Bendemeer Solar Farm

Application Number: **01567** Commencement Date: **07/12/2022** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Bendemeer Solar Farm

1.1.2 Project industry type *

Energy Generation and Supply (renewable)

1.1.3 Project industry sub-type

Solar Farm

1.1.4 Estimated start date *

1/04/2024

1.1.4 Estimated end date *

1/01/2056

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

The Project will involve the construction, operation and decommissioning a photovoltaic (PV) solar facility with a targeted electricity generating capacity of approximately 280 MW Direct Current (DC), battery energy storage system (BESS) with a capacity of approximately 200 MW / 400 MWh, and associated infrastructure.

The Project Area is crossed by an existing 330 kilovolt (kV) above-ground transmission line which traverses southwest-northeast section of the Project Area. The transmission line is owned and operated by TransGrid (Line 85) and runs from Armidale to Tamworth. The Project will supply electricity to the national electricity grid via the existing electricity transmission network.

The total Project Area is 606.4 ha, with a disturbance footprint of 476.6 ha and avoidance area of 129.8 ha. This disturbance footprint includes impacts to approximately 103.4 ha of native vegetation communities.

The proposed action will include construction, operation and decommissioning activities which will include native vegetation clearing, excavation, construction of solar array foundations and hard stand areas, construction of access roads and laydown areas, construction of ancillary infrastructure and associated temporary construction noise. Construction activities will result in direct impacts to known or potential habitat for listed threatened species and communities through vegetation clearing and habitat loss. Indirect impacts to areas of retained habitat may occur through changes to light, noise and hydrology features during the construction phase.

Project elements include:

Solar Arrays

- The PV array will be the largest component of the Project and will comprise approximately 430,000 PV modules, each with a nameplate capacity of approximately 665 W, installed on single-axis tracking structures across three solar arrays (east, north and south). Each PV module typically measures 2.4 m by 1.3 m with rows spacing approximately 6.2 m apart.
- The operational rotation range of the tracking system is typically +/- 60 degrees from the horizontal position. The maximum height of the PV modules above natural ground is up to 4.2 m. The modules will typically return to face east after sunset.
- Individual PV modules are constructed using a “high-transmission, low-iron” glass which has lower reflectance and therefore glare than that of normal glass. A coating applied to the module surface creates a stippled finish to further diffuse the reflected light and therefore energy.
- The PV modules will feature an unpainted aluminium frame to provide structural support and facilitate module mounting on the tracking structure

- The final number of PV modules within the three arrays and tracker design will be dependent on detailed design, equipment availability and commercial considerations. These dimensions may alter based on site constraints such as boundaries, riparian zone, existing vegetation, and access tracks.

BESS

- The BESS will be located within the site compound, laydown and substation footprint area, occupying an area of up to 20,000 m2. The BESS will utilise lithium-ion technology with a nameplate capacity of approximately 200 MW / 400 MWh. The BESS will utilise a pre-assembled and pre-tested, fully integrated system that includes the battery modules, inverters, transformers, thermal management system, circuit breakers and other controls. The number and layout of battery modules and cabinets would be confirmed during detailed design.
- The BESS will include a liquid cooling system to optimally operate the cells within a wide range of ambient temperatures. The BESS will be temperature monitored, and the automated control system will stop/reduce its operation if the temperature exceeds pre-set levels to prevent overheating. The BESS will be certified to UL9540A to prevent fire propagation between units, and ignition from external fire sources.

Solar PV Power Conversion Units (PCUs)

- A total of approximately 60 modular PCUs will be utilised, incorporating inverters and transformers and associated control equipment. Each modular PCU structure will typically be the size of a 40 foot (ft) shipping container structure, with an installed height of approximately 4 m.
- The PCUs will be connected to the solar array blocks to convert the DC electricity generated by the PV modules into AC power for reticulation around the site and connection to the electricity grid.

Electrical Reticulation and Grid Connection

- The Solar Farm and BESS will each have a dedicated 33/330kV transformer which will be in the substation adjacent to the switching station. The substation will be connected to the switching station, and the switching station will be connected to the existing 330 kV line, which separates the north and south arrays.
- The substation will be comprised of two transformers, high voltage switchgear, metering, protection and communications infrastructure. A security fence will surround the substation. The switchyards and associated equipment will be designed in accordance with AS2067, AS3000 as well as the associated referenced standards. The design will consider the site environmental conditions.

On-site O&M Facility

- A permanent site O&M Facility will be constructed to provide for all operations and maintenance activities associated with the Project. The O&M Facility will be located adjacent the substation and BESS.

Other Infrastructure

- Additional infrastructure will generally be constructed and utilised within the Project Area, including water management, sediment and erosion control structures, fencing and access tracks.

Internal Access Tracks

- The ongoing maintenance of the Project will be accessed through internal access tracks within the Project area, that will be connected to existing public roads. The tracks will provide ongoing access to the PV modules, substation and other Project infrastructure including the existing 330 kV line. Where practicable, the internal access track network will be aligned along the route of existing farm tracks to reduce impacts to biodiversity and to provide upgraded access for ongoing agricultural activities.
- The internal access tracks will be up to 6 m trafficable width, with localised widening on curves and where required to support transportation of the over-dimensional component vehicles. The internal access tracks will be constructed using gravel or sealed pavements.

Lighting

- Lighting will typically be required on each PCU, at the substation, switchyard and O&M Facility. Security lighting will be installed adjacent to security fencing and O&M Facility. All lighting will be designed, managed and operated in accordance with 'AS 4282 Control of Obtrusive Effects of Outdoor Lighting' (Standards Australia, 2019), to reduce negligible light spill

Landscape

- The landscape strategy for the Project Area will include vegetation planting to screen the western and southwest boundaries, providing a visual buffer to the surrounding areas. Landscaping will comprise planting of native trees, shrubs and groundcovers, designed to be low-maintenance and which will further enhance the natural habitat associated with the existing environment.

External Infrastructure

- The Project will rely on Tamworth existing waste and wastewater disposal facilities and the existing external road network. Public power and communications infrastructure may also be utilised.
- The Project will operate as a stand-alone operation; however, may also utilise various electrical reticulation, monitoring masts and other infrastructure from the Bendemeer Wind Farm (upon its positive determination) as described and assessed in that Application.

A detailed description of the proposed action and activities is provided in the attached 'Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report', Section 1.3, pp 2-5).

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

Yes

1.2.5 Provide information about the staged development (or relevant larger project).

The broader Bendemeer Renewable Energy Hub also includes a proposed wind farm, which is adjacent to the Project, consisting of up to 62 wind turbine generators (WTGs) with a nominal generating capacity of up to 380 MW. The Bendemeer Wind Farm is subject to a separate state significant development application and separate EPBC referral, and will include ancillary infrastructure including:

- Substation:
- Transmission line easement;
- Internal electrical reticulation;
- Switchyard;
- Operations and Maintenance (O&M) facility;
- Temporary construction infrastructure;
- Temporary and permanent meteorological masts;
- Landscaping and screening vegetation;
- Internal access tracks and Project Area access.

Subject to the timing of the construction of the Project, the Project may utilise shared infrastructure proposed as part of the Bendemeer Wind Farm as electrical reticulation, monitoring masts and other infrastructure.

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The Project involves development for the purpose of electricity generating works using solar power, which will have a capital investment value of more than $30 million. Therefore, the Project is classified as state significant development (SSD) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and will be assessed in accordance with Schedule 1 of the State and Regional SEPP.

The NSW Biodiversity Offsets Scheme applies to SSD projects, unless the Secretary of the Department of Planning and Environment determines that the Project is not likely to have a significant impact on biodiversity. As this is an SSD development and there are recorded biodiversity values within the Project Area, application of the NSW Biodiversity Assessment Method, 2020 (BAM 2020) and the preparation of a Biodiversity Development Assessment Report (BDAR) will be required.

A Significant Impact Assessment has been undertaken for MNES known or likely to be present in the project area and there is a potential for a significant impact to these features. These will be further assessed within the Environmental Impact Statement (EIS) currently being prepared under the NSW EP&A Act. This project is being referred to the Australian Government Minister for the Environment for a controlled action determination. The relevant sections of the EP&A Act. the NSW *Biodiversity Conservation Act 2016* (BC Act) and the NSW BAM are subject to a bilateral agreement with the Commonwealth Government for the assessment and approval of projects that have the potential to impact on MNES. Through this mechanism, the consent authority for the Project is expected to be the NSW Minister for Planning, who will need to consider the EPBC Act and significant impacts throughout the assessment of the EIS and any approval for the project.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Engagement for the Project has been undertaken in accordance with the “live” ‘Stakeholder Engagement Plan’ (SEP) prepared for the Applicant by communication specialists, C7EVEN Communications, locally based in Tamworth, NSW. The SEP is an evolving document and is subject to regular review and revision.

The SEP incorporated the ‘International Association of Public Participation (IAP2)’ (IAP2, 2022) engagement spectrum in which engagement activities were designed to ‘Inform’, ‘Consult’, ‘Involve’, ‘Collaborate’ and ‘Empower’. It also includes consideration of the *Large-Scale Solar Energy Guideline* (NSW Department of Planning and Environment, 2022) and *Undertaking Engagement Guidelines for State Significant Projects*, NSW Department of Planning and Environment, 2022).

The SEP has facilitated engagement with relevant stakeholders which is proactive and ensure all Project information is timely, transparent, accessible and easy to understand. The SEP also demonstrates the Applicant’s commitment to continuously evaluate community engagement and modify when needed, to ensure the Applicant meets stakeholder expectations.

Consultation will be undertaken with the following list of key stakeholders which have been identified for the Project:

Community

Landholders

- Kentucky South Landholder Group
- Host Landholders
- Non-associated dwellings
- Associated dwellings

Nearby Communities

- Local Communities
  - Bendemeer
  - Woolbrook
  - Limbri
  - Moonbi
  - Walcha

- Regional Centres
  - Tamworth
  - Armidale

Community Groups

- Bendemeer Country Women's Association (CWA)
- Bendemeer Town Hall Committee
- Woolbrook Hall and Park Committee
- MacDonald River Landcare Group
- Friends of Kentucky Action Group
- Thunderbolt Energy Hub Community Consultative Committee
- Red4NE – Responsible Development for New England
- Voice 4 Walcha
- Bendemeer Rural Fire Service (RFS)

Local Aboriginal groups and Registered Aboriginal Parties (RAPs)

Regulatory

Local Council(s)

- Tamworth Regional Council

State Government Agencies

- DPE – Planning
- DPE – Hazards
- DPE – Water Assessments
- DPE – Heritage
- DPI – Agriculture
- EPA NSW
- Tamworth State MP – Kevin Anderson
- Tamworth Regional Council
- NSW Rural Fire Service (RFS)
- Fire and Rescue NSW (FRSNW)
- Biodiversity Conservation Division (BCD) – North West Planning Team
- Mining, Exploration and Geoscience (MEG)
- Crown Lands
- Transport for NSW

Federal Government Agencies

- Federal Department of Climate Change, Energy, Environment and Water (DCCEEW)
- New England Federal MP

Other Industry and Stakeholders

Infrastructure Owners

- TransGrid

Business Groups

- Tamworth Business Chamber

Consultation will be undertaken in line with the proposed methods and strategies as outlined with the SEP which include:

- Emails / phone calls / newsletters / website / hotline / newsletters/ letters/ factsheets
- Community Pop-Up Sessions
- Landholder meetings (face to face and phone calls)
- Sponsorship
- Information Days and Face to Face Meetings
- Briefings
- Community Hotline and email
- Website and mailbox
- Public Relations and Media
- Social Media

In addition to general public consultation undertaken for the Project, consultation with Aboriginal stakeholders will be undertaken as part of the Project's Aboriginal Cultural Heritage Assessment. Consultation in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010).

In addition to general public consultation undertaken for the Project, consultation with Aboriginal stakeholders will be undertaken as part of the Project's Aboriginal Cultural Heritage Assessment (ACHA). Consultation for this assessment will be undertaken in accordance with the' Aboriginal Cultural Heritage Consultation Requirements for Proponents' (DECCW, 2010).

Requests for information on potentially interested Aboriginal stakeholders was requested from several government agencies on 15 October 2022 via email and an advertisement requesting registrations of interest in the process of community consultation was also placed in the local newspaper on 19 October 2021. Invitations to register interest in Aboriginal community consultation has been issued to all groups identified from the responses received

from the preliminary government agency contact. Those Aboriginal persons or groups who register their interest in the Project will subsequently be consulted regarding the proposed heritage assessment methodology, heritage values and significance of the Project Area and proposed management measures for Aboriginal heritage values across the Project Area.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at privacy@awe.gov.au.

☑ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	12002773248
Organisation name	Environmental Resources Management Australia Pty Limited
Organisation address	Level 14, 207 Kent St, Sydney NSW 2000

Referring party details

Name	Matt Davis
Job title	Principal Ecologist
Phone	0421 879 950
Email	matt.davis@erm.com
Address	Level 14, 207 Kent St, Sydney NSW 2000

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN	69630577418
Organisation name	ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD
Organisation address	2340 NSW

Person proposing to take the action details

Name	Mark Vile
Job title	Environment Manager – Bendemeer Renewable Energy Hub
Phone	+61437645419
Email	mark.vile@metisenergy.com
Address	1/403 Peel Street, Tamworth, NSW 2340

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Athena Energy Australia (Holdings) Pty Ltd has a satisfactory record of responsible environmental management. No proceedings have occurred under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Athena Energy Australia (Holdings) Pty Ltd.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

As a developer and operator of renewable energy facilities, Athena Energy Australia (Holdings) Pty Ltd (Athena) is conscious of the potential environmental impact of development activities, where a commitment for a responsible and sustainable development as well as environmental protection and preservation are seriously taken.

Athena's environmental risk assessment and management processes are aligned with the applicable environmental regulations and standards of each individual project sites. In accordance with each host country regulatory framework, Athena evaluates the potential impact to human health, the natural environment and ecosystems, and social impact of each project during the development stage. Areas of potential impact are identified and improved the design and construction plans of the projects to avoid, minimise, and mitigate such impact accordingly. Projects are continuously monitored throughout the project lifecycle as the Applicant commits to optimal environmental protections and timely corrective actions.

Athena is a Metis Energy company and the attached Metis Energy Environmental, Social & Governance Policy (2022) ensures that Athena's development processes for new projects comply the country or local environmental requirements, and that existing generation facilities maintain operations within the applicable regulations and standards of their permits and approvals.

In 2021, there were no fines or sanctions from non-compliance with the regulatory requirements across the Group's renewable energy business. For the upcoming year Athena aims to continuously maintain current clean record.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN	69630577418
Organisation name	ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD
Organisation address	2340 NSW

Proposed designated proponent details

Name	Mark Vile
Job title	Environment Manager – Bendemeer Renewable Energy Hub
Phone	+61437645419
Email	mark.vile@metisenergy.com
Address	1/403 Peel Street, Tamworth, NSW 2340

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	12002773248
Organisation name	Environmental Resources Management Australia Pty Limited
Organisation address	Level 14, 207 Kent St, Sydney NSW 2000
Representative's name	Matt Davis
Representative's job title	Principal Ecologist
Phone	0421 879 950
Email	matt.davis@erm.com
Address	Level 14, 207 Kent St, Sydney NSW 2000

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	69630577418
Organisation name	ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD
Organisation address	2340 NSW
Representative's name	Mark Vile
Representative's job title	Environment Manager – Bendemeer Renewable Energy Hub
Phone	+61437645419
Email	mark.vile@metisenergy.com
Address	1/403 Peel Street, Tamworth, NSW 2340

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

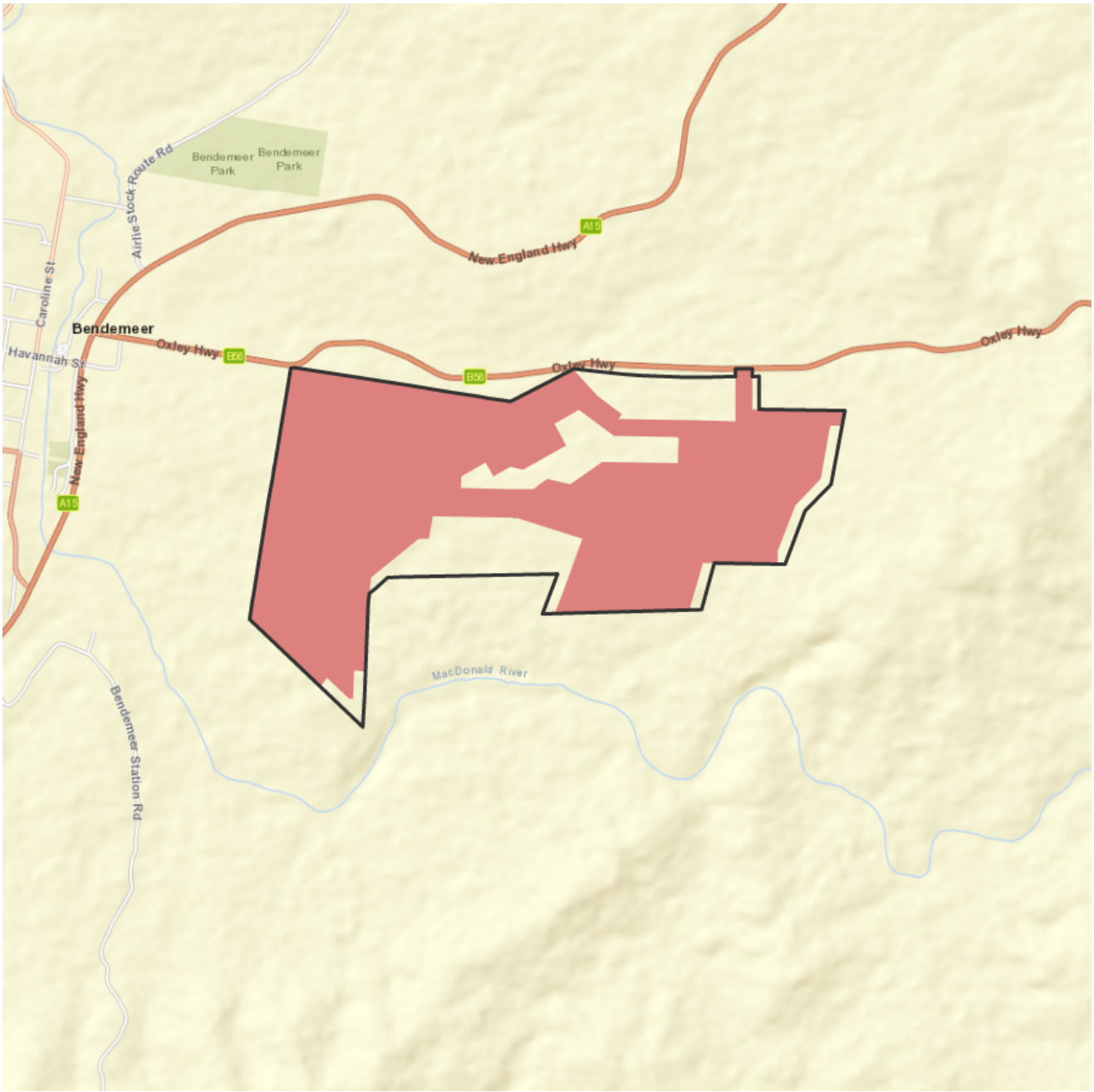
1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint



2.2 Footprint details

2.2.1 What is the address of the proposed action? *

Lots 1, 2 and 3 of DP 1211502, Lot 7318 of DP 1146359 and Lot 7317 of DP 1159220 for site access off the Oxley Highway.

2.2.2 Where is the primary jurisdiction of the proposed action? *

New South Wales

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

Freehold and some crown reserve.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The Project Area has historically been used for agricultural purposes and is currently used for cattle grazing. Due to a long history of agriculture and grazing, the Project Area is highly modified. The land is dominated by a mixture of modified pastures used for grazing and cropping, as well as native vegetation areas which are also used for grazing. The native vegetation remaining has a proportionately low cover within the Project Area, and contains high cover of exotic and invasive groundcovers, reflective of the agricultural land use history.

There are patches of native vegetation in the form of eucalypt woodlands that consist of the following PCTs:

- PCT 538 - Rough-barked Apple - Blakely's Red Gum open forest of the Nandewar Bioregion and western New England Tableland Bioregion; and
- PCT 510 – Blakely's Red Gum – Yellow Box grassy woodland of the New England Tablelands Bioregion.

The current condition of the environment in the Project Area is variable, from areas that are highly modified from their natural condition due to agricultural activites to areas of moderate ecological condition. Highly modified areas include those containing and immediately surrounding agricultural infrastructure, including cattle/stock yards and sheds, fence lines, access tracks and dams. Many of these areas have limited remnant vegetation, usually present only as trees, and are often cropped for pasture and/or have significant weed incursion. Those areas in better ecological condition include large patches of remnant vegetation with a modified understorey. Utilisation by native fauna has been observed, including non-threatened mammal and bird species. There is also a low to moderate level of erosion present in concentrated areas, particularly those associated with drainage (some wash-out in gullies) and livestock movement (tracks to and from waterbodies). Level of degradation is low to moderate and could be considered consistent with a long history of agricultural use.

Overall the Project Area is highly modified but not highly degraded, being generally in moderate condition.

Distance of project area to major towns

The Project and immediate surrounds is located within the Tamworth Regional Council Local Government Area (LGA), approximately 1.8 km east of the Bendemeer town centre, represented by the Bendemeer Hotel, 46 km (by road) north-east of the Tamworth Post Office to the Project access, 46 km (by road) north-west of Walcha town centre and 51 km (by road) south-west of Uralla. The Oxley Highway borders the Project Area to the north and the Macdonald River to the south.

Adjoining zoning and land use

The Project Area is zoned RU1 (Primary Production) in accordance with the 'Tamworth Regional Local Environmental Plan' (Tamworth LEP) 2010. The Project is surrounded by RU1 (Primary Production) zoning to the North, East and South. Immediately to the west of the Project is zoned RU4 (Primary Production Small Lots).

The zone RU1 objective is to '*encourage sustainable primary industry production by maintaining and enhancing the natural resource base'* (Land Use Table, zone RU1 objectives, Tamworth LEP 2010). The zone RU4 objective is to '*encourage and promote diversity and employment opportunities in relation to primary industry enterprises; particularly those that require smaller lots or that are more intensive in nature*' whilst minimising 'conflict between land uses within this zone' (Land Use Table, zone RU4 objectives, Tamworth LEP 2010).

Access via existing road infrastructure

Heavy vehicles will transport materials and equipment associated with the Project construction. These will consist of vehicles including articulated vehicles (AV), B-Doubles (standard vehicles), 'truck and dogs' and concrete trucks. Due to the size of some of the solar components, there will be a small number of oversize over-mass (OSOM) deliveries. These will be required for delivery of large substation equipment (e.g., transformers,

switchrooms, construction equipment (e.g., cranes), the O&M Facility, and water tanks. In order to transport these large components to the Project, Restricted Access Vehicles (RAVs) will be utilised.

All vehicles will access the Project via A15 New England Highway to B56 Oxley Highway, located directly north of the Project Area. Other access points (e.g., existing farm accesses) may be used in cases of emergency.

There is limited existing farm tracks within the Project Area. The construction and maintenance of the Project will require construction of up to 35 km of access tracks within the Project area. The roads will provide ongoing access to the solar arrays and other Project infrastructure. Where possible, the internal road network will be aligned on the route asset protection zones (APZs) and / or existing farm or other access tracks. The perimeter road and all internal access tracks will be up to 6 m wide. It is not expected that upgrades are required to A15 New England Highway as a result of the Project. Clearing has been allowed for at the proposed site entry at B56 Oxley Highway, as shown in Figure 1.1 of Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 1, pg 5.

3.1.2 Describe any existing or proposed uses for the project area.

The Project Area has been utilised for agricultural practices for the last 100 years with evidence of broad native vegetation modification resulting from agricultural land use.

The proposed uses for the Project Area involves the construction, operation and where relevant (decommissioning) of:

- Photovoltaic (PV) solar facility with an estimated capacity of up to 280 MW Direct Current (DC);
- Battery energy storage system (BESS) with a capacity of approximately 200 MW / 400 MWh; and
- Ancillary infrastructure including (but not limited to) Power Conversion Units (PCU), one onsite substations, switching station, internal electrical reticulation network (overhead and/or underground), on-site permanent supporting infrastructure (including an operation and maintenance (O&M) facility), internal access tracks, road upgrades, and landscaping and erosion and sediment controls.

The Project Area is crossed by an existing 330 kilovolt (kV) above-ground transmission line which traverses southwest-northeast section of the Project Area. The transmission line is owned and operated by TransGrid (Line 86) and runs from Armidale to Tamworth. The line provides a suitable grid connection point for the project due to its available network capacity.

The broader Bendemeer Renewable Energy Hub also includes a wind farm, which is in the early planning phase. Located adjacent to the Project, the Bendemeer Wind Farm is intended to include up to 62 wind turbine generators (WTGs) with a nominal generating capacity of up to 380 MW, and ancillary infrastructure. Details of the wind farm are subject to change as the planning for the project is still ongoing.

Subject to the timing of the construction of the Project, the Project may utilise shared infrastructure proposed as part of the Bendemeer Wind Farm as electrical reticulation, monitoring masts and other infrastructure. The Bendemeer Wind Farm is subject to a separate state significant development application and separate EPBC referral.

Following the construction of the Project, there will likely be some level of continued agricultural land use within the Project Area with the continuation of grazing or cropiping activities in appropriate areas.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

There are no outstanding natural features and/or any other important or unique values specific to the Project Area. There are no National Parks of State Forests within 10 km of the Project Area. The closest National Park is the Watsons Creek Nature Reserve (14 km north-west) and the nearest State Forest is Attunga State Forest (22 km south-west).

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The Project Area is described as generally flat terrain. There is slight variation in elevation and relief is very low across the Project Area. The lowest elevation is approximately 860 m in the south-west corner and rises to 970 m in the south-east corner across approximately 4 km.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

The Project Area has been classified into four broad habitat types, defined based on vegetation community type, structure and is based on ground-truthed mapping using the Biodiversity Assessment Method (BAM) (Department of Planning, Industry and Environment [DPIE], (2020). These habitat types have then been considered as respective foraging, breeding, roosting, dispersal and movement functions for listed threatened, migratory and/or marine species that are known, likely or have the potential to occur within the Project Area. This ground-truthed habitat mapping has been informed by these four habitat types, and subsequently used to identify areas of habitat for listed threatened species. It is noted that some species will have certain species-specific habitat requirements within each habitat type, for example some reptiles might have microhabitat requirements within Eucalypt woodlands that restrict them to certain portions of that habitat type. This was also further verified through ground-truthing during the field surveys.

The habitats in the Project Area are mostly in moderate to low condition, with signs of degradation and fragmentation due to cattle grazing, erosion, and the presence of introduced flora species. These broad habitat types were:

- Eucalypt Open Forest: associated with PCT 538 - Rough-barked Apple - Blakely's Red Gum open forest of the Nandewar Bioregion and western New England Tableland Bioregion;
- Eucalypt Grassy Woodland: associated with PCT 510 – Blakely’s Red Gum – Yellow Box grassy woodland of the New England Tablelands Bioregion;
- Non-native Grasslands and Paddocks: associated with cleared land, pasture paddocks, infrastructure and plantings; and
- Waterbodies: associated with dams and drainage lines.

No listed threatened flora or fauna species were found to occur within the Project Area. Three listed threatened species and one migratory species were considered likely to occur. These were:

- Koala (*Phascolarctos cinereus*) (Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (Vulnerable);
- Narrow-leaved Peppermint (*Eucalyptus nicholii*) (Vulnerable); and
- Satin Flycatcher (*Myiagra cyanoleuca*) (Migratory).

With respect to the Satin Flycatcher, areas of potentially suitable habitat within the Project Area associated with eucalypt forests was 155.8 ha. The species would only occur as a transient visitor within the Project Area between autumn and winter due to migration patterns (DoE, 2022c). It is unlikely to use the Project Area for foraging or breeding purposes and so is not considered as part of the significant impact assessments.

A further five EPBC Act listed flora species, and six EPBC Act listed threatened fauna species were determined to have the potential to occur within the Project Area. The potentially occurring threatened flora species were: Velvet Wattle (*Acacia pubifolia)*, Granite Boronia (*Boronia granitica*), Bluegrass (*Dichanthium setosum*) and McKie's Stringybark (*Eucalyptus mckieana*) and Austral Toadflax (*Thesium australe*) (Bendemeer EPBC Act SIA, Section 3.2.1.2, pp. 22, Table 3-5). The potentially occurring threatened fauna species were: Regent Honeyeater (*Anthochaera phrygia*), Glossy-black Cockatoo (*Calyptorhynchus lathami lathami*), White-throated Needletail (*Hirundapus caudacutus*), Spotted-tailed Quoll (south-eastern mainland population) (*Dasyurus maculatus maculatus*), Border Thick-tailed Gecko (*Uvidicolus sphyrurus*) and Bell's Turtle (*Wollumbinia belli [Myuchelys bellii]*) (Bendemeer EPBC Act SIA, Section 3.2.2.3, pp. 24, Table 3-7).

One listed migratory species, the White-throated Needletail, was considered as having the potential to occur (Bendemeer EPBC Act SIA, Section 3.2.3.2, pp. 25, Table 3-8).

Following ground-truthing of vegetation mapping during field surveys, there is confirmed presence of one TEC within the Project Area, being White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Field surveys were undertaken throughout 2021 and 2022 to identify and map biodiversity constraints across the Project Area. The inspection was undertaken to validate the biodiversity desktop information and obtain general site characteristics and information on the level of site disturbance to inform other environmental assessments. The field survey involved the following methods, summarised below and shown on:

- Rapid data points for Plant Community Types (PCTs) / Threatened Ecological Communities (TECs) and vegetation zone mapping;
- Vegetation integrity plots (Biodiversity Assessment Method [BAM] plots); and
- Targeted threatened flora surveys.

The BAM requires targeted surveys to be completed when suitable habitat is identified for species credit species to inform the EPBC Act SIA. These are species whose presence cannot be reliably predicted through PCTs or habitat types, and their presence or absence on a site must be confirmed through field survey.

Further survey effort included the following:

- Winter 2021 – 16 rapid vegetation assessments points;
- Spring 2021 – 21 vegetation integrity points, 16 rapid vegetation assessments points, scattered tree assessments; and
- Winter 2022 – targeted bird surveys with call playback, 313 trees targeted for Spot Assessment Technique (SATs) for the Koala

Detail on the flora and fauna within the Project Area, as well as the ecological surveys completed to inform these features are included in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 2 and Section 3, pp 7-19.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

The native vegetation communities within the Project Area are described in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3, pp. 11-12. A total of two PCTs were ground-truthed to occur in the Project Area which were:

- PCT 538 - Rough-barked Apple - Blakely's Red Gum open forest of the Nandewar Bioregion and western New England Tableland Bioregion; and
- PCT 510 – Blakely's Red Gum – Yellow Box grassy woodland of the New England Tablelands Bioregion.

The desktop review identified the potential occurrence of four TECs listed under the EPBC Act in the Project Area, including:

- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland – Critically Endangered;
- New England Peppermint *(Eucalyptus nova-anglica)* Grassy Woodlands – Critically Endangered;
- Weeping Myall Woodlands – Endangered; and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.

Following ground-truthing of vegetation mapping during field surveys, there is confirmed presence of one TEC within the Project Area, being White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Presence of the TEC across the Project Area is discontinuous with patches occurring across the entirety of the site. The western and eastern boundaries of the Project Area consist of the Box-Gum Grassy Woodland among areas of non-native vegetation. The central section of the Project Area consists of the Box-Gum Grassy Woodland as well as areas of PCT 510 and 538 and non-native vegetation. Presence of the TEC totals 97.4 ha within the total Project Area and 56.4 ha within the Preliminary development footprint, as outlined in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3.1.1, pp. 12-13.

A review of the NSW BioNet and Atlas of Living Australia (ALA) databases identified no records of threatened flora species within the Project Area. The likelihood of occurrence assessment considered one flora species, Narrow-leaved Peppermint (*Eucalyptus nicholii*), as likely to occur based on records in the locality, and suitable habitat present within the Project Area. This species is listed as Vulnerable under both EBPC Act and BC Act. The total amount of Narrow-leaved Peppermint habitat within the Project Area is 162.6 ha. There is one record of the species within the locality of the Project Area, recorded in 2017 by DPIE NSW beside the New England Highway (ALA, 2022). Due to the sufficient targeted survey effort conducted within suitable habitat for the species across the Project Area, it can be concluded that *Eucalyptus nicholii* does not occur within the Project Area and a significant impact assessment is not required, as detailed in the Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3.2.1.1, pp. 15-16.

As part of the New England Tablelands Bioregion and Eastern Nandewar subregion, the geology of the Project Area is formed on Paleozoic sedimentary rocks on the western edge, where the bioregion is bounded by the New England Tablelands, and includes the Tertiary basalts of Inverell and Kaputar (NSW National Parks and Wildlife Service, 2003). The soils within the Project Area are identified as tenosols (TE), which are gravelly soils, particularly shallow and stony on steep slopes with rocky outcrops and generally have limited water holding capacity due to shallowness of the soil. The land within the Project Area is Class 4 and 5 under the Land and Soil Capability Assessment Scheme (LSC) which is described as moderate to severe agricultural land use limitations. The Project Area is not identified as containing any areas of Biophysical Strategic Agricultural Land (BSAL), or Critical Industry Cluster (CIC).

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

There are no identified Commonwealth Heritage Places or other places that have heritage values relevant to the Project Area:

There are no Commonwealth Heritage listed places within or in proximity to the Project Area;

There are no National Heritage listed places within or in proximity to the Project Area;

There are no National Heritage listed places within or in proximity to the Project Area;

A search of the Tamworth LEP was conducted on 12 September 2022. The search identified no locally heritage listed sites within the Project Area. The closest heritage item listed in the Tamworth LEP is the Bendemeer Cemetery located approx. 7 km west of the Project Area;

A search of the Section 170 of the *Heritage Act 1977*, the State Heritage Inventory was undertaken on 12 September 2022, no Section 170 heritage places are located within the Project Area.

A search of the Australian Heritage Database was undertaken on 12 September 2022, no Register of the National Estate (RNE) listed places were identified within the Project Area.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

Aboriginal Heritage Assessment for the Project is currently underway. Preliminary desktop assessment has included an extensive search of the NSW Aboriginal Heritage Information Management System (AHIMS) web service, undertaken on 06 June 2022.

The search results indicated that no Aboriginal heritage sites had previously been registered within the Project Area. The closest known site (an Artefact) is located approximately 2 km west of the Project Area.

The Aboriginal heritage values of the Project Area would be further detailed and delineated as part of the Aboriginal Cultural Heritage Assessment under preparation for the Project EIS.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

The Project Area is located north of the Macdonald River, with the Bendemeer catchment having an area of about 1140 km2. The shape of the catchment is unusually narrow and dominated by rural landscapes including farmland and forested areas. The river flows through the town of Bendemeer then to the north and west, where it joins the Namoi River before flowing into Keepit Dam, located approximately 65 km west of Bendemeer.

A number of minor tributaries located within the Project Area join the Macdonald River and Perrys Creek, located to the north of the Project Area. The Project is contained within the Namoi catchment. There is no flood prone land mapped within the Project Area. There are no mapped wetlands within the Project Area.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no World Heritage Areas within or adjacent to the Project Area.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no National Heritage places within the Project Area.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Ramsar wetland
No	No	Banrock Station Wetland Complex
No	No	Riverland

Direct impact	Indirect impact	Ramsar wetland
No	No	The Coorong, and Lakes Alexandrina and Albert Wetland

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no Ramsar Wetlands within the Project Area, or within close proximity to the Project Area.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Anthochaera phrygia
No	No	Aprasia parapulchella
No	No	Arthraxon hispidus
No	No	Cadellia pentastylis
No	No	Calidris ferruginea
No	No	Callistemon pungens
No	No	Calyptorhynchus lathami lathami
No	No	Chalinolobus dwyeri
No	No	Dasyurus maculatus maculatus (SE mainland population)
No	No	Dichanthium setosum
No	No	Erythrotriorchis radiatus
No	No	Eucalyptus mckieana
No	No	Eucalyptus nicholii
No	No	Euphrasia arguta
No	No	Falco hypoleucos
No	No	Grantiella picta
No	No	Hirundapus caudacutus
No	No	Homoranthus prolixus
No	No	Lathamus discolor

Direct impact	Indirect impact	Species
No	No	Litoria booroolongensis
No	No	Maccullochella peelii
No	No	Nyctophilus corbeni
No	No	Petauroides volans
No	No	Petaurus australis australis
No	No	Petrogale penicillata
Yes	Yes	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)
No	No	Polytelis swainsonii
Yes	Yes	Pteropus poliocephalus
No	No	Rostratula australis
No	No	Thesium australe
No	No	Uvidicolus sphyrurus
No	No	Vincetoxicum forsteri
No	No	Wollumbinia belli

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland
No	No	New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands
No	No	Weeping Myall Woodlands
Yes	Yes	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

The White-Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box-Gum Grassy Woodland) TEC is listed as 'Critically Endangered' under the EPBC Act and BC Act and has been determined to occur within the Project Area. An ecological survey to confirm the presence of Box-Gum Grassy Woodland TEC was conducted in 2021 and 2022. A total of 97.4 ha of this TEC has been confirmed and mapped in the Project Area. Of this, 56.4 ha is within the development footprint and will be directly impacted through clearing for the development of the Project. In a regional context this amounts to 0.024% loss in the New England Tablelands Bioregion (NET Bioregion). This regional analysis uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Box-Gum Grassy Woodland TEC.

Potential indirect impacts to areas of retained Box-Gum Grassy Woodland are not likely to result in a significant impact, and may include altered hydrology and weed incursion. These indirect impacts will be managed through construction and operation environmental management plans.

Additional information on the location and extent of Box-Gum Grassy Woodland is provided in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3.1.1, pp 12-13.

Grey-headed Flying-fox

Potential direct impacts to the Grey-headed Flying-fox habitat include the removal of 93.6 ha of Grey-headed Flying-fox foraging habitat through vegetation clearing for construction. In a regional context this amounts to 0.04% loss in the New England Tablelands Bioregion (NET Bioregion). This regional analysis only uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional and sub-regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Grey-Headed Flying Fox's foraging habitat. There are no records for this species within the Project Area, however the Project Area is approximately 40 km north-east from the closest active colony with recent Grey-headed Flying-fox activity (DAWE, 2022). This colony is located near

Tamworth. Grey-headed Flying-foxes are capable of nightly flights of up to 50 km from their roost to different feeding areas as food resources change (Eby, 2000; cited in Eby, 1991). Thus, the Project Area has been conservatively assessed to contain foraging habitat as it is less than the 50 km range from the closest colony.

There is unlikely to be any indirect impacts to Grey-headed Flying-fox as a result of the Project.

Additional information on the location and extent of Grey-headed Flying-fox habitat is provided in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3.2.2 page 18.

Koala

Potential direct impacts to the Koala include the removal of 93.6 ha of foraging and breeding habitat, and the disturbance of 341 ha of Koala dispersal habitat, through vegetation clearing for construction. In a regional context this amounts to 0.04% loss in the New England Tablelands Bioregion (NET Bioregion). This regional analysis uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional and sub-regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Koala's foraging and breeding habitat. Targeted searches for the species were conducted in suitable habitat throughout the Project Area. The field investigations did not record any evidence of Koalas through direct sightings or indirect signs of scats or scratch marks, despite 313 individual Koala Spot Assessment Technique (SAT) surveys. The Project Area does occur within the distribution for the Koala however, and there are recent records within the locality discovered by ERM in adjacent properties.

The potential indirect impacts associated with habitat fragmentation and barriers to dispersal are unlikely to contribute to a significant impact to Koala. This is due to the retention of a corridor of foraging habitat through the centre of the Project Area. Koalas can also disperse across modified habitats, such as agricultural and grazing lands and it is expected that the solar farm will not cause a barrier to dispersal functions.

Additional information on the location and extent of Koala habitat is provided in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 3.2.2 pp 16-18.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

A full MNES Significant Impact Assessment is located in the Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 4, pp 20-26

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

White-Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC totaling 97.4 ha of the Project Area (as shown on Figure 3.1), of which 56.4 ha occurs in the development footprint. In a regional context this amounts to 0.024% loss in the New England Tablelands Bioregion (NET Bioregion). This regional analysis uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional and sub-regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Box-Gum Grassy Woodland TEC. This will result in a significant impact to the TEC as it will reduce and fragment the extent of the TEC, adversely affect and cause a substantial change to the composition of the TEC and interfere with the recovery plan.

Koala

The Koala has been identified as likely to occur within the Project Area. This was because the Project Area is within the known distribution for the species and has been recorded during studies on adjacent properties by ERM. Preferred habitat is present within the Project Area as eucalypt woodland. The disturbance footprint will result in the removal of 93.6 ha of foraging and breeding habitat. In a regional context this amounts to 0.04% loss in the New England Tablelands Bioregion (NET Bioregion) of foraging and breeding habitat. This regional analysis uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional and sub-regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Koala's foraging and breeding habitat. This disturbance footprint will also result in the disturbance to 341 ha of Koala dispersal habitat. The foraging and breeding habitat, and dispersal habitat, is considered to be habitat critical to the survival of the species. The impacts are therefore concluded as likely to result in a significant impact to the species based on the impacts to habitat critical to the survival of the species.

Grey-headed Flying-fox

The disturbance footprint will result in the removal of 93.6 ha of Grey-headed Flying-fox foraging habitat. In a regional context this amounts to 0.04% loss in the New England Tablelands Bioregion (NET Bioregion) for foraging habitat. This regional analysis uses the extent of the equivalent PCTs that have been ground-truthed in the Project Area with respect to publicly available regional and sub-regional mapping which have not been ground-truthed. This estimate is likely to be conservative, as there may be other PCTs that correspond to the Grey-Headed Flying Fox's foraging habitat. The Project Area is approximately 40 km north-east from the closest active colony with recent Grey-headed Flying-fox activity in Tamworth, per the interactive flying-fox colony viewer (DCCEEW, 2022). Grey-headed Flying-foxes are capable of nightly flights of up to 50 km from their roost to different feeding areas, although the majority of foraging occurs within 25km of camps. The Project Area is conservatively considered foraging habitat as it is within 40 km from the closest colony. There is also a recent record in the locality from 2018, approximately 38 km north-west of the Project Area.

No roost sites will be directly or indirectly affected by the Project works. The amount of Grey-headed Flying-fox foraging habitat to be removed is up to 93.6 ha. This species has the potential to forage within the Project Area on an opportunistic and occasional basis. This foraging habitat is concluded as habitat critical to the survival of the species. The removal of 93.6 ha Grey-headed Flying-fox foraging habitat is regarded as an adverse impact to habitat critical to the survival of the species. Therefore, it is likely that the proposed development will result in a significant impact to the Grey-headed Flying-fox.

4.1.4.7 Do you think your proposed action is a controlled action? *

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

An assessment against the EPBC Act significant impact guidelines for the Project is included in the attached Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 4, pp 20-34.

This assessment identifies that the Project is likely to be a controlled action for removal of 93.6 ha of threatened species habitat and 56.4 ha of TEC, resulting in a significant impact. This is because of the following:

- White-Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC totaling 97.4 ha of the Project Area (as shown on Figure 3.1), of which 56.4 ha occurs in the development footprint. In a regional context this amounts to 0.024% loss in the NET Bioregion. This will result in a significant impact to the TEC as it will reduce and fragment the extent of the TEC, adversely affect and cause a substantial change to the composition of the TEC and interfere with the recovery plan;
- Grey-headed Flying-fox totalling 155.8 ha of habitat within the Project Area, of which 93.6 ha occurs within the development footprint. In a regional context this amounts to a 0.04% loss in the NET Bioregion. This will result in a significant impact to the species as the project will adversely affect habitat critical to the survival of the species within the Project Area; and
- Koala totaling 155.8 ha of foraging and breeding habitat within the Project Area, of which 93.6 ha occurs within the development footprint, and 396.3 ha of dispersal habitat in the Project Area, of which 341 ha occurs within the development footprint. In a regional context this amounts to a 0.04% loss in the NET Bioregion for foraging and breeding habitat. This will result in a significant impact as it will adversely affect habitat critical to the survival of the species within the Project Area.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Since the conception of the Project, the design has evolved through consideration of technical, environmental, social, and commercial limitations. A significant aspect of this design refinement was engaged with landowners, neighbours to the Project, the broader community, local government, State and Federal Agencies, and business and stakeholder groups. This engagement, along with technical studies undertaken, has helped to shape the indicative Project layout presented in this EPBC Act referral.

The Project design has been revised and refined for the referral based on further detailed assessments and in response to the identification and assessment of environmental limitations, constructability requirements, and consideration of the outcomes of agency, landowner, and community consultations. This proposed layout had the potential to result in over 97 ha of impact to Box Gum Grassy Woodland TEC and 155 ha of impact to Koala and Grey-headed Flying-fox habitat. The solar array layout has since been refined to a total area of 350.8 ha and the total development footprint to 485.6 ha to avoid areas of higher quality TEC and threatened species habitat. Further mitigation measures are as follows:

Loss of existing native vegetation

- Areas of remnant and regrowth vegetation to be avoided at the design and micro siting stages, where practicable.
- Areas of threatened flora and fauna habitat or TECs will be avoided at design and micro siting stages, where practicable.
- Detailed design to be reviewed and opportunities to reduce clearing widths and buffers implemented into the design.
- If vegetation clearing is required, a Vegetation Management Plan that includes a clearing protocol will be implemented to ensure that clearing is undertaken in accordance with legislative standards and requirements.

Weed and pest control

- A Pest Management Plan will be developed and implemented for the Project. This will include measures such as vehicle wash downs, weed certification and obligations to stick to access tracks throughout the Project Area.
- Weed management and control methods will depend upon the location, weed species identified, the degree of the infestation, relevant landholder agreement or conduct and compensation agreements provisions, and local, state and national regulatory requirements
- Imported material able to transport weed seed will be assessed to ensure they are free of contamination, disease and invasive weeds.
- WONS and Invasive species will be identified and monitoring in the Project Area. Appropriate weed monitoring will occur to ensure new weed species are identified, recorded and managed appropriately.

Mortality or injury to native fauna

- No driving will occur in unauthorised areas, and in other areas will be carried out at safe speeds adopted to the road conditions.
- During vegetation clearing activities fauna management will be implemented that includes pre-clearing surveys, fauna spotter-catcher supervision and methods to reduce impacts as set out in a Fauna Management Plan and Vegetation Management Plan.
- Injured, sick or dead fauna will be recorded and reported during construction. This can be carried out by a fauna spotter-catcher.

More information on mitigation and management measures is provided in the Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 4.1, pp 20-23

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

The Proponent will identify potential offset locations for the MNES within the Project Area. Negotiations with landholders has commenced, and desktop investigations have indicated that there is adequate availability of potential offsets within and adjacent to the Project Area. Additional detail, will be presented in the form of an Offsets Strategy.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	No	Actitis hypoleucos
No	No	Apus pacificus
No	No	Calidris acuminata
No	No	Calidris ferruginea
No	No	Calidris melanotos
No	No	Gallinago hardwickii
No	No	Hirundapus caudacutus
No	No	Motacilla flava
No	No	Myiagra cyanoleuca
No	No	Rhipidura rufifrons

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.5.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development will not result in any direct or indirect impacts to migratory species.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not a nuclear action.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development is not within, nor does it impact on, a Commonwealth Marine Area.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development will not result in any direct or indirect impacts to the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development will not impact on a water resource in relation to large coal mining development or coal seam gas.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development is not located on Commonwealth land nor will it result in any direct or indirect impact to Commonwealth land.

4.1.11 Commonwealth heritage places overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed development will not impact any Commonwealth heritage places overseas.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

- Threatened Species and Ecological Communities (S18)

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

Alternatives have previously been considered in forming the current Project. These alternatives have been discounted for the reasons detailed below.

Alternative Project Location

A project of this magnitude requires significant land area, proximity to existing or proposed transmission networks and available network capacity, and many alternative sites may be limited in providing these critical elements. The Project Area is identified as a highly suitable site for the proposed solar farm development, due to the solar resource, sparsely populated locality, the proposed route of existing 330 kV line 85 Armidale-Tamworth Transmission line, and being located within the New England REZ, it is considered that the Project Area is optimal for solar energy generation.

Additionally, it offers accessibility to the Project via a major road, topographical features that would require minimal earthworks / soil disturbance and not subject to flooding or bushfire impacts.

Alternative Project Layout Options

Since the conception of the Project, the design has evolved through consideration of technical, environmental, social, and commercial limitations. A significant aspect of this design refinement was engaged with landowners, neighbours to the Project, the broader community, local government, State and Federal Agencies, and business and stakeholder groups. This engagement, along with technical studies undertaken, has helped to shape the

indicative Project layout presented in this EPBC Act referral. The Project design has been revised and refined for the referral based on further detailed assessments and in response to the identification and assessment of environmental limitations, constructability requirements, and consideration of the outcomes of agency, landowner, and community consultations.

A preliminary constraints assessments of potential solar farm layouts was undertaken during the early Project feasibility assessment phase. The Scoping Report (NGH, 2022) submitted for the NSW request for Project SEARs identified areas containing two Plant Community Types (PCTs) associated with a Critically Endangered Ecological Community (CEEC). The areas of CEEC Box Gum Woodland are a high constraint to the Project as impacts in these areas may constitute a serious and irreversible impact (SAII) to the vegetation community, as defined by the BC Act.

The Project's development footprint originally consisted of an area of 680 ha and an overall, which was proposed prior to completing ecological surveys to understand constraints across the Project Area. This proposed layout had the potential to result in over 97 ha of impact to Box Gum Grassy Woodland TEC and 155 ha of impact to Koala and Grey-headed Flying-fox habitat.

As ecological surveys and vegetation community mapping was completed across the Project Area, areas of constraint have been identified and mapped. The Project layout and development footprint have been refined to respond to these constraints. They have identified a large section within the initial development footprint containing Box-Gum Grassy Woodland TEC.

The solar array layout has since been refined to a total area of 350.8 ha and the total development footprint to 485.6 ha, and the substation is located to the south of the existing 330 kV transmission line, to avoid areas of higher quality TEC and threatened species habitat. These amendments to the layout have resulted in a 194.4 ha reduction of the area of impact to EPBC Act listed species and communities. The layout of the solar arrays into three broad areas has also allowed for the retention of an ecological corridor through the centre of the Project Area, with a vegetated link between the Macdonald River in the south and retained vegetation around the Oxley Highway.

Further information on the evolution of the Project layout and the amendment responses to key environmental and other land use limitations identified is provided in the Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report (ERM, February 2023), Section 4, pp 20-22

Do Nothing Approach

The Project Area is currently used for agricultural purposes. Although the 'do nothing' scenario would allow for continued use of the site for agricultural production, it will also lead to a missed opportunity to generate additional renewable energy and to reduce Australia's dependency on fossil fuels for energy generations and the consequential emissions of GHGs. It would also result in the loss of social and economic benefit through the provision of direct and indirect employment and economic stimulus from the development of the Project.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm
#2.	Control of the obtrusive effects of outdoor lighting (AS/NZS 4282:2019)	Link (Journal article)	https://www.standards.org.au/standards-catalogue/sa-snz/other/lg-010/as-slash-nzs--4282-colon-2019

1.2.7 Public consultation regarding the project area

#1.	IAP2 Public Participation Spectrum	Link (Webpage)	https://iap2.org.au/resources/spectrum/
#2.	Large-Scale Solar Energy Guideline	Link (Webpage)	https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Lisa+Drupal+Documents/16007_DPIE+Large+Scale+Sc 9-22.pdf
#3.	Undertaking Engagement Guidelines for State Significant Projects	Link (Webpage)	https://www.planning.nsw.gov.au/-/media/Files/DPE/Guidelines/Policy-and-legislation/SSPT-Guidelines/GD1265-RAF-Engagement-Guidelines-final.pdf

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

#1.	Metis Energy Environmental, Social & Governance Policy	Document	The environmental and social management framework for Metis Energy Ltd

3.1.1 Current condition of the project area's environment

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm
#2.	Tamworth Regional Local Environmental Plan 2010 (2011 EPI 27)	Link (Webpage)	https://legislation.nsw.gov.au/view/html/inforce/current/epi-2011-0027

3.2.1 Flora and fauna within the affected area

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm
#2.	Myiagra cyanoleuca — Satin Flycatcher	Link (Webpage)	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=612

3.2.2 Vegetation within the project area

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm
#2.	Eucalyptus nicholii Maiden & Blakely	Link (Webpage)	https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/28

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm
#2.	Seasonal Movements of Grey-headed Flying-foxes, Pteropus poliocephalus (Chiroptera: Pteropodidae), f	Link (Journal article)	https://www.publish.csiro.au/WR/WR9910547

4.1.4.5 (Threatened Species and Ecological Communities) Why you consider the direct and/or indirect impact to be a Significant Impact

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm

4.1.4.8 (Threatened Species and Ecological Communities) Why you think your proposed action is a controlled action

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

#1.	Bendemeer Solar Farm EPBC Act Significant Impact Assessment Report	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm

4.3.8 Why alternatives for your proposed action were not possible

#1.	Bendemeer Solar Farm EPBC Act Significant Impact	Document	Species Impact Assessment of MNES matters for Bendemeer Solar Farm

Assessment Report

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	12002773248
Organisation name	Environmental Resources Management Australia Pty Limited
Organisation address	Level 14, 207 Kent St, Sydney NSW 2000
Representative's name	Matt Davis
Representative's job title	Principal Ecologist
Phone	0421 879 950
Email	matt.davis@erm.com
Address	Level 14, 207 Kent St, Sydney NSW 2000

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Matt Davis of Environmental Resources Management Australia Pty Limited**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	69630577418
Organisation name	ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD
Organisation address	2340 NSW
Representative's name	Mark Vile
Representative's job title	Environment Manager – Bendemeer Renewable Energy Hub
Phone	+61437645419
Email	mark.vile@metisenergy.com
Address	1/403 Peel Street, Tamworth, NSW 2340

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Mark Vile of ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Mark Vile of ATHENA ENERGY AUSTRALIA (HOLDINGS) PTY LTD**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *