) identified seven sites which would be impacted by the project, consisting of three artefact scatters and four isolated finds. • The ACHA determined that the sites recorded during the survey generally have a low scientific significance as they are either isolated finds or low-density artefact scatters, often in disturbed contexts. • In addition to these sites, seven trees with scars were inspected during the survey. The ACHA concludes that the scars on the trees do not display sufficient attributes to be considered to have cultural origins and are not recorded as Aboriginal objects or registered in the Aboriginal Heritage Information Management System (AHIMS). Despite this, the RAPs present during the survey indicated that these trees were of cultural importance and believed that the scarring was potentially Aboriginal in origin. • Three of these trees are located within the project footprint and would be removed. • The seven items within the project footprint would be salvaged by surface collection of visible artefacts, while the three trees with scars would be subject to photographic recording. • Heritage NSW has recommended that an Aboriginal Cultural Heritage Management Plan be prepared for the project in consultation with the RAPs.	• Ensure the development does not cause any direct or indirect impacts on any items located within exclusion zones or outside the approved development footprint. • Salvage and relocate Aboriginal items in consultation with RAPs. • Prepare and implement an Aboriginal Cultural Heritage Management Plan in consultation with RAPs. • Maintain a 20m exclusion zone around the original hut slab.

Issue	Recommended conditions
• In consideration of these measures, the Department and Heritage NSW consider that the project would not significantly impact the Aboriginal heritage values of the locality. **Historic heritage** • There are no listed heritage items in the project area, however the Goulburn River National Park, which surrounds the site, is a locally listed landscape heritage item under the *Mid-Western Regional Local Environmental Plan 2012*. • Site survey identified four structures of potential archaeological/heritage significance. These consist of: – an abandoned house (circa 1900) located in the north-east of the site; – ancillary structures and sheds of varying ages and conditions associated with the agricultural use of the site; – a post-war house currently used as the primary residence of the project site; and – the original slab hut identified as the O'Brien homestead located centrally within the project site. • Although the abandoned house, ancillary structures, and post-war house were determined to have little to no heritage significance, the original slab hut was identified as having high potential for archaeological artefacts which are likely of local significance for their historical value with the early settlement of the area. • Accordingly, Lightsource has committed to implementing a 20 m exclusion zone around the original slab hut site to avoid impacts to any archaeological artefacts. • With the proposed mitigation measures, the Department considers that the project is unlikely to result in significant impacts on the heritage values of the locality.	
Water Resources	
Surface water and flooding • The project site is located within the Hunter River catchment. • The watercourses and flow paths within the site are located towards the site boundary and eventually flow into the Goulburn River, with the majority of watercourses identified as first and second order streams, while sections of Redlynch Creek, Rocky Creek, and Monaghans Creek are third order streams.	• Design, construct and maintain the project to reduce impacts on surface water and flooding at the site.

Issue	Recommended conditions
• While the project has aimed to avoid works close to or within waterways, several waterway crossings would be required for site access, internal access roads and the electrical cabling layout. • Accordingly, the Department has recommended that all works are undertaken in accordance with *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018) and *Policy and Guidelines for Fish Habitat Conservation and Management* (2013). • No water discharge is proposed as part of the project. • The results of the flood assessment demonstrate the site is located outside areas of major flood hazard. • The 1% annual exceedance probability (AEP) flood modelling demonstrates that overland flow depths remain generally less than 0.3 m, with depths of flow along the minor watercourses in the site typically up to 1 m. • High velocities, up to approximately 4.5 m/s, are predicted within the north-east and western channels, and a review of aerial imagery shows existing evidence of erosion and sedimentation (due to higher flow velocities and steeper areas). The flood hazard within the Project Area for the 1% AEP flood event is mostly characterised as H1: '*Generally safe for vehicles, people and buildings*', and only surpasses this level within the waterways and defined drainage lines. • Accordingly, the Department has recommended conditions of consent requiring the development to ensure the solar panels and ancillary infrastructure do not cause any increased water being diverted off the site or alter hydrology off site. **Erosion and sediment control** • NPWS raised concerns regarding potential impacts of the project to the Goulburn River National Park and associated watercourses including Redlynch Creek, Rocky Creek, Monaghans Creek, Bow River, and Killoe Creeks. • The proponent has committed to preparing a Soil and Water Management Plan and Erosion Sediment Control Plan to manage any potential water quality impacts affecting the park interface and waterways during construction.	• Ensure the solar panels and ancillary infrastructure do not cause any increased water being diverted off the site or alter hydrology off site. • Ensure all works are undertaken in accordance with *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018) and *Policy and Guidelines for Fish Habitat Conservation and Management* (2013). • Prepare a Soil and Water Management Plan in consultation with the Water Group. • Minimise any soil erosion in accordance with the *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) manual and ensure the project is constructed and maintained to avoid causing erosion on site.

Issue	Recommended conditions
• The Department considers that any erosion and sedimentation risks associated with the project can be effectively managed by complying with the relevant requirements in the *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) manual and the *Managing Urban Stormwater: Soils and construction - Volume 2A* manual (Landcom, 2008). **Groundwater** • The project is not expected to adversely affect groundwater resources including groundwater dependent ecosystems due to limited excavation depths during construction. • All water sourced from groundwater sources to meet project construction demands would be licenced and managed, as required. **Water supply** • Water demand during the construction period is estimated to peak at 11.26 megalitres (ML) per month, largely for dust suppression and plant establishment. • Water sources would be determined prior to the commencement of construction in consultation with suppliers and landholders, subject to availability. A water sourcing strategy would be developed to ensure there are no water supply impacts to adjacent landowners or other stakeholders. • Lightsource has confirmed that any water requirements beyond its existing water rights would be able to be sourced from commercial suppliers and delivered to site by water tanker. • The Department considers that Lightsource has demonstrated that sufficient access to viable water supply is available.	
Noise	
• Construction noise levels are predicted to exceed the 'noise management level' of 45 dB(A) in the *EPA's Interim Construction Noise Guideline* (ICNG) at a number of receivers located in close proximity to the proposed road upgrade works on Ringwood and Wollara Roads.	• Minimise noise generated by the construction, upgrading or decommissioning activities on site in accordance with best

Issue	Recommended conditions
• These works would be temporary and importantly, all noise generated during construction, including works associated with the road upgrades and TWA, would be below the 'highly noise affected' criterion of 75 dB(A) in the ICNG at all nearby residences. • Notwithstanding, Lightsource has committed to developing a Noise and Vibration Management Plan which would be implemented during the construction period. This plan would provide details of the mitigation measures proposed to be implemented at each road works location, and would include adoption of the measures suggested in the TfNSW's *Construction Noise and Vibration Guideline*, including prior notification to potentially affected receivers and a noise monitoring program. • Operational noise would comply with relevant noise criteria, as calculated in accordance with the *NSW Noise Policy for Industry* (EPA, 2017), at all residences. • Road traffic noise during construction of the project, including heavy vehicle use of the turnaround facility on Barnett Street, would comply with the relevant criteria in the EPA's *Road Noise Policy*. • The Department considers that noise generated during construction and operation of the project can be appropriately managed through implementation of the proposed mitigation measures and adherence with the recommended conditions.	practice requirements outlined in the ICNG. • Comply with the noise management levels as derived from the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence. • Restrict construction hours to Monday to Friday, 7am to 6 pm and Saturday, 8 am to 1 pm.
Dust	
• The main source of emissions to the air from the project would occur during the construction phase, and would be generated from traffic accessing the site via Wollara and Ringwood Roads (unsealed), along with other construction activities including site preparations. • Lightsource would minimise dust generated by the project through use of water suppression on all exposed areas, unsealed roads and stockpile areas when required, and establishment of groundcover as soon as practicable following construction. • The proposed road upgrades, once completed, would also act to minimise dust emissions associated with traffic along Ringwood and Wollara Roads.	• Minimise dust generated from the project during construction, operation and decommissioning.

Issue	Recommended conditions
• The Department considers the likelihood of dust generation during operation of the project is low given ground cover would be quickly established across the site. • The Department considers that dust generated during construction and operation of the project can be appropriately managed through implementation of the proposed mitigation measures and adherence with the recommended conditions.	
Hazards and risks	
• The site is located on bushfire prone land. As such, Lightsource has prepared a bushfire threat assessment, including consideration of the proposed TWA, and would be required to comply with the RFS's *Planning for Bushfire Protection 2019*. • The Department considers that the bushfire risks, and can be suitably controlled through the implementation of standard fire management procedures and recommendations made by FRNSW and RFS, including: – measures including APZs in accordance with *Planning for Bushfire Protection 2019* – preparation of a Fire Safety Study in consultation with FRNSW; and – development and implementation of a comprehensive Emergency Plan. • The bushfire threat assessment prepared for the TWA also concluded that the bushfire attack level would be sufficient to provide shelter for personnel in the unlikely event that they are unable to evacuate during a bushfire event. • Lightsource prepared a Preliminary Hazard Analysis in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive* Development. The PHA concluded that the potential hazards and risks associated with the project can be adequately managed and that the separation distances to the site boundary are appropriate for the specific battery cell type to be used at the project. • The project would comply with the *International Commission on Non-Ionizing Radiation Protection* (INCIRP) guidelines for electric, magnetic and electromagnetic fields. • Subject to the recommended conditions, the Department, FRNSW and RFS are satisfied that risks associated with the project would be minimal.	• The BESS must not exceed the proposed total capacity of 1030 MW across the project site and must be installed in an arrangement consistent with the options presented in EIS. • Prepare a Fire Safety Study and an Emergency Plan for the development. • Ensure the project complies with the relevant asset protection requirements in the RFS's Planning for *Bushfire Protection 2019* and Standards for APZs. • All chemicals, fuels and oils to be stored in accordance with Australian Standards and EPA requirements.

Issue	Recommended conditions
Community Benefit	
• The Department considers that, in addition to its contribution to energy transition, the project would generate direct and indirect benefits to the local community, including: – up to 350 construction jobs over the 27 month construction period; – expenditure on businesses in the local economy by workers involved in the project; and – the procurement of goods and services by Lightsource and associated contractors; • The Department considers that the project would not result in any significant or widespread reduction in land values in areas surrounding the project. • Further, Lightsource has reached an in-principle agreement with Council to enter into a Voluntary Planning Agreement (VPA) comprising annual payments at the greater of: – $346 (increased by CPI) multiplied by the number of megawatts installed as at the due date for payment; or – $190,000 (increased by CPI). • The project is unlikely to result in significant demand on community services and infrastructure (excluding roads considered above) given the relatively low level of local employment generated once it is operational. • Noting the above, the Department considers that the project would have a positive socio-economic impact on the local community.	• Lightsource implement its offer to enter into a planning agreement with Council. • Prepare an Accommodation and Employment Strategy for the project in consultation with Council, with consideration to prioritising the employment of local workers.
Workforce accommodation	
• As part of the EIS, Lightsource proposed to utilise a third-party Temporary Workers Accommodation (TWA) facility in Merriwa to accommodate the construction workforce, however ongoing consultation identified that this TWA may be unlikely to be constructed in time. • Accordingly, Lightsource identified and assessed the option to construct an on-site TWA facility within the already assessed development footprint (i.e. without any increase in disturbance) and lodged an amendment report.	• Prepare an Accommodation and Employment Strategy and an Accommodation Camp Management Plan in consultation with Council prior

Issue	Recommended conditions
• The proposed TWA facility would be capable of housing up to 400 workers, and construction of the facility would occur over approximately 3 months. Once construction of the solar farm is nearing completion, and the TWA facility is no longer required, it would be decommissioned for re-use on other projects, and the final solar panels would be installed in its place. • Given there are no existing services (e.g. potable water, sewage and electricity) within the site capable of supporting the proposed TWA facility, Lightsource has designed the facility to be self-sufficient (e.g. with onsite power generation, potable water storage, water treatment facilities and food storage and preparation facilities). • The amendment report demonstrate**s** that means of servicing the TWA facility would be available as follows: – Potable water – two to three water truck deliveries daily (up to 12ML per year), and supplemented by a combination of on-site bores and/or by purchasing Water Access Licenses from existing producers within region (if required). – Sewage – a modular Sewerage Treatment Plant, consisting of untreated sewerage storage, a treatment plant, and treated sewered storage would be housed within the TWA facility. – Electricity – four skid mounted generator units would support the TWA facility. • In addition to providing certainty regarding accommodation for the construction workforce, and avoiding impacts on housing availability in the region, the onsite TWA facility would also reduce traffic pressure on the local roads, further mitigating the key concern from the local community. • Council did not raise any concerns regarding the proposed TWA facility on-site, and was ultimately support of this approach. • Overall, the Department considers the proposed TWA facility is capable of being effectively serviced, and is a suitable means of mitigating potential impacts associated with housing availability and affordability in the region.	to commencing construction of the TWA.

Issue	Recommended conditions
Decommissioning and rehabilitation	
• The operational life of a large-scale solar project is likely to range between 20 to 30 years, however they have the potential to operate for a long period of time if solar panels are upgraded over time, which would be permitted under the recommended conditions of consent. • The Large-Scale Solar Energy Guideline identifies four key decommissioning and rehabilitation principles for circumstances where an applicant ceases operating a project, which are the removal of project infrastructure, returning the land to its pre-existing use, including rehabilitating and restoring the pre-existing LSC Class where previously used for agricultural purposes, and the owner/operator of the project should be responsible for the decommissioning and rehabilitation and this should be reflected in an agreement with the host landowner(s). • With the implementation of objective-based conditions and monitoring requirements, which are consistent with these key principles, the Department considers that the solar farm would be suitably decommissioned at the end of the project life, or within 18 months if operations cease unexpectedly, and that the site be appropriately rehabilitated.	• Include rehabilitation objectives requiring the site to be rehabilitated within 18 months of cessation of operations.

6 Evaluation

The Department has assessed the development application, EIS, Submissions Report, Amendment Reports and additional information and has carefully considered:

- submissions received from members of the community;
- comments provided by Council; and
- advice received from State and local Government agencies.

The Department has also considered the objectives of the EP&A Act, including the ESD principles, and relevant considerations under section 4.15(1) of the EP&A Act. The Department has given consideration to Lightsource's evaluation of the project's merits against applicable statutory and strategic planning requirements.

The project is permissible with consent in accordance with the Infrastructure SEPP and is located on agricultural land, most of which has been historically cleared and modified for grazing. The project has been designed to largely avoid site constraints, including better quality native vegetation, Box Gum Woodland CEEC, Regent Honeyeater habitat and on-site watercourses while maintaining its ability to utilise the existing electricity infrastructure and road network. This is consistent with the Large-Scale Solar Energy Guideline's focus on avoiding or minimising impacts during site selection and design.

While traffic impacts were of particular concern to members of the local community, Lightsource has committed to a number of avoidance and mitigation measures to manage these impacts. These include a series of road upgrades, restricting project-related traffic movements to left-only movements from the Golden Highway, ongoing vehicle monitoring, and development of a Traffic Management Plan.

To address the residual impacts of the project, the Department has recommended a range of detailed conditions, developed in conjunction with agencies and Council, to ensure these impacts are effectively minimised, managed and/or offset. Lightsource has reviewed the conditions and does not object to them.

The Department considered the submissions made through the exhibition of the project and the issues raised by the community and agencies during consultation. These matters have been addressed through changes to the project and the recommended conditions of consent.

Importantly, the project would assist in transitioning the electricity sector from coal and gas-fired power stations to low emissions sources and is consistent with the goals of the NSW's *Climate Change Policy Framework*, the *Net Zero Plan Stage 1: 2020 – 2030*. It would have a generating capacity of 450 MW_{AC} of clean electricity, which is enough to power approximately 190,000 homes, and 900 MWh of energy storage to dispatch energy to the grid when the energy generation from renewable resources is limited.

The project would also provide flow-on benefits to the local community, including up to 350 construction jobs and a capital investment of $880 million. A VPA involving annual payments to Council up to approximately $190,000 over the life of the project is also proposed.

Overall, the Department considers that the project achieves an appropriate balance between maximising the efficiency of the solar resource development and minimising the potential impacts on surrounding land uses and the environment.

On balance, the Department considers that the project is in the public interest and is approvable, subject to the recommended conditions of consent (see **Appendix G**).

7 Recommendation

It is recommended that the **Executive Director** , as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report
- **accepts and adopts** the findings and recommendations in this report as the reasons for making the decision to grant consent to the application
- **agrees** with the key reasons for approval listed in the notice of decision
- **grants consent** for the application in respect of Goulburn River Solar Farm (SSD 33964533) as amended, subject to the conditions in the attached development consent
- **signs** the attached development consent (**Appendix G**).

Prepared by:

- Joe Fittell, Team Leader
- Kurtis Wathen, Senior Environmental Assessment Officer

Recommended by:

21 August 2024

Iwan Davies
Director
Energy Assessments

8 Determination

The recommendation is **adopted** by:

22 August 2024

Chris Ritchie
A/Executive Director
Energy, Resources and Industry

Appendices

Appendix A – Environmental Impact Statement

Appendix B – Submissions

Appendix C - Agency advice

Appendix D - Submissions Report

Appendix E - Amendment Report

Appendix F - Additional Information

Appendix G – Recommended Development Consent

Appendix H – Consideration of community views

Table 9 | Key issues and how they have been considered

Issue	Consideration
Compatibility of the proposed land use • Loss of agricultural land • Impacts on neighbouring agricultural activities (including weeds, pests, soil and erosion)	**Assessment:** • Although the project would reduce agricultural productivity within the site by removing marginal cropping land from production and removing cattle grazing, the inherent agricultural capability of the land would not be affected due to the relatively low scale of the development. Further to this, once the project is operational, Lightsource is proposing to conduct sheep grazing on site. • The Department considers that the project represents a reasonable use of the land that is generally consistent with the broader and specific land use planning objectives for the site and the region under relevant planning instruments and strategies. **Recommended Conditions:** • Maintain the agricultural capability of the land, including establishing ground cover within 3 months following completion of any construction.

Issue	Consideration
	• Restore land capability to pre existing productive capacity following decommissioning.
Visual Amenity • Impacts on landscape views and rural character • Glint and glare impacts	**Assessment:** • The Applicant assessed the visual impacts of the development from representative viewpoints surrounding the site. The site is entirely surrounded by Goulburn River National Park which provides a densely vegetated backdrop and largely obstructs any public views of the site. • The visual impact assessment concluded that impacts to motorists travelling along a short stretch of Wollara Road, immediately adjacent the site, would be moderate given the limited existing roadside vegetation in this location. Although all views of the project from this road would be fleeting, Lightsource has committed to implementing tree screening in this location to mitigate any potential visual impacts. • Visual impacts of the solar farm were considered low from all nearby residences, as the project would be difficult to discern due to distance, intervening vegetation and topography. **Recommended Conditions:** • Minimise the off-site visual impacts of the development, including the potential for any glare or reflection. • Establish and maintain a mature vegetation buffer (landscape screening) as described in the EIS. • Minimise the off-site lighting impacts of the development. • Limit the solar farm footprint to the amended site layout.
Traffic and Transport Impacts	**Assessment:** • The potential traffic and transport impacts would be restricted to the 27 month construction period, noting peak construction will span 7 months. • The proposed road upgrades have been developed in consultation with Transport for NSW (TfNSW) and Upper Hunter Shire Council (Council). TfNSW and Council are satisfied that the proposed road upgrades and maintenance conditions would address road safety, including the upgrade of the intersection at Golden Highway and Ringwood Road. **Recommended Conditions:** • Restrict the number of vehicles during construction, upgrading and decommissioning to the peak volumes identified. • Prepare and implement a Traffic Management Plan (TMP) in consultation with TfNSW and Council, including provisions for

Issue	Consideration
	dilapidation surveys, details of the measures that would be implemented to address road safety and limiting construction traffic to ensure the peak network vehicle movements along the Golden Highway do not exceed 380 during the AM peak period. • Road and intersection upgrades must be carried out to the satisfaction of the relevant roads authority.

Appendix I – Statutory considerations

Objects of the EP&A Act

In line with the requirements of Section 4.15 of the EP&A Act, the Department's assessment of the project has given detailed consideration to a number of statutory requirements. These include:

- the objects found in Section 1.3 of the EP&A Act; and
- the matters listed under Section 4.15(1) of the EP&A Act, including applicable environmental planning instruments and regulations.

The Department has considered all these matters in its assessment of the project and has provided a summary of this assessment below.

Summary
Objects of the EP&A Act
The objects of most relevance to the Consent Authority's decision on whether to approve the project are found in Section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project: • is a permissible land use on the subject land • is located in a logical location for efficient solar energy development • is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard • would contribute to a more diverse local industry, thereby supporting the local economy and community • would not fragment or alienate resource lands in the LGA • is consistent with the goals of NSW's Climate Change Policy Framework and Net Zero Plan Stage 1: 2020 – 2030 and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. The Department has considered the encouragement of Ecologically Sustainable Development (ESD) (Object 1.3 (b)) in its assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences.

Summary

In addition, the Department considers that an appropriately designed SSD solar farm, in itself, is consistent with many of the principles of ESD. Lightsource has also considered the project against the principles of ESD. Following its consideration, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD.

Consideration of environmental protection (Object 1.3(e)) is provided in **Section 5** of this report. Following its consideration, the Department considers that the project could be undertaken in a manner that would at least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department is also satisfied that any residual biodiversity impacts could be managed and/or mitigated by imposing appropriate conditions and retiring the required biodiversity offset credits.

Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is also provided in **Section 5** of this report. Following its consideration, the Department considers the project would not significantly impact the built or cultural heritage of the locality, and any residual impacts can be managed and/or mitigated by imposing appropriate conditions.

State significant development

Under Section 4.36 of the EP&A Act the project is considered a State Significant Development.

Under Section 4.5(a) of the EP&A Act and Clause 1(b) of Section 2.7 of the Planning Systems SEPP, the Minister for Planning and Public Spaces is the consent authority for the development. However, under the Minister's delegation of 9 March 2022, the Executive Director, Resources and Energy Assessments, may determine the development application as Upper Hunter Shire Council did not object, there were less than 50 objections from the general public and a political donations disclosure statement has not been made.

Environmental Planning Instruments (EPIs)

The *Upper Hunter Local Environment Plan 2013* (Upper Hunter LEP) applies and is discussed in **Sections 3.3** and **3.4** of this report, particularly regarding permissibility and land use zoning. As discussed in **Section 3.3** while the project would be prohibited under the Upper Hunter LEP within the RU1 zone, it is permissible under the Infrastructure SEPP. In accordance with the Infrastructure SEPP, the Department has given written notice of the project to Transgrid and TfNSW.

Lightsource completed a preliminary risk screening in accordance with *SEPP No. 33 – Hazardous and Offensive Development* and confirmed the project was not categorised as potentially hazardous or potentially offensive development. The Department has also considered the provisions of *SEPP No. 55 – Remediation of Land*. The site is not listed as a contaminated site in the NSW EPA Contaminated Land Record and list of NSW contaminated sites. Given the site has historically been used for agricultural uses, the Department considers the site would be suitable for the proposed development.

Appendix J Assessment of Matters of National Environmental Significance

In accordance with the Bilateral Agreement between the Australian Government and NSW Government, the Department provides the following additional information required by the Commonwealth Minister, in deciding whether to approve a proposed action (i.e. the project) under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the Goulburn River Solar Farm Environmental Impact Statement (EIS), Response to Submissions Report, Amendment Reports, Biodiversity Development Assessment Report (BDAR), EPBC Act Matters of National Environmental Significance Report and additional information provided during the assessment process, public submissions, and advice provided by the BCS, other NSW government agencies and the Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEEW).

This appendix is supplementary to, and should be read in conjunction with, the assessment included in **Section 5.3** of this assessment report, which includes consideration of impacts to listed threatened species and communities, and mitigation and offsetting measures for threatened species and communities, including Matters of National Environmental Significance (MNES).

Controlled Action Decision – EPBC 2022/9102

On 2 February 2022, the Goulburn River Solar Farm was determined to be a Controlled Action by the (then) Commonwealth Department of Agriculture, Water and the Environment (now the Commonwealth DCCEEW) for the controlling provision of listed threatened communities and species. The Commonwealth Referral Decision (EPBC 2022/9102) (Referral Decision) was based on likely significant impacts to:

- White Box-Yellow Box-Blakley's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland and DNG) – Critically Endangered; and
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered.

Additionally, the Commonwealth DCCEEW identified there was some risk that there may be significant impacts on the following matters:

- Central Hunter Valley Eucalypt Forest and Woodland – Critically Endangered;
- Swift Parrot (*Lathamus discolor*) – Critically Endangered;
- Painted Honeyeater (*Grantiella picta*) – Vulnerable;
- Large-eared Pied Bat (*Chalinolobus dwyeri*) – Vulnerable;

- Corben's Long-eared Bat (*Nyctophilus corbeni*) – Vulnerable;
- Pink tailed Worm-lizard (*Aprasia parapulchella*) – Vulnerable;
- Bluegrass (*Dichanthium setosum*) – Vulnerable; and
- Homoranthus darwinioides – Vulnerable.

The Commonwealth DCCEEW also requested further analysis of the impacts of the 2019–2020 bushfires on the following species:

- Box Gum Woodland and DNG – Critically Endangered;
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered;
- Koala (*Phascolarctos cinereus*) (Combined Population of QLD, NSW and the ACT) – Endangered;
- Greater Glider (*Petauroides Volans*) – Vulnerable;
- Brush tailed Rock wallaby *(Petrogale penicillata*) – Vulnerable;
- Spot-tailed Quoll (*Dasyurus maculatus maculatus* [South-east mainland population]) – Endangered;
- New Holland Mouse, Pookila (*Pseudomys novaehollandiae*) – Vulnerable; and
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable.

All entities identified above as requiring an assessments were considered in Lightsource's EIS (in particular the EPBC Act Matters of National Environmental Significance Report) as outlined in the following sections.

Impacts on EPBC Act Listed Threatened Species and Communities

Section 5.3 of this report describes the biodiversity assessment undertaken for the project and the resulting BDAR.

All entities that were identified as requiring an assessment of significance were assessed. **Table 10** provides a summary of the likelihood of occurrence for each of the species identified above by the Commonwealth DCCEEW as requiring consideration.

Table 10 | Likelihood of occurrence of MNES identified in Commonwealth DCCEEW SEARs

Entity	Conservation Status	Likelihood of Occurrence	Comments
Threatened Ecological Communities			
Box Gum Woodland and DNG	CE	Present	Community is associated with areas of PCT 483 which meet condition threshold requirements.

Entity	Conservation Status	Likelihood of Occurrence	Comments
Central Hunter Valley Eucalypt Forest and Woodland	CE	Not identified during floristic surveys	Not assessed further.
Threatened Fauna Species			
Regent Honeyeater (*Anthochaera phrygia*)	CE	Assumed present	Site contains mapped important habitat. Assessed as a species credit species as outlined in Section 5.3.3 of the main report.
Swift Parrot (*Lathamus discolor*)	CE	Assumed present	No mapped important habitat would be impacted. Species is associated with PCT 483 and PCT 1661 which would be offset via ecosystem credits as outlined in Section 5.3.3 of the main report.
Painted Honeyeater (*Grantiella picta*)	V	Assumed present	Suitable foraging habitat present within action area is associated with areas of PCT 483 which would be offset via ecosystem credits as outlined in Section 5.3.3 of the main report.
Large-eared Pied Bat (*Chalinolobus dwyeri*)	V	Recorded in locality	No PCTs associated with this species or areas of potential breeding habitat would be directly impacted by the action.
Corben's Long-eared Bat (*Nyctophilus corbeni*)	V	Assumed present	Species is associated with PCT 483 and PCT 1661 which would be offset via ecosystem credits as outlined in Section 5.3.3 of the main report.
Pink tailed Worm-lizard (*Aprasia parapulchella*)	V	Unlikely	Not recorded during targeted surveys conducted in accordance with relevant guidelines.
Koala (*Phascolarctos cinereus*) (Combined Population of QLD, NSW and the ACT)	E	Unlikely	Not recorded during targeted surveys conducted in accordance with relevant guidelines.
Greater Glider (*Petauroides Volans*)	V	Unlikely	Not recorded during targeted surveys conducted in accordance with relevant guidelines and no PCTs associated with the species are mapped on site.
Brush tailed Rock wallaby *(Petrogale penicillata*)	V	Unlikely	Not recorded during targeted surveys conducted in accordance with relevant guidelines and no PCTs associated with the species are mapped on site.
Spotted-tailed Quoll (*Dasyurus maculatus maculatus* (South-east mainland population))	E	Assumed present	Species associated with PCT 1661 which would be offset via ecosystem credits as outlined in Section 5.3.3 of the main report.
New Holland Mouse, Pookila (*Pseudomys novaehollandiae*)	V	Unlikely	No suitable habitat present.
Grey-headed Flying-fox (*Pteropus poliocephalus*)	V	Assumed present	Species is associated with PCT 483 and PCT 1661 which would be offset via ecosystem credits as outlined in Section 5.3.3 of the main report.
Threatened Flora Species			

Entity	Conservation Status	Likelihood of Occurrence	Comments
Bluegrass (*Dichanthium setosum*)	V	Unlikely	Not predicted to occur according to the BAM-C. The Solar Farm Project Area is located within the Sydney Basin Bioregion, this species is not known or predicted to occur within the Sydney Basin Bioregion.
Homoranthus darwinioides	V	Unlikely	Not recorded during targeted surveys conducted in accordance with relevant guidelines.

A further three threatened fauna species were identified during field surveys and assessed accordingly, namely:

- Diamond Firetail (*Stagonopleura guttata*)
- White-throated Needletail (*Hirundapus caudacutus*); and
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*).

Impacts on threatened ecological communities

As described in **Section 5.3.1** of this report, Lightsource has generally focused on avoidance of impacts through site selection and avoidance of higher quality native vegetation and habitat during the preliminary design process for the action. This work has focussed largely on avoiding impacts to areas of Box Gum Woodland CEEC.

Notwithstanding, the action would result in the clearance of approximately 494 ha of Box Gum Woodland which meets the conditions thresholds under the EPBC Act. This includes approximately:

- 18.5 ha of scattered trees;
- 165.5 ha of DNG in moderate condition; and
- 3103 ha of DNG in moderate to low condition.

As a result, the assessments of significance contained within the MNES Assessment concluded that the action may have a significant impact on this community.

Lightsource would offset the residual biodiversity impacts of the action in accordance with the requirements of NSW Biodiversity Offset Scheme. The Department considers that impacts to this community would be appropriately offset via the ecosystem credit requirements detailed in **Section 5.3** of this report.

Impacts on threatened flora species

No threatened flora species listed under the EPBC Act were recorded or considered likely to occur within the action area.

Impacts on threatened fauna species

Assessments of significance were undertaken for threatened species that were recorded during field surveys or were identified as having a moderate or higher potential to occur within the project area, including 15 threatened fauna species.

The assessments of significance for these species determined that the project is unlikely to have a significant impact on any threatened fauna species with the exception of Regent Honeyeater and Painted Honeyeater.

The action would impact approximately 42 ha of mapped 'important habitat' for the Regent Honeyeater, of which only approximately 17.5 ha is treed, with the remainder mapped over grassland and cleared areas which do not provide feed trees for the species.

In relation to the Painted Honeyeater, the action would impact approximately 22.5 ha of potential habitat for this species, comprising the areas of PCT 483 which contain scattered trees.

The Department considers that the species identified would be appropriately offset via the species and ecosystem credit requirements detailed in **Section 5.3** of this report. The Department has recommended conditions and additional measures to avoid or minimise impacts on threatened fauna species as detailed in **Section 5.3.7** of this report.

Conservation Advice

In its MNES assessment, Lightsource has appropriately referred to the Conservation Advice for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Table 2.1 of MNES Assessment) in relation to the relevant recovery and threat abatement actions for the CEEC.

Conservation Advice for Regent Honeyeater, Glossy Black Cockatoo, Large-eared Pied Bat, Spotted-tailed Quoll, Painted Honeyeater, Swift Parrot, Corben's Long-eared Bat, Koala, New Holland Mouse and Grey-headed Flying-fox are also appropriately referred to (Table 2.1 of MNES Report) to inform habitat requirements for each species.

The Department notes the key threats to species and communities include landscape fragmentation, introduction of weeds, competition for land, habitat degradation (particularly by rabbits, foxes, and feral pigs), climate change, disease transmission (particularly by feral pigs), biological effects associated with invasive species and predations (particularly by feral cats and foxes).

The Department's recommended conditions require the proponent to prepare and implement a Biodiversity Management Plan detailing how these risks would be minimised and managed, including measures to:

- avoid the disturbance of native vegetation or fauna habitat located outside the development footprint;
- implement clearing and operational management protocols;
- minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;
- avoid and minimise impacts on potential SAII entities and provide minimisation measures for these entities to mitigate harm to Box Gum Woodland and the Regent Honeyeater;
- minimising the impacts to fauna on site and implementing fauna management protocols;
- measures to rehabilitate and restore temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and restoration of the project area;
- prepare and implement an incidental threatened species finds protocol to avoid and/or minimise and/or offset options to be implemented if additional threatened species are discovered on the site;
- control weeds and pests; and
- manage bushfire.

The proponent would be required to prepare the Biodiversity Management Plan in consultation with BCS, and ensure the plan is prepared by a suitably qualified and experienced biodiversity expert.

In addition, the proponent is required to ensure impacts on species and communities are avoided and minimised, where practicable during detailed design, and offset the residual biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme.

Recovery Plans

Recovery plans for White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, Regent Honeyeater, Koala, Swift Parrot, Grey-headed Flying fox, are referenced in Table 2.1 of the MNES Assessment. Recovery Plans have generally been referenced to inform the identification of areas of important habitat for the above species.

Threat Abatement Plans

The relevant Threat Abatement Plans that apply to the project are all listed in Table 2.1 of the MNES Assessment Report and include:

- *Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads* (Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011);
- Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomic (Australian Government Department of the Environment and Energy, 2018);
- Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa) (Australian Government Department of the Environment and Energy, 2017);
- *Threat abatement plan for predation by feral cats* (Australian Government Department of the Environment, 2015);
- *Threat abatement plan for predation by the European red fo*x (Australian Government Department of the Environment, Water, Heritage and the Arts, 2008);
- *Threat abatement plan for competition and land degradation by rabbits* (Australian Government Department of the Environment and Energy, 2016); and

The Department has included measures for the control of feral animals and pathogens under the recommended Biodiversity Management Plan for the project, including specific requirements for Lightsource to consider the actions identified in relevant Threat Abatement Plans. With these measures in place, the Department considers that the action can be carried out in a manner which is compatible with the relevant Threat Abatement Plans.

Subject to the recommended conditions, the Department considers that the project can be carried out in a manner that is consistent with the relevant conservation advice, recovery plans and threat abatement plans.

Additional EPBC Act Considerations

Table 11 contains the additional mandatory considerations, factors to be taken into account and factors to have regard to under the EPBC Act that are additional to those already discussed.

Table 11 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act Section	Considerations	Conclusion
Mandatory considerations		
136(1)b	Economic and social matters are discussed in **Section 5** of this report.	The project would provide benefits for the local and regional economy and is of public benefit for up to 40 years. Up to 350 workers would be required during the construction period. Impacts on the local community would primarily occur during the construction period, which has been considered in the assessment report. The recommended conditions require the proponent to minimise potential traffic and amenity impacts including noise, dust, and visual impacts.
3A, 391(2)	Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, in particular: • the long term and short term economic, environmental, social and equitable considerations that are relevant to this decision; • conditions that restrict environmental impacts and impose monitoring and adaptive management, reduce any lack of certainty related to the potential impacts of the project; • conditions requiring the project to be delivered and operated in a sustainable way to protect the environment for future generations and conserving the relevant matters of national environmental significance; • advice provided within this report reflects the importance of conserving biological diversity, ecological and cultural integrity in relation to all of the controlling provisions for this project; and • mitigation measures to be implemented which reflect improved valuation, pricing and incentive mechanisms are promoted by placing a financial cost on the proponent to mitigate the environmental impacts of the project.	The Department considers that the project, if undertaken in accordance with the recommended conditions of consent, would be consistent with the principles of ESD.
136(2)(e)	Other information on the relevant impacts of the action.	The Department considers that all information relevant to the impacts of the project has been taken into account in its assessment.
139(1)	Requirements for decisions about threatened species and endangered communities	Recovery plans and threat abatement plans are addressed above.

EPBC Act Section	Considerations	Conclusion
		Australia's obligations under the Convention on Biological Diversity (Biodiversity Convention) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies, and by appropriate funding. The recommendations of this assessment report are consistent with the Biodiversity Convention, which promotes environmental impact assessment (such as this process) to avoid and minimise adverse impacts on biological diversity. Accordingly, the recommended development consent requires avoidance, mitigation and management measures for listed threatened species, and all information related to the project is required to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity There are no additional requirements for decisions about threatened species and endangered communities that apply to the project. The Apia convention and CITES are not relevant to the project.
Factors to have regard to		
176(5)	Bioregional plans	There is no approved bioregional plan related to the activity.
Consideration on deciding conditions		
134(4)	Must consider: • Information provided by the person proposing to take the action or by the designated Applicant of the action; and • The desirability of ensuring as far as practicable that the condition is a cost effective means for the Commonwealth and the person taking the action to achieve the object of the condition.	All project related documentation is available from the Department's website www.planningportal.nsw.gov.au The Department considers that the recommended conditions at **Appendix G** are a cost effective means of achieving their purpose. The conditions are based on material provided by Lightsource that was prepared in consultation with the Department, BCS and other government agencies.

Conclusions on Controlling Provisions

For the reasons set out in **Section 5.3** of this report and this appendix, the Department considers that the impacts of the action would be acceptable, subject to the avoidance and mitigation measures described in the EIS, Amendment Reports, BDAR, and the recommended conditions of consent in **Appendix G**.

BCS GUIDANCE NOTE

PROJECT ASSESSMENT OF

EPBC ACT LISTED THREATENED SPECIES AND COMMUNITIES

1. Purpose and Scope

This Guidance Note is intended for use by Biodiversity, Conservation and Science Group (BCS) teams, in their review of project-related biodiversity assessment documentation and the provision of expert advice to the project assessment teams within Department of Planning, Housing and Infrastructure (DPHI) on matters of national environment significance (MNES) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This Guidance Note applies to projects determined to be a 'controlled action' by the Australian Government Minister for the Environment and where the NSW Minister for Planning and Public Spaces (as delegated) has provided notice that the project will be assessed by an assessment process accredited under the Assessment Bilateral Agreement between NSW and the Commonwealth.

For these projects, the NSW Government has committed to undertaking an assessment of matters protected by Part 3 of the EPBC Act relating to the relevant controlling provisions and can include species and communities, world heritage values and ecological character of Ramsar sites. These matters are often described as MNES. Governments are working to streamline the assessment and where the NSW *Biodiversity Offset Scheme's* (BOS's) *Biodiversity Assessment Method* (BAM) (2020) can provide an adequate assessment of EPBC-listed threatened species and communities, this should be reflected in the Biodiversity Development Assessment Report (BDAR). Where the assessment of MNES cannot be assessed by applying the BAM, the assessment must be presented elsewhere in the assessment documentation in accordance with the Secretary's Environmental Assessment Requirements (SEARs).

To assist in this process, DPHI has developed this Guidance Note and the attached checklist templates for use by BCS teams when providing advice on EPBC-listed species and communities.

2. Role of BCC Officers

The key role for BCS teams in the Bilateral process is to provide comments and advice to DPHI on the adequacy of a proponent's assessment of the impacts and offsets for EPBC Act-listed threatened species and communities within an Environmental Impact Statement (EIS), or in the case of a modification to an approved project, a Modification Report, and associated Biodiversity Development Assessment Report (BDAR).

Additionally, BCS is required to verify whether the BAM has been appropriately applied. BCS is also required to advise whether projects are consistent with applicable Australian Government guidelines and policy statements.

During the assessment process, DPHI will typically seek expert advice from BCS in response to an EIS and/or a report prepared by a proponent.

In reviewing assessment documentation, it is particularly important for BCS assessment officers to provide expert advice in relation to the adequacy of evidence-based justifications for decisions about methods, techniques and outcomes. This is required to demonstrate the scientific rigor of the assessments and determine a level of confidence in DPHI's decision making process.

3. Reference Documentation

Key information typically required to be reviewed by BCS officers incudes the project EIS (or Modification Report), BDAR and the associated BAM Calculator (BAM-C) report, and any supplementary information provided during the assessment process (including any revisions of the BDAR and associated documentation). Officers may also need to refer to additional information, including but not limited to:

- Referral documentation from the Australian Government Department of Agriculture, Water and the Environment (DAWE), including the referral decision brief;
- Secretary's Environmental Assessment Requirements (SEARs) in relation to Commonwealth matters;
- Supporting databases and directories (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, NSW BioNet (Mitchell) Landscapes, Commonwealth Species Profile and Threats Database and the Directory of Important Wetlands in Australia, and Biogeographic Regionalisation for Australia);
- Australian Government plans and agreements (such as International environmental obligations, Recovery Plans, Approved Conservation Advice and Threat Abatement Plans) http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl ; and
- NSW and Australian Government policies and guidelines (such as DPHI's Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact and the Australian Government's Significant Impact Guideline).

4. Information Requirements

Tables 1 and **2** provide checklist templates for use by the BCS teams when providing project assessment advice to DPHI on Australian Government matters. The templates generally follow the minimum information requirements for BDARs (refer to Appendix K of the BAM) but focus on and include additional information relevant to MNES.

The **Table 1** template requires BCS officers to verify whether the assessment documentation includes relevant required information by crossing boxes and providing written advice on the adequacy of the information, and/or any additional information requirements. In addition, the **Table 1** template requires officers:

- to provide summaries of proposed impact avoidance, minimisation, mitigation and management measures;
- to confirm the EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity (i.e.. on land to which impacts may extend), that have been identified in the BDAR/EIS;
- for **each** EPBC Act listed threatened species and/or community, to provide summaries of the:
  - nature and consequences of impacts (i.e. direct and indirect);
  - duration of impact;
  - quantum of impact;
  - consequences of impacts on the species, the population and / or extent of the community at local, state and national scales, and
  - confirmation of the level of predicted impact (likely high risk or low risk of impact).
- to confirm impacts requiring offsetting, the number and class of biodiversity credits needed in accordance with the BAM and, if known, the proposed offsetting approach;
- to consider any relevant Australian Government guidelines and policy statements, and
- to recommend any conditions of development consent.

The BCS officer will need to add or delete dot points and rows in this table, as required for each MNES.

The **Table 2** template requires BCS officers to complete a MNES impact and offsets summary table. Information in both **Table 1** and **2** will provide the basis of the information to be included in the Secretary's Assessment Report.

TABLE 1: BCS OFFICER PROJECT ADVICE TO DPHI ON EPBC ACT LISTED THREATENED SPECIES AND COMMUNITIES

Requirement	Information	Reference (BAM / BLA[2])
Background & Description of Action	Does the EIS/BDAR[3]: ☐ clearly show how operational and construction footprints, including clearing boundaries, structures to be built and elements of the action are situated with regard to MNES ☒ depict stages and timing of the action that may impact on MNES ☐ provide a map(s) of the subject land boundary showing the final proposal/disturbance footprint with respect to location of MNES, including GIS shape files Include references to where this detail is provided.	BAM Chapters 3, 4, 5 and 8
	Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements: The bilateral assessment for this project relates to the construction of a solar farm with a development footprint of approximately 792.19 hectares (ha), which is comprised of: • up to 1,000 000 bifacial solar photovoltaic (PV) modules • battery storage facilities (up to 2060 megawatts) • substation and switching stations with underground electrical conduits • site office and operations and maintenance building with parking • Communication tower up to 30 meters (m) in height • internal access roads for site maintenance. The proposed development will also require upgrades to existing roads to facilitate site access. The road upgrades cover approximately 13.17 ha and are comprised of: • upgrades to the intersection of Ringwood Road and the Golden Highway (0.82ha) • road widening and culvert replacement works on Ringwood Road starting at Bow River and extending south to Binks Road (5.43ha) • Road widening and sealing of Wollara Road from the current sealed section to the southern boundary of the Tongo State Forest (6.92ha)	

[2] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

[3] Or revisions of the BDAR and associated documentation made as a result of previous reviews or project changes post-exhibition.

Requirement	Information	Reference (BAM / BLA[2])
	The proponent has prepared two BDARs for the proposed development. The BDARs dated May 2023, initially formed Appendix 6 (solar farm) and Appendix 7 (road upgrade) of the Environmental Impact Statement (EIS). The BDARs were subsequently updated in January 2024 after the Response to Submission (RTS), and an amendment report was prepared in May 2024. All references to the 'BDARs' in this assessment refer to the January 2024 versions and the amendment report in May. The locations of MNES in relation to the development are located in the following figures in the BDARs: • Figure 10.2A, Figure 10.2B, Figure 10.2C of the Road Upgrade BDAR - *White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grassland* Critically Endangered Ecological Community (CEEC) • Figure 4.3A of the Solar Farm BDAR - *White Box-Yellow Box- Blakely's Red Gum Grassy Woodlands and Derived Native Grassland* CEEC • Figure 5.3A-C of the Road Upgrade BDAR – regent honeyeater (*Anthochaera phrygia*) species polygon, as derived from the Regent Honeyeater Important Habitat Map • Figure 5.1 of the Solar Farm BDAR – regent honeyeater species polygon, as derived from the Regent Honeyeater Important Habitat Map • Figure 5.3B of the Solar Farm BDAR – glossy black-cockatoo (*Calyptorhynchus lathami lathami)*, white-throated needletail (*Hirundapus caudacutus)* and diamond firetail (*Stagonopleura guttata*). No species polygons have been prepared for the white-throated needletail, hooded robin (*Melanodryas cucullata*), brown treecreeper (*Climacterus picumnus victorie*) and diamond firetail. A species polygon is not required for ecosystem credit species and the impacts to these species will be offset through the retirement of ecosystem credits. The glossy black-cockatoo is a dual credit species. BCS notes that the species was observed foraging at the proposed solar farm site but targeted surveys during the breeding season indicated that the glossy black-cockatoo was not using the development footprint for breeding. As such, a species polygon was not prepared, and species credits were not generated for the glossy black-cockatoo at the proposed solar farm. Similarly, the large-eared pied bat (*Chalinolobus dwyeri*) was recorded at the solar farm project site, outside of the development footprint. The development footprint is not within 100m of known breeding habitat, and the development footprint does not contain any associated plant community types (PCT's) (Figure 5.3 of Solar Farm BDAR). A species polygon was not prepared for the large-eared pied bat and species credits were not generated for the solar farm. Assumed species polygons were created in the Road Upgrades BDAR for the following species: • large-eared pied bat (foraging habitat only) – Figure 5.4A-D • Commersonia rosea (*Androcalva rosea*) – Figure 5.1A-C • giant burrowing frog (*Heleioporus australiacus*) – Figure 5.5A-B • broad-headed snake (*Hoplocephalus bungaroides*) – Figure 5.7A-C	

Requirement	Information	Reference (BAM / BLA[2])
	BCS is of the view that the spatial data and the areas of impact to MNES in the BDAR are mostly consistent. BCS requested spatial files showing the Asset Protection Zones (APZs) for the proposed Temporary Workers Accommodation Facility in May 2024 (reference: DOC24/420319-2). BCS has not received any files which clearly demonstrate clearing boundaries and it is unclear whether the APZs have been captured in the BDAR maps. BCS also notes that the hooded robin and brown treecreeper were observed during surveys near the proposed Wollara Road upgrade, but the location of these species have not been mapped in the Road Upgrade BDAR. Figure 10.1 of the Road Upgrade BDAR only contains Bionet records for some MNES species. No targeted surveys were required for the painted honeyeater (*Grantiella picta*) under the Biodiversity Assessment Method (BAM) 2020 as the species is an ecosystem credit species. A species polygon has been created for foraging habitat for the species which is depicted in Figure 5.3 of Appendix A of the Solar Farm BDAR.	
Landscape Context of the MNES	**Provide advice on the adequacy of the landscape context information and identify any additional information requirements:** Section 3.2 'Landscape Features' of each BDAR describes the landscape context and features of the project. This section includes information which meets the requirements of the BAM. No additional information is required.	BAM Section 3.1 BLA clause 7.4
EPBC Act Listed Threatened Species & Communities	Verify that the EIS/BDAR includes relevant information on the identification of all EPBC Act listed threatened species and communities on the site or in the vicinity[4] via: ☒ field based survey effort ☒ published peer reviewed literature ☒ local data ☒ supporting databases (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results) ☐ Verify that the EIS/BDAR includes appropriate mapping of all EPBC Act listed threatened species and communities in accordance with the relevant Commonwealth Listing Advice. The EIS/BDAR should include important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans. **Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements:**	BAM Chapters 4 and 5

[4] On land to which impacts may extend

Requirement	Information	Reference (BAM / BLA[2])
	Field-based survey effort: The survey methodology for assessing native vegetation (vegetation integrity plots and native vegetation mapping), threatened flora survey methodologies and effort, and threatened fauna survey effort are described in various sub-sections of section 2.0 of each BDAR. Additional information on the survey methods for threatened flora and fauna have been included in section 2.3 of Appendix A of the Solar Farm BDAR. Floristic and vegetation integrity data was collected in accordance with the minimum requirements under the BAM for each BDAR. Vegetation surveys identified *White Box-Yellow Box- Blakely's Red Gum Grassy Woodlands and Derived Native Grassland* CEEC within the proposed development and road upgrade areas. The proposed impact to Box-Gum Woodland CEEC is 494.43 ha which is comprised of: • 493.82 ha of impact within the solar farm footprint (Table 4.4 of the Solar Farm BDAR) • 0.61 ha of impact within the road upgrade footprint (Table 4.9 of the Road Upgrade BDAR) Targeted surveys were conducted for the regent honeyeater and the species was not recorded. BCS notes that development footprint intersects with the regent honeyeater Important Habitat Map. The proposed impact to the regent honeyeater is 42.46 hectares which is comprised of: • 42.30 ha of impact within the solar farm footprint (Table ES.2 of the Solar Farm BDAR) • 0.16 ha of impact within the road upgrade footprint (Table ES.2 of the Road Upgrade BDAR). No EPBC Act-listed threatened flora species were documented within the development corridor for the proposed project. One EPBC Act-listed threatened flora species, *Commersonia rosea*, was assumed present in the Road Upgrade BDAR. *Commersonia rosea* is a fire ephemeral species and surveys are recommended 18 months post-fire. As the development footprint had not been burnt in 18 months leading up to targeted surveys, the proponent adopted a precautionary approach and assumed presence (Table 5.11 of the Road Upgrade BDAR). The proposed impact to *Commersonia rosea* is 0.36 ha. Six EPBC Act-listed threatened fauna species were documented across both development footprints; the glossy black-cockatoo, hooded robin, diamond firetail, brown treecreeper, large-eared pied bat and one migratory species, the white-throated needletail. Four EPBC-Act listed threatened fauna species were assumed to be present in the Road Upgrade BDAR (Table ES.2). The proposed impact for EPBC Act-listed species assumed to be present is: • large-eared pied bat - 1.54 ha of foraging habitat • giant burrowing frog - 0.09 ha of habitat • broad-headed snake – 1.05 ha of habitat	

Requirement	Information	Reference (BAM / BLA[2])
	BCS raised that surveys for *Delma impar* do not comply with the EPBC Survey guidelines for Australia's threatened reptile or the Threatened reptiles, BAM Survey Guide. This has not been adequately addressed by the applicant to date. No surveys were conducted for the powerful owl (*Ninox strenua*) in the Kerrabee Interim Biogeographic Regionalisation of Australia (IBRA) sub-region of the Road Upgrade BDAR despite the presence of 3 hollows which meet the habitat constraints for the species. Table 5.3.2 of the BDAR states that the hollows were on the edge of Wollara Road and therefore the hollows could not support the species. BCS notes that the road intersects with a large patch of forest that could support the species and the survey requirements for the species as required by section 5.2 of the BAM have not been met. BCS is satisfied that all other EPBC-Act listed flora and fauna BAM survey requirements have been met. ***Published peer-reviewed literature:*** Section 12.0 'References' of each BDAR and section 7.0 of Appendix A of the Solar Farm BDAR include peer-reviewed papers that were used for the assessment of MNES entities. Section 2.1 of Appendix A of the Solar Farm BDAR and Table 10.2 of the Road Upgrade BDAR provide additional information on databases and literature used. There are a number of references to NSW or Commonwealth Government websites, and these are considered to be current and contain reliable information about all MNES considered for this project. A broad range of peer-reviewed literature has generally been used to underpin decision-making in the BDAR. ***Local data:*** No local data has been used on inform decisions in either BDAR. No expert reports were prepared for either BDAR. A BAM listed species expert, Dr Ross Crates, did provide advice to the proponent on regent honeyeater habitat which was used to inform the Serious and Irreversible Impact (SAII) assessment for the species (Appendix H of the Solar Farm BDAR). ***Supporting databases:*** Eight databases were used for the MNES assessment: • NSW DCCEEW BioNet Vegetation Information System (VIS) • NSW DCCEEW BioNet Threatened Biodiversity Data Collection (TBDC) • NSW DCCEEW BioNet Atlas • NSW DCCEEW State Vegetation Map • NSW DCCEEW Bam Important Areas Viewer • DCCEEW EPBC Protected Matters Search Tool (PMST) • Australian Bureau of Meteorology (BOM) Climate Data Online Tool • National Flying Fox Monitoring Viewer **Appropriate mapping of all EPBC Act-listed species and communities in accordance with relevant Commonwealth Listing Advice:**	

Requirement	Information	Reference (BAM / BLA[2])
	White Box-Yellow Box- Blakely's Red Gum Grassy Woodlands and Derived Native Grassland CEEC has been assessed within the development footprints against the Approved Conservation Advice criteria published by the Commonwealth Threatened Species Scientific Committee (TSSC). The assessment for Box-Gum Woodland CEEC has been provided in section 4.3 of the Solar Farm BDAR and Table 4.9 of the Road Upgrade BDAR. Box-Gum Woodland CEEC that will be impacted by the proposed development is depicted in Figure 4.3A of the Solar Farm BDAR and Figure 4.6 C, D and F in the Road Upgrade BDAR. BCS notes that vegetation in the Road Upgrade BDAR has been assigned to PCT 1691 which does not appear to be consistent with the plot data. Table 4.4 of the Road Upgrade BDAR states that PCT 1691 was assigned as the remnant trees were *Eucalyptus albens x moluccana* and notes that *E.creba* was observed in areas outside of the plot. The table also states that the PCT 483 was discounted due to the lack of *E. creba* in the canopy. *E.creba* is not associated with PCT 483 in the VIS-C and therefore, the species should not have been used to exclude PCT 483 from consideration. In addition, *E. albens x moluccana* is not associated with PCT 1691 in the VIS-C, but is associated with PCT 483. BCS raised this inconsistency with the proponent however further justification has not been provided for this PCT allocation. BCS considers that insufficient information has been provided to justify the allocation of PCT 1691 over PCT 483. The MNES referral documentation listed the critically endangered regent honeyeater and the swift parrot (*Lathamus discolor*) as likely to be significantly impacted. The swift parrot was not considered to have breeding or important habitat (species credit habitat) present within the development site and has therefore been treated as ecosystem credit species. The foraging value of the project area for this species, and the likely impact to the species, is defined by the PCTs that the swift parrot is associated with in the Threatened Biodiversity Data Collection (TBDC). While maps of the PCTs impacted by this project are provided in the BDAR, specific habitat for the swift parrot has not been mapped. The species polygons for the regent honeyeater are depicted in Figure 5.1 of the Solar Farm BDAR and Figure 5.3 of the Road Upgrade BDAR. A species polygon has also been mapped for the painted honeyeater which is depicted in Figure 5.3 of Appendix A of the Solar Farm BDAR. BCS notes that the figure may have been erroneously labelled as a regent honeyeater species polygon. The assumed species polygons for *Commersonia rosea*, large-eared pied bat, giant burrowing frog, pale-headed snake and broad-headed snake are presented in Figure 5.1, 5.4, 5.5, 5.6 and 5.7 of the Road Upgrade BDAR. The large-eared pied bat was recorded in the study area, within 0.3km of the development footprint. A species polygon has not been prepared in accordance with Box 2 of the BAM. Acoustic detectors are the only survey method used, however breeding habitat has not been assumed and mapped in accordance with Table 2 of the 'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method. A Serious and Irreversible Impact assessment has not been completed for the species.	

Requirement	Information	Reference (BAM / BLA[2])
	The glossy black-cockatoo and white-throated needletail were recorded on or adjacent to the proposed solar farm, but no breeding habitat was identified for these species. As such, breeding habitat has not been mapped in the Solar Farm BDAR and no species credits are required. **Any important populations and critical habitat, as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans:** Areas of the proposed solar farm development and road upgrades intersect with the Important Habitat Map for the regent honeyeater. The species polygons cover the areas which are mapped as important habitat for the regent honeyeater that will be impacted by the proposed development. These areas are depicted in Figure 5.2 of Appendix A of the Solar Farm BDAR and Figure 5.3 of the Road Upgrade BDAR. **Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list:** Section 5.2 of Appendix A of the Solar Farm BDAR contains an assessment for EPBC Act-listed species for the proposed development. Table 5.1 of Appendix A states that bluegrass (*Dichanthium setosum)* is not known to occur in the Sydney Basin Bioregion and the species is not associated with the PCTs within the proposed solar farm development footprint. As such, the proponent has not conducted targeted surveys for bluegrass and the species was not observed in BAM plots or during targeted flora surveys. Targeted surveys were conducted for bluegrass in both IBRA sub-regions for the Road Upgrade BDAR (Table 5.7 and 5.8 of the BDAR). Targeted surveys were not conducted for bluegrass in the solar farm site.	
Avoidance, Minimisation, Mitigation & Management	Verify that the EIS/BDAR demonstrates all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including an analysis of alternative: ☒ designs and engineering solutions ☒ modes or technologies ☒ routes and locations of facilities ☒ sites within the subject site ☒ Verify that the EIS/BDAR identifies any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc). Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including: ☒ techniques, timing, frequency and responsibility ☒ identify measures for which there is risk of failure ☒ evaluate the risk and consequence of any residual impacts	BAM Chapters 6, 7 and 8 BLA clause 7.1

Requirement	Information	Reference (BAM / BLA[2])
	☐ any adaptive management strategy proposed to monitor and respond to impacts. **Confirm that all feasible alternatives and efforts have been made to avoid and minimise impacts on EPBC Act listed threatened species and communities.** Section 7.0 of the Solar Farm BDAR addresses avoidance and minimisation of native vegetation and prescribed impacts. Section 6.0 of the Road Upgrade BDAR addresses avoidance and minimisation of native vegetation and prescribed impacts. Much of the infrastructure has been located within exotic grasslands or in derived native grassland. The proposed disturbance footprint for the solar farm is located within derived native grasslands or exempt land with complete avoidance of moderato to good woodland areas. An area of 22.49 hectares of scattered trees associated with Box-Gum Woodland CEEC has not been avoided. Section 7.0 and Table 7.1 and 7.2 of the Solar Farm BDAR detail the steps taken to demonstrate further avoidance of TECs. In addition, section 7.1.2.1 of the Solar Farm BDAR states that most of the DNG within the solar farm footprint would not be stripped or subject to earthworks. Impact avoidance areas for Box-Gum Woodland CEEC and regent honeyeater important habitat have been mapped in Figure 8.1 of the Solar Farm BDAR. Section 6.1.2.7 of the Road Upgrade BDAR states that the proposed works for the road upgrades are constrained by the location of the existing roads to the development site. The proponent investigated 3 routes to the proposed development and selected the route for upgrade that would have less impacts to biodiversity. **Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect, and prescribed impacts)** Section 9.3 of the Solar Farm BDAR contains details on additional impact assessment provisions for threatened species at risk of SAII. The proponent has proposed to establish an approximately 1200 hectare Biodiversity Stewardship Agreement (BSA) over residual areas of the Project Site (section 11.3.1 of the Solar Farm BDAR). BCS requested additional information on the proposed BSA and the mitigation measures for addressing the SAII principles for Box-Gum Woodland CEEC and the regent honeyeater. BCS has not received detailed information on the additional and appropriate measures that will be applied to mitigate or manage the impacts to these SAII entities; therefore, BCS cannot determine whether feasible measures are being proposed. Section 7.2 of the Solar Farm BDAR indicates that prescribed impacts for the proposed development are unlike to significantly impact MNES threatened species. Table 7.2 provides a summary of measures for direct, indirect and prescribed impacts. The table states that a construction environmental management plan (CEMP) will be developed as part of post-approval management plans. Table 5.24 of the Road Upgrade BDAR identifies prescribed impacts for the road upgrades. Table 6.1 of the Road Upgrade BDAR also refers to the development of the CEMP for minimising impact.	

Requirement	Information	Reference (BAM / BLA[2])
	BCS notes that indirect impacts from the Temporary Workers Accommodation (TWA) on adjacent native vegetation, threatened entities and their habitat have not been considered. The TWA Facility Amendment Report states the "TWA Facility would be designed for up to 400 workers" and "would operate 24/7 for approximately 27 months". Given the lack of detail regarding additional and appropriate mitigation measures, the risk and consequences of the impacts to SAII entities cannot be determined.	
Impact Assessment	Verify that the EIS/BDAR: ☐ identifies the residual adverse impacts likely to occur to **each** EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account ☐ provides adequate justification and evidence for the predicted level of impact, with reference to the: • Commonwealth's Significant Impact Guideline*:* *https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf* • DPHI Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SAII): (*https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf*) Section 7.0 of the Solar Farm BDAR and Section 6.0 of the Road Upgrade BDAR 'Avoid and Minimise Impacts' addresses the measures that have been taken to avoid and minimise impacts to biodiversity. Specific comments on avoidance and minimisation of impacts to MNES are included below. ***Box-Gum Woodland CEEC*** The Solar Farm BDAR (Section 7.1) states that throughout the development of the project layout, design decisions have been implemented to avoid impacts to threatened ecological communities. Table 4.4 in section 4.0 of the Solar Farm BDAR provides a summary of the impact assessment Box-Gum Woodland CEEC. The EPBC referral documentation indicated that the impact to Box-Gum Woodland CEEC would not exceed 527 ha. Table 4.4 of the Solar Farm BDAR indicates that the impact to Box-Gum Woodland CEEC is 493.82 ha which includes 18.43 ha of scattered trees. There will also be impacts on 165.36 ha of moderate condition DNG and 310.03 ha of low condition DNG. Table 4.9 of the Road Upgrade BDAR indicates that 0.61 ha of Box-Gum Woodland CEEC will be impacted by the proposed development which is comprised of remnant forest and trees. ***Regent Honeyeater*** Table 7.1 and section 7.1.1.4 of the Solar Farm BDAR indicate that the impacts of the proposed development on the regent honeyeater have been reduced by 61% due to design changes. Table 8.1 of the Solar Farm BDAR provides a summary of the residual direct impacts to the regent honeyeater.	BAM Chapters 8 and 9 BLA clauses 6.2(b)(i)-(ii) and 7.1

Requirement	Information	Reference (BAM / BLA[2])
	The EPBC referral documentation indicated that the impact to the regent honeyeater would not exceed 108.9 hectares. Table 8.1 of the Solar Farm BDAR indicates that the impact to the regent honeyeater is 42.3 hectares which includes 17.58 hectares of scattered trees and 24.72 hectares of derived native grassland. ***Prescribed Impacts*** Prescribed impacts are described in section 6.0 and section 8.3 of the Solar Farm BDAR and section 6.2 of the Road Upgrade BDAR. A summary of the assessment of the prescribed impacts is provided in Table 8.4 of the Solar Farm BDAR. No EPBC Act listed species are considered likely to be dependent upon habitat features that are associated with any prescribed impacts and no offsets have been proposed for prescribed impacts at this stage. ***Habitat Connectivity*** Section 3.2.2 of the BDAR states that the project consists of an agricultural landscape, predominantly comprised of grazed grasslands with remnant trees. The project is surrounded by the Goulburn River National Park. Patches of retained forest and woodland vegetation are present typically in areas surrounding watercourses and on steeper or less fertile rocky habitats. The site was selected as large areas had already been historically cleared, and the proponent sought to avoid and minimise the impact on native vegetation, flora and fauna (section 7.1). Section 3.2.3 of the Solar Farm BDAR states that wildlife movement across the development footprint is likely to be limited to highly mobile species. The majority of the development footprint provides limited vegetation cover for small prey species so their movement is expected to be minimal. Scattered trees may provide stepping stones for mobile fauna movement but are spaced too far apart to be suitable for gliding mammals and small forest birds. Table 6.1 identifies that the clearing of native vegetation will include canopy trees, but the trees are mainly isolated, scattered paddock trees. Areas of derived native grassland and highly disturbed agricultural land will also be disturbed. The threatened entities that were observed during bird and bat utilisation (BBUS) surveys (large-eared pied bat, white-throated needletail, diamond firetail and glossy black-cockatoo) are all highly mobile species, capable of flying over the areas proposed for development. ***Vehicle Strike*** Table 6.1 of the Solar Farm BDAR states that vehicle movements would be on access tracks throughout the development footprint and the proponent aims to utilise existing tracks where practicable. No threatened species are likely to be affected by vehicle strike as the vehicles will be travelling at low speeds. ***Hydrological Impacts*** Section 6.1.1.5 of the Road Upgrade BDAR states that the culvert upgrades required for Golden Highway and Bow River to Binks Road have the potential to disturb habitats within Killoe Creek and Bow River. These watercourses are both part of the Goulburn River catchment. There are also various tributaries of Council's Creek which intersect the Wollara Road Upgrade Development Footprint.	

Requirement	Information	Reference (BAM / BLA[2])
	Section 6.2.2.2 of the Road Upgrade BDAR details the criteria that will be used for the road upgrades to ensure that the impacts to hydrological processes are minimised. No threatened species (giant burrowing frog) are likely to be impacted if the processes are followed.	
	Complete the following information for each EPBC Act listed threatened species and/or community (add/remove rows as necessary): • EPBC Act listed threatened species and/or community • nature and consequences of impacts (i.e. direct and indirect) • duration of impact (e.g. construction, operation, life of project) • quantum of impact • consequences of impacts on the species, the population and / or extent of the community at local, state and national scales Confirm the level of predicted impact (cross appropriate): ☒ high risk of impact (requiring offsets)# or SAII ☒ Low risk of impact (not requiring offsets) # For purposes of EPBC approval, as a minimum, significant adverse residual impacts **must** be offset (significant impact can be evaluated with reference to the significance impact guidelines) **Confirm that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species.** BCS confirms that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR (see further information below). **If any species and communities identified in the referral documentation (provided by DAWE) have been ruled out because they don't occur on or near the site, verify that there is robust analysis and justification for why these species can be ruled out.** The referral decision brief (dated 11 February 2022) identified that the project was likely to have a significant impact on: • *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* TEC - listed as Critically Endangered • regent honeyeater (*Anthochaera phrygia*) – listed as Critically Endangered In addition, the Commonwealth identified potential for some risk of significant impacts to the following matters: • *Central Hunter Valley Eucalypt Forest and Woodland* TEC – listed as Critically Endangered • swift parrot (*Lathamus discolor*) – listed as Critically Endangered	

<table>
<tr><th>Requirement</th><th>Information</th><th>Reference (BAM / BLA[2])</th></tr>
<tr><td></td><td>

painted honeyeater (Grantiella picta) – listed as Vulnerable
large-eared pied bat (Chalinolobus dwyeri) – listed as Vulnerable
Corben’s long-eared bat (Nyctophilus corbeni) – listed as Vulnerable
pink-tailed worm lizard (Aprasia parapulchella) – listed as Vulnerable
bluegrass (Dichanthium setosum) – listed as Vulnerable
Homoranthus darwinoides – listed as Vulnerable

Seven additional threatened species were identified as priority management species following the 2019-2020 bushfires. The Commonwealth identified that the following species may be impacted by the proposed action:

koala (Phascolarctos cinereus) – listed as Vulnerable
greater glider (Petauroides volans) – listed as Vulnerable
brush-tailed rock wallaby (Petrogale penicillata) – listed as Vulnerable
spotted-tail quoll (Dasyurus maculatus maculatus) – listed as Endangered
New Holland mouse (Pseudomys novaehollandiae) – listed as Vulnerable
grey-headed flying-fox (Pteropus poliocephalus) – listed as Vulnerable

The hooded robin, glossy-black cockatoo, diamond firetail, brown treecreeper and southern whiteface were not included in the referral documentation but were recorded at the proposed development sites. As such, the proponent has included these species in the MNES assessment for the Solar Farm BDAR.
Delma impar was not listed in the referral decision brief, however Delma impar was predicted as having potential to occur by the BAM-C. Delma vescolineata has since been listed under the EPBC Act and would have a likelihood of occurrence at the proposed subject site. Surveys to date has not appropriately excluded this species.
Ten threatened species and one threatened ecological community listed in the referral decision brief as likely to be significantly impacted were not recorded during surveys. The survey effort for these species is summarised below:
<table>
<tr><th>Entity</th><th>BDAR</th></tr>
<tr><td colspan="2">Listed in the referral decision (dated 22 February 2022)</td></tr>
<tr><td>Central Hunter Valley Eucalypt Forest TEC</td><td>Table 2.2 of the Solar Farm BDAR identifies that the ecological community was not observed during targeted flora surveys.</td></tr>
</table>
</td><td></td></tr>
</table>

Requirement	Information		Reference (BAM / BLA[2])
	Swift parrot	No mapped important habitat for the swift parrot in either development footprint. No swift parrots recorded during targeted diurnal bird surveys.	
	Corben's long-eared bat	Targeted surveys were conducted using anabat acoustic recorders and microbat roost flyout surveys were conducted at dilapidated structures (Table 2.8 of the Solar Farm BDAR). The species was not recorded during targeted surveys.	
	Bluegrass	Targeted surveys were conducted on the areas of impact assessed under the Roads BDAR. The species was not recorded during targeted surveys. This species was not surveyed for at the solar farm site	
	Homoranthus darwinoides	Targeted flora transects were conduct in August and November of 2023. Reference populations were recorded flowering nearby (table 5.11 of the Road Upgrade BDAR). The species was not detected during surveys.	
	Koala	Targeted spotlight and drone surveys were conducted for species (Table 5.7 of the BDAR). Baited arboreal camera traps were also deployed (Table 2.8). The species was not recorded during targeted surveys.	
	Greater glider	Targeted surveys were conducted using arboreal baited camera traps. Thermal drone surveys were conducted in 2023 (Table 2.8 of the Solar Farm BDAR). The species was not recorded during targeted surveys.	
	Brush-tailed rock wallaby	The habitat within the proposed development footprint was heavily degraded and unsuitable for the species. No targeted surveys were conducted for the species (Table 5.3 of the Solar Farm BDAR).	

Requirement	Information		Reference (BAM / BLA[2])
	Grey-headed flying-fox	No breeding camps were detected during targeted surveys (Table 5.3 of the Solar Farm BDAR). The species was not recorded within the development footprint.	
	New Holland mouse	Targeted surveys were conducted using arboreal baited camera traps. Thermal drone surveys were conducted in 2023 (Table 2.8 of the Solar Farm BDAR). The species was not recorded during targeted surveys.	
	Spotted-tail quoll	Targeted surveys were conducted using arboreal baited camera traps. Thermal drone surveys were conducted in 2023 (Table 2.8 of the Solar Farm BDAR). The species was not recorded during targeted surveys.	
	Provide advice on whether there are any other MNES species or communities that are missing from the assessment based on BCS knowledge and experience. BCS notes that bluegrass is a species for consideration for the Bilateral Assessment and that Table 5.2 in the BDAR considers this species to be a vagrant and states it is not on site. However, the proponent has not provided the full assessment of vagrant species, as required under Section 5.2.2 of the BAM. As such BCS cannot verify the statement that the species does not occur on site. BCS recommends that the proponent provide the information outlined in Section 5.2.2 of the BAM. This is important for this project, given that its basaltic substrate is atypical of the Sydney Basin IBRA Bioregion in which it is located. There is an isolated part of basalt that extensively underlies the adjacent Liverpool Ranges IBRA subregion to the north. The basaltic substrate supports similar native species in these areas, such as PCT 483 'Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley'. If the proponent cannot provide sufficient information to determine species vagrancy, it should determine presence per Section 5.2.4 of the BAM. **Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list (if applicable):** Ten threatened species (see Table above) listed in the referral decision brief as likely to be significantly impacted, were assessed as not occurring in the proposed development footprints. One threatened ecological community (Central Hunter Valley Eucalypt Forest TEC) was also assessed as not occurring. BCS considers that the proponent has provided sufficient evidence that these species are unlikely to be impacted by the proposed development.		

<table>
<tr><th>Requirement</th><th>Information</th><th>Reference (BAM / BLA[2])</th></tr>
<tr><td></td><td>
BCS is satisfied that it was justifiable to include the threatened species and communities listed below in the assessment of MNES. These entities have been appropriately assessed:
<table>
<tr><th>MNES Entity</th><th>EPBC Listing Status</th><th>Reason for Inclusion</th></tr>
<tr><td>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</td><td>Critically Endangered</td><td>Recorded</td></tr>
<tr><td>Regent honeyeater</td><td>Critically Endangered</td><td>Project overlaps with Important Habitat Map</td></tr>
<tr><td>South-eastern glossy black-cockatoo</td><td>Vulnerable</td><td>Recorded</td></tr>
<tr><td>White-throated needletail</td><td>Vulnerable</td><td>Recorded</td></tr>
<tr><td>Diamond firetail</td><td>Vulnerable</td><td>Recorded</td></tr>
<tr><td>Hooded robin</td><td>Vulnerable</td><td>Recorded</td></tr>
<tr><td>Brown treecreeper</td><td>Vulnerable</td><td>Recorded</td></tr>
<tr><td>Large-eared pied bat</td><td>Vulnerable</td><td>Recorded outside development footprint for Solar Farm. Assumed present in the Road Upgrade BDAR.</td></tr>
<tr><td>Commersonia rosea</td><td>Endangered</td><td>Assumed present in the Road Upgrade BDAR</td></tr>
<tr><td>Giant burrowing frog</td><td>Vulnerable</td><td>Assumed present in the Road Upgrade BDAR</td></tr>
<tr><td>Broad-headed snake</td><td>Endangered</td><td>Assumed present in the Road Upgrade BDAR</td></tr>
</table>
Provide advice on whether adequate justification and evidence is provided for species and communities that have been identified as being at low risk of impact.
The proponent has not provided sufficient information to demonstrate that Delma impar (including Delma vescolineata) is vagrant within the area and they should survey for it in line with the Threatened reptiles – Biodiversity Assessment Method survey guide.
</td><td></td></tr>
</table>

<table>
<tr><th>Requirement</th><th>Information</th><th>Reference (BAM / BLA[2])</th></tr>
<tr><td></td><td>
BCS notes that bluegrass is a species for consideration for the Bilateral Assessment and that Table 5.2 in the BDAR considers this species to be a vagrant and states it is not on site. However, the proponent has not provided the full assessment of vagrant species, as required under Section 5.2.2 of the BAM. As such BCS cannot verify the statement that the species does not occur on site.

BCS recommended that the proponent provide the information outlined in Section 5.2.2 of the BAM. This is important for this project, given that its basaltic substrate is atypical of the Sydney Basin IBRA Bioregion in which it is located. There is an isolated part of basalt that extensively underlies the adjacent Liverpool Ranges IBRA subregion to the north. The basaltic substrate supports similar native species in these areas, such as PCT 483 ‘Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley’.

BCS recommended that if the proponent could not provide sufficient information to determine species vagrancy, it should determine presence per Section 5.2.4 of the BAM.

Assess the consequences of impacts on the species, the population and / or extent of the community at local, state and national scales.
<table>
<tr><th>MNES Entity</th><th>Area of Impact (ha)</th><th>Local Consequence</th><th>State Consequence</th><th>National Consequence</th></tr>
<tr><td>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</td><td>493.82</td><td>The project will increase the fragmentation of this community within the landscape. The Liverpool Range and Kerrabee IBRA sub-regions have been subjected to extensive clearing.</td><td>Current extent in NSW is approximately 250,000 ha. The amount of this community to impacted is small in the context of the NSW community occurrence (0.2%)</td><td>Current national extent of approximately 416,000 ha. The amount of this community to be impacted in the context of the country is small (0.12%).</td></tr>
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Requirement	Information					Reference (BAM / BLA[2])
	Regent honeyeater	42.46	The project will increase the habitat fragmentation in the local area and reduce the area of occupancy in the local area.	The project will increase the habitat fragmentation in the local area and reduce the area of occupancy in the state of NSW.	The project will increase the habitat fragmentation in the local area and reduce the area of occupancy. This impact has the potential to be significant.	
	South-eastern glossy black-cockatoo	25.15	The species was observed flying over the proposed development site. A small number of foraging trees will be removed for the proposed development. No breeding habitat is expected to be impacted.	The current distribution of the glossy-black cockatoo covers areas from the coast to the tablelands and extends as far west as the Riverina and Pilliga Scrub. The species favours intact woodland and timbered watercourses and the amount of area impacted is unlikely to be significant.	Unlikely to have a significant impact.	
	White-throated needletail	789.15	Recorded in proposed development footprint. Habitat within the locality and IBRA sub-regions is extensive. The species is migratory and is not restricted to the development land.	The air space of the woodland habitat in the development may provide foraging opportunity. Habitat within the IBRA sub-regions is extensive and species is not restricted to NSW.	Unlikely to have a significant impact.	

Requirement	Information					Reference (BAM / BLA[2])
	Diamond firetail	798.15	The species was documented foraging in several locations across the development footprint. It is likely that there will be a loss of known habitat. The proposed development is unlikely to reduce the area of occupancy for an important population.	Unlikely to have a significant impact.	Unlikely to have significant impact.	
	Hooded robin	95.29	The species was observed in the Project Site, outside of the development footprint. The areas of suitable habitat are heavily degraded, nonetheless there may be a loss of suitable foraging habitat.	Unlikely to have a significant impact.	Unlikely to have significant impact.	

Requirement	Information					Reference (BAM / BLA[2])
	Brown treecreeper	95.29	The species was not observed in the development footprint but s considered likely due to floristic composition. There may be a loss of suitable foraging habitat locally.	Unlikely to have a significant impact.	Unlikely to have significant impact.	
	Large-eared pied bat	1.54	Species not recorded in development footprint. Suitable habitat in road upgrade sites is minimal.	Unlikely to have significant impact.	Unlikely to have significant impact.	
	Commersonia rosea	0.36	Species not recorded in development footprint. Suitable habitat in road upgrade sites is minimal.	Unlikely to have significant impact.	Unlikely to have significant impact.	
	Giant burrowing frog	0.09	Species not recorded in development footprint. Suitable habitat in road upgrade sites is minimal.	Unlikely to have significant impact.	Unlikely to have significant impact.	

Requirement	Information					Reference (BAM / BLA[2])
	Broad-headed snake	1.05	Species not recorded in development footprint. Suitable habitat in road upgrade sites is minimal.	Unlikely to have significant impact.	Unlikely to have significant impact.	
Offsets	Verify that the EIS/BDAR: ☒ identifies any MNES that haven't been offset using the BAM ☒ identifies how impacts requiring offsets correlate to MNES impacts ☐ identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES ☐ identifies threatened species requiring offset and the number of species credits required for impacts to MNES ☐ correctly uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity ☐ identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting ☒ if known, identifies any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures[#].					BAM Chapter 10 BLA clauses 7.1 and 7.2

Requirement	Information	Reference (BAM / BLA[2])
	[#] In accordance the BAM there is no longer a requirement to define the offsetting approach at EIS stage. Large eared pied bat has been detected within the study area but impacts are not proposed to be offset using the BAM. **Complete the Impacts and Offsets Summary table below (Table 2)**	
	Provide advice on the adequacy of the proposed offsets in meeting the requirements of the BAM: The proposed offsets may be inadequate for *Delma impar*, powerful owl and the vegetation currently allocated to PCT 1691 in the Roads BDAR. There are no proposed offsets or compensation for impacts to large-eared pied bat. Additional and Appropriate Measures are being considered for impacts to White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and regent honeyeater to address the risk of Serious and Irreversible Impacts. The offsets proposed for the remaining vegetation and threatened entities is considered appropriate. Impacts to MNES that require offsetting are addressed in each MNES impact assessment in 5.2 of the MNES Assessment report. Table 10.2 of the BDAR lists the PCTs that require offsetting and the number of ecosystem credits required. There is no information to specify the requirements for MNES entities. Table 10.3 of the BDAR lists species credit entities that will require offsetting and the number of credits required for each species. There is no information to specify the requirements for MNES entities. The BAM and BAM-C have been incorrectly used to identify the number and class of biodiversity credits that need to be offset. This is demonstrated by incomplete survey effort for *Delma impar* and powerful owl, inadequate justification for PCT 1691 in the Roads BDAR and inappropriate exclusion of large eared pied bat on the Solar Farm site. 1. The BAM and BAM-C have been used correctly for other MNES entities. Section 6.0 of the MNES Assessment Reports details the proposed offsetting approaches intended to be used. The applicant is proposing to establish a BSA over 60% of the Project Area. Additional credits will be retired through agreement with private landowners.	
Other Considerations	Verify if any relevant Commonwealth guidelines and policy statements are applicable to the action and listed threatened species and/or community, including but not limited to:	

Requirement	Information	Reference (BAM / BLA[2])
	☐ International environmental obligations ☒ Recovery Plans ☐ Approved Conservation Advice ☐ Threat Abatement Plans *The relevant Commonwealth guidelines and policy statements for each species and community are available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl*	BLA clauses 6.2(b)(iv), 7.2(c), 7.3 and 7.4
	For each EPBC Act listed threatened species and/or community, provide advice on whether the assessment has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans. The significant impact assessment for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland does not directly consider the *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan*. The applicant does propose to establish a Biodiversity Stewardship Site over approximately 1200 ha, which will serve to contribute to the offsetting of the residual impacts of the proposed development. The significant impact assessment for the Regent Honeyeater has been informed by the *National Recovery Plan for the Regent Honeyeater (Anthochaera phrygia)*. The assessment does acknowledge that the proposed development does fall within, or in close proximity to the Mudgee Wollar breeding area identified in the National recovery plan. It does acknowledge that the removal of this habitat will remove the future recovery potential of the site, interfering with Strategy 1 of the National Recovery Plan for this species. The assessment does not consider published conservation advice or National Recovery Plans for the new holland mouse, grey-headed flying-fox, southern whiteface, white-throated needletail and brown treecreeper (south-eastern). The significant impact assessment concludes that the project will remove suitable habitat for the southern whiteface, white-throated needletail and brown treecreeper (south-eastern). The assessment for the large-eared pied bat has been assessed in accordance with its listing as Vulnerable despite this species being uplisted to Endangered under the EPBC Act in November 2023. This assessment does make reference to the National Recovery Plan, however the report inappropriately excludes the species from consideration of impacts onsite. The significant impact assessments consider relevant National Recovery Plans and/or conservation advice for the spotted-tailed quoll, painted honeyeater, swift parrot, hooded robin (south-eastern),	

Requirement	Information	Reference (BAM / BLA[2])
	There are no published national recovery plans or conservation advice for the glossy black-cockatoo, Corben's long-eared bat.	
Recommended Conditions	**Provide advice on any recommended conditions and reasons for imposing the conditions:** BCS recommends two conditions be considered for the threatened entities at risk of SAII as a result of the proposal. • The proponent will provide a financial contribution of $100,000 per annum for three years to the NSW Government to be used on the Regent Honeyeater breeding program (or other suitable species-specific conservation program). • The proponent will develop a rehabilitation management plan in consultation with BCS. This plan will detail how White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland will be restored in the proposed Biodiversity Stewardship Site.	BLA clause 6.2(c)(iii)

TABLE 2: MNES IMPACT AND OFFSET SUMMARY

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS, BDAR)
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	PCT 483	493.82	4629	Establishment of an approximately 1,200 ha Biodiversity Stewardship Agreement (BSA) over the residual parts of the Project Area. Retirement of residual credits across two existing BSAs. Payment into the BCF.	Table 10.2 of Solar Farm BDAR, Table 9.2 Roads BDAR, Table 6.1 of MNES report for Solar Farm.
Regent honeyeater	Mapped important habitat	45.12	1433	Establishment of an approximately 1,200 ha Biodiversity Stewardship Agreement (BSA) over the residual parts of the Project Area. Retirement of residual credits across two existing BSAs. Payment into the BCF.	Table 10.3 of Solar Farm BDAR, Table 9.3 of Roads BDAR, Table 6.1 of MNES report for Solar Farm
Painted honeyeater (*Grantiella picta*)	PCT 483	22.49	1109 (ecosystem credits	Establishment of an approximately 1,200 ha Biodiversity Stewardship Agreement (BSA) over the residual parts of the Project Area. Retirement of residual credits across two existing BSAs. Payment into the BCF.	Table 6.1 of MNES report for Solar Farm