Middlebrook Solar Farm

Application Number: **02498** Commencement Date: **08/07/2024** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Middlebrook 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 *

01/01/2027

1.1.4 Estimated end date *

01/07/2057

1.2 Proposed Action details

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

The Proposed Action includes the pre-construction, construction, operation and decommissioning of the Middlebrook Solar Farm (the Project). The Person Proposing the Action (PPA) is Middlebrook Solar Farm Pty Ltd as trustee for MSF Project Trust. The Project will have a generating capacity of 320 MW (AC) at point of connection with a Battery Energy Storage System (BESS) of up to 780MWh storage capacity. An onsite substation would be built to connect to the existing 330kV transmission line that passes through the site. The Project sits within the Tamworth Regional LG.

The Projects purpose is to provide large output capacity of renewable power supply, that will contribute to the state and national decarbonization goals while the BESS will provide energy storage to regulate electricity supply to the grid. The activities that are subject to this referral will occur on freehold land within the following lots and/or other

areas:

- Lot 60 DP 755343
- Lot 61 DP 755343
- Lot 14 DP 37547
- Lot 15 DP 37547

One Council Road reserve

- Middlebrook Road (3.8 km to main site access in addition to a secondary access and two crossings of Middlebrook Road)

Transport for NSW Intersection upgrade

- New England Highway (intersection with Middlebrook Road)

Transgrid

- The Substation will occupy 6 ha which will be formally subdivided from the affected lot. The substation would be located adjacent to the existing (Transgrid – owned 330kV transmission line).

Terms and areas

There are several terms associated with the Proposed Action which are defined below. We note terms may differ in supporting documents but this referral uses terms most relevant to assessing impacts on Matters of National Environmental Significance (MNES):

- **Project Area** – areas of direct impact as well as areas that are now excluded = 956.04 ha. In this referral, the Biodiversity Development Assessment Report (BDAR's) 'Subject land' is used as this is the area initially assessed for all direct and indirect impacts. This area is most relevant to the assessment of MNES.
- **Development footprin**t – the uppermost area of land consented under the NSW approval for impacts (including during construction, operation and decommissioning) and assessed in detail in the supporting Biodiversity Development Assessment Report = 507.67 ha. In this referral, the BDAR's 'Development footprint' and area is used as this is the area most relevant to the assessment of MNES.
- **Additional Areas** – three areas that are now being considered for impacts in addition to the Development footprint; identified as A, B & C:
    - A: 'R2' and curtilage = 3.12 ha. The house and curtilage of 'associated receiver' (host landholder dwelling) R2; this area may be considered for expanded panel areas or to house construction or operational staff facilities. It is within the Project area but was previously excluded from impacts.
    - B: North west laydown area = 11.21 ha. This area may be considered for temporary construction / laydown areas. It is within the Project area but was previously excluded from impacts.
    - C: Intersection widening = 0.49 ha. Additional widening for slip lanes and road barriers at the intersection with the New England Highway may be required. These areas are within the Project area but were previously excluded from impacts.

Since the NSW Development Application was approved, the Applicant has commenced detailed design work and is considering these three additional areas for impacts. A NSW Modification would be required to include any of these new areas. However, in terms of area, these changes are considered minor and all three have been verified as non native vegetation and not containing any MNES. These areas are included as part of the Project for the purpose of this referral, in case a modification for their use is later sought.

- Avoidance Area – all areas that were initially assessed but are now excluded from Project impacts (the Project Area, minus the Development footprint and Areas A, B and C) = 433.55 ha (Att 1 Middlebrook Solar Farm updated Project Area and Disturbance Footprint).

Project Lifecycle

Pre-construction (site preparation and earthworks)

This phase will take approximately six months:

- Pre-construction approvals
- Clearing for access roads and associated drainage, construction compound, BESS and substation

- Site preparation and services connection
- Clearing of vegetation
- Installation of security fencing and CCTV
- Establishment of site construction compounds, parking, laydown areas and the operations and maintenance building.
- Establishment of temporary staff amenities and offices for construction
- Widening and sealing of Middlebrook road from the New England Highway to up (or just past) the second site access
- Intersection upgrade for New England Highway / Middlebrook Road basic left-hand turn

Construction

This phase will take approximately 18-24 months and will include

- Delivery of PV modules, frames, electrical conduits and associated equipment
- Construction of footings
- Installation and fixing of PV modules
    - Pile driving or screwing of steel posts into the ground to a depth of 1.5 m - 2.5 m
    - Installation of mounting structures on the posts
    - Installation of tracking equipment
- Installation of underground cabling and installation of inverter stations
- Construction of office building and control room
- Construction of substation and connections
- Cable trenches up to 1500 mm deep
- Removal of temporary construction facilities and rehabilitation of disturbed areas
- Landscaping

Operation

The Project is expected to have an operation life of 30 years and activities will include

- Routine visual inspections, general maintenance and cleaning operations of the solar arrays as required.
- Routine visual inspections, general maintenance and cleaning operations of the substation as required.
- Vegetation management, likely using sheep to control grass growth beneath the panels.
- Groundcover vegetation would be maintained over the site to minimise erosion, dust and weeds.
- Groundcover would be monitored and remediation (such as reseeding, soil protection or destocking) undertaken as required.
- Site security response (24 hr.), if required.
- Site operational response (24 hr.), if required.
- Replacement of equipment and infrastructure as required.
- Maintenance of landscaping and screening plantings as required.
- Pest plant and animal control as required

Decommissioning

Decommissioning will include removal of all above ground and below ground (up to 500 mm) infrastructure from the site and the land restored and or rehabilitated in accordance with the Decommissioning plan.

Project Impacts

Impacts would be generated during construction, operational and decommissioning activities such as clearing vegetation, construction of internal access roads, piledriving of steel posts into the ground for solar farm arrays and constructing substation, BESS and Operation & Maintenance (O&M) facilities, shading of areas beneath operational panels and removal of most of this infrastructure during decommissioning (Att 2 Consolidated updated project description_20240322 from Amended Report, 1.5.3, Pages 17-20).

The Project has undergone an iterative design process to avoid and minimise impacts (refer Att 3 Middlebrook Solar Farm EIS, Section 6, Pages 74 - 229). Areas of higher agricultural value, riparian buffer zones and vegetation of higher biodiversity value are now within the Avoidance Footprint (Att 3 Middlebrook Solar Farm EIS, Section 2, Page 19).

Direct impacts include:

- Removal of native vegetation including hollow bearing trees; most of the direct impacts affect non native vegetation.
- Injury or mortality of fauna during removal of trees
- Soil disturbance
- Amenity impacts

Indirect impacts of the Project may occur during the Project lifecycle; they may be associated with the following (Att 3 Middlebrook Solar Farm EIS, Section 3, Pages 38 - 39):

- Erosion and sedimentation
- Increased risk of disease and pathogens
- Noise and lighting
- Dust
- Weeds and pests
- Bushfire
- Chemical spills

Indirect impacts specific to biodiversity are detailed further in Att 4 Middlebrook Solar Farm BDAR, Section 7, Pages 106 - 107.

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

No

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

Key NSW planning policy and framework - Planning Systems State Environmental Planning Policy 2021
Environmental Planning and Assessment Act 1979 (EP&A Act)

Clause 20 of Schedule 1 of the SEPP SRD states that the following is considered a SSD: Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that: (a) has a capital investment value of more than $30 million, or (b) has a capital investment value of more than $10 million and is located in an environmentally sensitive area of State significance.' The Project would have a capital investment cost estimate of more than $30 million. Therefore, the Project is classified as "State Significant Development" under division 4.7 of the EP&A Act. The Minister for Planning and Public Spaces is the consent authority for SSD, and SSD applications are assessed by DPE (unless specific conditions occur e.g., where 50 or more people have objected to the application, the local council has objected to the application; and/or the applicant has disclosed a reportable political donation, whereby the Independent Planning Commission (IPC) would be the consent authority.

Key Commonwealth planning framework - EPBC Act

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities, and heritage places, which are defined in the EPBC Act as MNES. Significance of impacts is determined in accordance with the Significance impact guidelines 1.1 – Matters of National Environmental Significance (DCCEEW, 2013). Where a proposal is likely to have a significant impact on MNES, the proposal is referred to the Commonwealth Environment Minister via the Department of the Environment (DCCEEW, 2013).The Minister then determines whether the proposal is a 'controlled action'. If a proposal is declared a controlled action, an assessment of the action is carried out and the Minister makes a decision to approve, approve with conditions, or not approve the proposed action.

This referral considers the potential for the proposal to impact on MNES relevant to biodiversity.

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 with neighbours, council and communities

The following stakeholder engagement activities have been undertaken with neighbours, council and surrounding communities:

- Direct contact with near neighbours within 3 km of the project site and
- Consulted with Tamworth Regional Council (TRC) regarding road upgrades
- An online survey
- One employment and training workshop (April and May 2023)
- One Community Information Session (27 April 2023)
- Stakeholder interviews (face to face and online/phone)
- Receipt and consideration of written feedback by stakeholders

Ongoing consultation has been undertaken via meetings, phone calls and email exchanges, in particular with neighbours within 3 km of the Project Area has facilitated the provision of updates, responses to enquiries and discussions concerning neighbour benefit sharing. by various means

Engagement with Indigenous stakeholders

Consultation with Aboriginal stakeholders was undertaken in accordance with Section 60 of the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2019 as part of the Aboriginal Cultural Heritage Assessment Report (ACHAR).

- *Stage 1* - notification of the Project and registration of interest was done via an advertisement in the local newspaper (the Northern Daily Leader), on the 20th of March 2020. (Att 5 Middlebrook Solar Farm ACHAR, Section 2, Page 9).
- *Additional Stage 1* - Letters outlining the Project, the need to carry out additional consultation for an ACHA and information about the delay to the Project were sent to the Tamworth LALC, the Nungaroo LALC and various statutory authorities including Heritage NSW as identified under the ACHCRP in 2023. An additional advertisement was placed in the Northern Daily Leader on the 21st of March 2023 seeking registrations of interest from Aboriginal people and organisations. A further series of letters was sent to other organisations identified by Heritage NSW (Att 5 Middlebrook Solar Farm ACHAR, Section 2, Page 10)
- *Stage 2* – presentation of information about the proposed project. On the 9th of July 2020, an assessment methodology was sent to the registered Aboriginal Parties (RAPs) and the Nungaroo LALC (Att 5 Middlebrook Solar Farm ACHAR, Section 2, Page 9).
- Additional Stage 2 - an additional round of consultation consisting of the assessment methodology, a summary of the draft ACHAR was sent to additional RAPS between 29th of May 2023 and 7th of June 2023. A copy of this methodology was also sent to the Tamworth LALC. The document invited comments regarding the proposed methodology and sought any information regarding known Aboriginal cultural significance values associated with the Project Area and /or any Aboriginal objects contained therein.
- *Stage 3* - A field survey was carried out in August 2020.
- In March 2021 the RAPs for this project were emailed that the project was on hold until detailed designs had been established.
- In 2023 the RAPs were informed the project would be progressing with a reduced proposed impact footprint (Att 5 Middlebrook Solar Farm ACHAR, Section 2, Pages 11 - 12).
- *Additional Stage 3*. The assessment methodology included a written request to provide any information that may be relevant to the cultural heritage assessment of the Project Area. No additional fieldwork was undertaken for this Project given the initial survey had sufficiently covered all areas proposed to be impacted (Att 5 Middlebrook Solar Farm ACHAR, Section 2, Page 12).
- *Stage 4* – In May 2023, a draft ACHAR was provided to the RAPs for review and inviting comment on the results, the significance assessment and the recommendations.

- *Additional Stage 4* - the final ACHAR was provided to the RAPs for their records and comment on the 15th and 16th of February 2024.

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	31124444622
Organisation name	NGH PTY LTD
Organisation address	2010 NSW

Referring party details

Name	Tammy Vesely

Job title	Senior Project Manager
Phone	0452 151 752
Email	tammy.v@nghconsulting.com.au
Address	T3, Level 7, 348 Edward St, Brisbane City, Qld 4000

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	639743310
Organisation name	MIDDLEBROOK SOLAR FARM PTY LTD
Organisation address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000

Person proposing to take the action details

Name	Sherry Mohajerani
Job title	Senior Development Manager
Phone	0437877301
Email	sherry.mohajerani@totalenergies.com
Address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000 Australia

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? *

Yes

1.3.2.16 Describe the nature of the trust arrangement in relation to the proposed action. *

The PPA is Middlebrook Solar Farm Pty Ltd as trustee for MSF Project Trust (Att 6. Trust Deed MSF Project Trust). The PPA is an indirectly wholly owned subsidiary of TotalEnergies Renewables Australia Pty Ltd, which develops renewable energy projects in Australia. As is common practice in the renewable energy industry in Australia, TotalEnergies Renewables Australia Pty Ltd established the PPA as a special purpose vehicle to act as trustee of the MSF Project Trust, which holds the assets and liabilities of the project.

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. *

The PPA is an indirectly wholly owned subsidiary of TotalEnergies Renewables Australia Pty Ltd which is a controlled entity of TotalEnergies SE a company incorporated in France. Neither the PPA nor TotalEnergies Renewables Australia Pty Ltd is a party to or otherwise involved in any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

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

The PPA is an indirectly wholly owned subsidiary of TotalEnergies Renewables Australia Pty Ltd which is a controlled entity of TotalEnergies SE a company incorporated in France. All entities named above are beholden to the TotalEnergies Sustainability Approach which is built on the following pillars:

- Energy and climate
- Safety, respect and well being
- Environment
- Positive impact for stakeholders

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	639743310
Organisation name	MIDDLEBROOK SOLAR FARM PTY LTD
Organisation address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000

Proposed designated proponent details

Name	Sherry Mohajerani
Job title	Senior Development Manager
Phone	0437877301
Email	sherry.mohajerani@totalenergies.com
Address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000 Australia

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	31124444622
Organisation name	NGH PTY LTD
Organisation address	2010 NSW
Representative's name	Tammy Vesely
Representative's job title	Senior Project Manager
Phone	0452 151 752
Email	tammy.v@nghconsulting.com.au
Address	T3, Level 7, 348 Edward St, Brisbane City, Qld 4000

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	639743310
Organisation name	MIDDLEBROOK SOLAR FARM PTY LTD
Organisation address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000
Representative's name	Sherry Mohajerani
Representative's job title	Senior Development Manager
Phone	0437877301
Email	sherry.mohajerani@totalenergies.com
Address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000 Australia

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

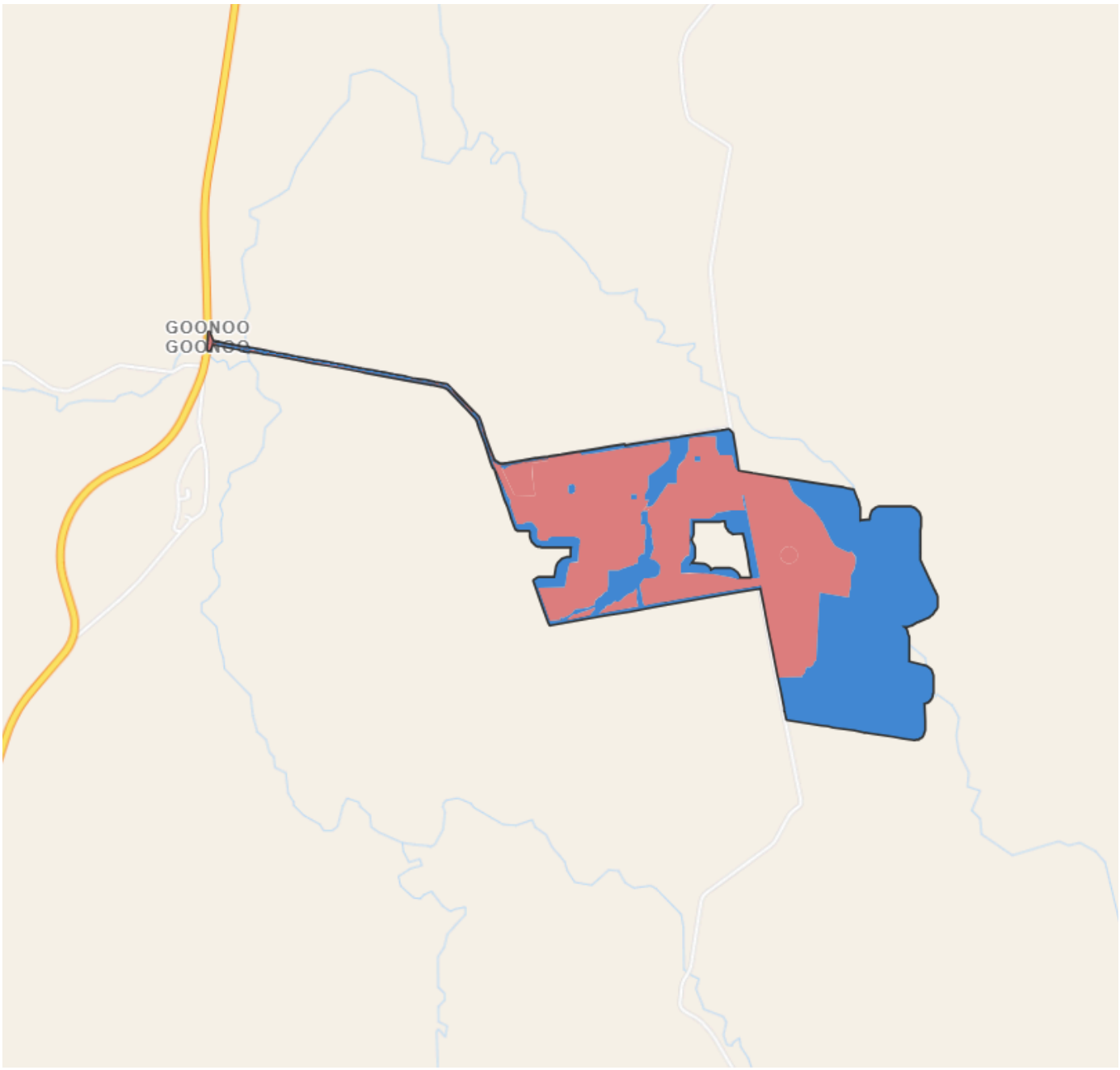
1.4 Payment details: Payment allocation

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

Referring party

2. Location

2.1 Project footprint



Project area (956.87 Ha)
Disturbance footprint (522.829 Ha)
Avoidance area (434.03 Ha)

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

760 Middlebrook Road Loomberah, NSW (across several lots)

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? *

The Project Area is privately owned and located on freehold land on the following lots / road reserve :

- Lot 60 DP 755343
- Lot 61 DP 755343
- Lot 14 DP 37547
- Lot 15 DP 37547

One Council Road reserve

- Middlebrook Road (3.8 km to main site access in addition to a secondary access and two crossings of Middlebrook Road)

Transport for NSW Intersection upgrade

- New England Highway (intersection with Middlebrook Road)

Refer to Att 3 Middlebrook Solar Farm EIS, Section 2, Figure, 2-1 Page 18.

3. Existing environment

3.1 Physical description

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

Description of the Project Area

The Project Area is gently undulating. It has been mostly cleared of native vegetation and is used for stock grazing and cropping which are also the dominant land uses in the locality. This is consistent with the permitted land use associated with RU1 – Primary Production land zoning. The Project Area has not suffered from recent natural disasters (2020 bushfires) or 2022 major flooding event. Agricultural enterprises have continued throughout the EIS process.

Distance to major towns

The Project Area is located approximately 22 km south of the nearest major centre of Tamworth, NSW within the New England region. The Project is also located 414 km from the closest major city Sydney. (Att 3, Middlebrook Solar Farm EIS, Executive Summary, Page xxi, Figure ES2).

Zoning details and land uses

The Lots involved with the Project Area are all freehold and zoned as RU1 – Primary Production under the Tamworth Regional LEP 2010. There is no change to the land zoning.

All surrounding land is zoned as RU1 – Primary Production under the Tamworth Regional LEP 2010. There is a 330 kilovolt (kV) transmission line that passes through the site to which the project would connect to through the construction of an onsite 330 kV substation. All land immediately adjoining the boundary of the project is privately – owned agricultural land. Land use within the 5 km of the Project Area land is comprised of grazing modified pastures or dryland cropping. Areas to the east area associated with the partially vegetated hills are designated as minimal use, due to the steep undulating terrain.

The historical land use for the Project area include cropping cereal, cropping lucerne for hay and grazing animals.

There is one agri-tourism(and accommodation)/historic site listed as Goonoo Goonoo Homestead and group of buildings which is located 3.5 km west of the Project Area and is categorised as RU1 - Primary Production under the Tamworth Regional LEP 2010.

The Project surrounds are generally located across agricultural areas whilst land within 5 km of the Project Area has been predominantly cleared of remnant vegetation to support agricultural activities, however, this excludes undulating areas and along major riparian corridors. The majority of the landscape is characterised as modified pastures used for livestock grazing and dryland cropping, with areas of native vegetation and grazing.

The New England Highway is located approximately 3.8 km west of the Project Area and is the main highway connecting to Tamworth. Middlebrook Road connects to the New England Highway and runs between the Project Area in a north-south direction, and then east-west along the northern boundary eventually meeting with the New England Highway to the west. This would be the nominated access route to the Project for all project associated traffic.

Natural vegetation in the Project Area and surrounds

The Project Area has been mostly cleared of native vegetation for stock grazing and cropping.

White Box (Eucalyptus albens) is the dominant canopy species observed in the higher areas. Lower lying areas near watercourses have a higher proportion of the Yellow Box (Eucalyptus melliodora) and Blakely's Red Gum (Eucalyptus blakelyi). Depending on condition and extent, some of these native vegetation remnants are considered conservation significant Box Gum Woodland. Several threatened species are associated with this community.

The following MNES are present or have a high likelihood to occur in the Project Area:

- One Threatened Ecological Community
- Two Threatened Species

Soils and hydrology on site

The soils have been surveyed and results show the topsoils across the site generally have good capability for agricultural use. They have a pH range suitable for plant growth, low to very low salinity and a high ability to retain plant nutrients. A corridor, verified by the soil surveys, of Biophysical Strategic Agricultural Land (BSAL) has been excluded. The entirety of Spring Creek has been identified as an area of value for Aboriginal objects and as such has a 150m buffer and has been excluded.

The project is located within the Namoi River Catchment of the Peel River within the Murray Darling Basin. All watercourses within the Project Area can be described as ephemeral and would only contain flowing water during and shortly after rainfall events.

The Peel River is the closest major watercourse and runs in a north-south direction approximately 12 km to the west of the Project Area. Goonoo Goonoo Creek runs generally north south approximately 3.5 km west of the Project (Att 3 Middlebrook Solar Farm EIS, Section 6, Page 152 Figure 6-36). Other significant landscape features include the ridgelines to the east of the Project Area. Three named watercourses cross the site:

- Spring Creek (Strahler stream order 5 and 6), traverses the eastern portion of the Project Area in a southeast to north-west direction
- Banyandah Creek (Strahler stream order 3), tributary of Spring Creek, traverses the western side of the site
- Algona Creek (Strahler stream order 4), also a tributary of Spring Creek, traverses the eastern side of site

The Project Area also contains numerous other minor un-named tributaries of the above creeks, most of which are first or second order watercourses and there are approximately 25 small farm dams.

Project Area elevation

The Project Area typically falls from south-east to north-west with elevation ranging from about 635 m to 460 m Australian Height Datum (AHD). On its eastern flank, the area is bound by relatively steep terrain which rises to an elevation of about 850 m AHD (Att 3 Middlebrook Solar Farm EIS, Section 7, Page 241, Figure 7-1).

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

Land Uses

The Project Area is comprised of four lots which will encompass the Project, associated infrastructure and the connection to the national electricity grid. The on-site substation will connect to the Transgrid 330kV line that traverses the site. A description of the current land use of each lot is listed below:

- Lot 60 DP 755343 – The Project Area within the lot is currently used for grazing and cropping. This lot includes a dwelling and associated farm infrastructure
- Lot 61 DP 755343 – The Project Area within the lot is currently used for grazing and cropping. It includes farm infrastructure (shedding complex)
- Lot 14 DP 37547 – The Project Area within the lot is currently used for grazing and cropping. Includes a dwelling.
- Lot 15 DP 37547 – The Project Area within the lot is currently used for grazing and cropping. Includes a dwelling and associated farming infrastructure.

The historical land use for the Project Area include cropping cereal, cropping lucerne for hay and grazing animals.

There is one Agri-tourism (and accommodation)/historic site listed as Goonoo Goonoo Homestead and group of buildings. Which is located 3.5 km west of the project area. This feature is still located on RU1 - Primary Production under the Tamworth Regional LEP 2010.

The Project surrounds are generally located across agricultural areas at low to mid elevation that are characterised by scattered vegetation, typically box woodlands on clay or loam soils. Land within 5 km of the Project has been predominantly cleared of remnant vegetation to support agricultural activities, however, this excluding more undulating areas and along major riparian corridors. The majority of the landscape is characterised as modified pastures used for livestock grazing and dryland cropping, with areas of native vegetation and grazing.

Proposed uses including known future developments

The proposed use is for the development (construction and operation) of a renewable energy facility (i.e. a solar farm, BESS, substation and a powerline). Energy created from the solar farm and BESS will be exported to the national electricity grid. The Project is expected to have an operational life of 30 years. At the end of the operational phase, the Project would either be decommissioned or upgraded. In the event of decommissioning, this would involve the removal of all above ground infrastructure with the exception of TransGrid connection assets and substation.

Historical land uses

The land has been cleared and used for agricultural grazing and cropping activities historically. The lots are currently used for grazing and dryland cropping and are zoned RU1. The cropped areas are predominantly cleared, with scattered trees present in most paddocks. There are patches of native vegetation located along Banyandah Creek on site and isolated in different areas on the farm (Att 3 Middlebrook Solar Farm EIS Section 6, Page 160, Figure 6 - 44). Scattered paddock trees would be cleared within the disturbance footprint. Areas of higher agricultural value, riparian buffers and conservation significant native vegetation value have been avoided where possible and will be retained as part of the exclusion zone (features best shown in Att 3 Middlebrook Solar Farm EIS, Section, 2, Page 19, Figure 2-2).

The surrounding land is zoned as RU1 – Primary production under the Tamworth Regional LEP 2010. There is a 330 kilovolt (kV) transmission line that passes through the site to which the project would connect to through the construction of an onsite 330 kV substation.

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

Natural features of the Project Area

Conservation and Protected Areas

There are no conservation or protected areas within the Project Area. The Project Area is located 28 km from Back River Nature Reserve, 28 km from Crawney Pass National Park, 33 km from Ben Halls Gap Nature Reserve and 37 km from Tomalla Nature Reserve, all located southeast of the Project Area (Att 4 Middlebrook Solar Farm BDAR, Section 2.1, page 7)

Project Area's important values

Threatened Ecological Communities (TEC) & Critical Habitat

One TEC, *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* which is a Critically Endangered Ecological Community (Box-gum Woodland CEEC), occurs within the Project Area, predominately along Banyandah Creek plus several smaller occurrences on the eastern side. Areas of PCT 433 and 599 within the Project Area are considered to be Box-gum Woodland CEEC where they have the following:

- Predominantly native understory of perennial species; are greater than 2 ha in size including contiguous areas of the patch outside of the Project Area; and contain an average of 20 or more mature trees per hectare, or
- Predominantly native understory of perennial species; are greater than 0.1 ha in size; and contain 12 or more native understory species including one important species.

For areas that have qualified under the second pathway above, a precautionary approach has been taken due to non-optimal survey timing.

The extent of EPBC listed Box-gum Woodland CEEC within the Project Area is 38.84 ha (Att 4 Middlebrook Solar Farm BDAR, Figures 3-14 to 3-19 pages 31 to 36).

No other Commonwealth listed TECs were identified within the Project Area.

Project area's unique values

Biophysical strategic agricultural land, defined as land with quality soil and water resources that can sustain high levels of agricultural productivity, was identified in the Project Area. This mapped area was identified in early planning and through the design process it has been excluded completely (224.50 ha, part of the 433.55 ha exclusion areas). No areas of sensitive regulated land were identified in any desktop searches.

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 topography of the Project Area is undulating. Elevation on site ranges from 635 m to 460 m Australian Height Datum (AHD). On its eastern flank, the Project Area is bound by relatively steep terrain which rises to an elevation of about 850 m AHD.

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.

Plant Community Types

Field surveys were carried out across the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 3.2, pages 17 to 29), and verified the presence of three vegetation communities in the Project Area:

- PCT 433: White Box grassy woodland to open woodland
- PCT 599: Blakely's Red Gum - Yellow Box grassy
- PCT 84: River Oak - Rough-barked Apple - red gum - box

Threatened Ecological Communities (TEC)

One TEC, *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (a* Critically Endangered Ecological Community under the EPBC Act), occurs within the Project Area, predominately along Banyandah Creek plus several smaller occurrences on the eastern side. Areas of PCT 433 and 599 within the Project Area are considered to be Box-gum Woodland CEEC where they have:

- Predominantly native understory of perennial species; are greater than 2 ha in size including contiguous areas of the patch outside of the Project Area; and contain an average of 20 or more mature trees per hectare, or
- Predominantly native understory of perennial species; are greater than 0.1 ha in size; and contain 12 or more native understory species including one important species.

The extent of EPBC listed Box-gum Woodland CEEC within the Disturbance Footprint is 0.22 ha (Att 2 Middlebrook Solar Farm BDAR, Figs 3-14 to 3-19 pages 31 to 36).

No other Commonwealth listed TECs were identified within the Project Area.

Flora

The Project Area is significantly cleared and heavily fragmented. The remnant woody vegetation along Spring Creek provides the best connectivity through the Project Area and which connects to a large area of Eucalyptus woodland growing on hilltops east of the Project Area.

Field surveys verified 177 flora species, many of which were only able to be identified to genus level due to the lack of identifying features (Att 2 Middlebrook Solar Farm BDAR, Fig 4-3, page 95). Surveys identified 82 non-native species which included 7 high threat exotics (Att 2 Middlebrook Solar Farm BDAR, Appendix A, Section A.1, pages A-I to A-XXXIV).

No flora species listed under the EPBC Act were found during field surveys.

A likelihood of occurrence assessment was undertaken (Att 2 Middlebrook Solar Farm BDAR, Appendix C, Section C2.1, Pages C-I to C-VI). One EPBC threatened flora species with potential to occur in the Project Area was identified: Bluegrass (*Dichanthium setosum*) (Vulnerable under the EPBC Act). Bluegrass has BioNet records in most directions within 10 km of the Project Area, the closest of which is about 7 km to the north, just south of Timbumburi. Given the soil landscape, the PCTs present and the ability of the species to persist in highly disturbed pasture, if the species occurs nearby, colonisation of and dispersal through unimpacted areas would still be possible. Bluegrass was not found during targeted field surveys.

Fauna habitat

Surveys identified 205 hollow bearing trees (HBT) within patches of native vegetation and an additional 218 hollow bearing scattered trees, totalling 423 HBT within the Project Area. Of the 423 HBTs identified, 119 will be removed (Att 2 Middlebrook Solar Farm BDAR, Section 7.1.3, page 105).

HBT clearing has been avoided as much as possible and mitigation measures have been implemented for residual impacts to HBTs including clearing supervision (Att 2 Middlebrook Solar Farm BDAR, Section 8, pages 117 to 121). One of the HBTs to be removed is within the Squirrel Glider species polygon. This HBT not considered key habitat for this species, due to the isolated nature of the associated vegetation patch, which is located along Middlebrook Road. A HBT inventory of trees within vegetation zones is included (Att 2 Middlebrook Solar Farm BDAR, Appendix G, pages G-I to G-VII).

Field surveys verified there are no occurrences of karst, caves, crevices, or cliffs in the Project Area. Occurrence of rock or rocky outcropping is very limited within the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 7.3.1, page 108).

Fauna species

Targeted field surveys were carried out across the Project Area (Att 2 Middlebrook Solar Farm BDAR, Table 4-4, pages 70 to 72 for several species. These field surveys verified the presence of:

- Birds – 46 species of birds, comprised of water birds, woodland birds and raptors. Two species are listed as migratory under the EPBC Act, Rainbow bee-eater (*Merops ornatus*) and Satin flycatcher (*Myiagra cyanoleuca*)
- Mammals – 17 species of mammals, including 11 bat species and 2 macropod species
- Reptiles – two reptile species
- Amphibians – eight native frogs

A fauna species list can be found in Att 2 Middlebrook Solar Farm BDAR, Appendix B, Pages B-I to B-IV, which includes pest animals.

Likelihood of Occurrence

A likelihood of occurrence assessment was undertaken (Att 2 Middlebrook Solar Farm BDAR, Appendix C, Section C2.2, Pages C-VII to C-XXI). One threatened fauna species with potential to occur in the Project Area was identified, as well as two migratory species: Koala (*Phascolarctos cinereus*), Rainbow bee-eater (*Merops ornatus*) and Satin flycatcher (*Myiagra cyanoleuca*).

- Koala – Endangered under the EPBC Act. Koala was not recorded during targeted field surveys although habitat is present within the Project Area in the form of koala use tree species including Rough-barked Apple, White Box, Yellow Box and Blakely's Red Gum. Connectivity is also present along Spring Creek, as well as through scattered paddock trees throughout the Project Area. The Project Area is located within the Koala's known distribution range, however there are no BioNet records within 10 km of the Project Area. The Project would only remove up to 0.37 ha of Koala habitat plus 197 scattered trees from the Disturbance Footprint, with 70.01 ha of Koala habitat within the Project Area (97.1%) plus 228 scattered trees being excluded.
- Rainbow bee-eater – a migratory species listed under the EPBC Act. This species is very widespread, being found throughout mainland Australia as well as eastern Indonesia, New Guinea and, rarely, the Solomon Islands. In Australia it is widespread, except in desert areas, and breeds throughout most of its range, although southern birds move north to breed (Ibid). The population size is assumed to be reasonably large, as there have been 30,000 records of the Rainbow Bee-eater since 1998 on Atlas of Australian Birds. Mobility of the species suggests that it is unlikely that any local or regional population would be genetically isolated from the remainder of the Australian population. Although Rainbow Bee-eaters were heard during the targeted surveys, their very broad distribution and their ability to utilise multiple habitats including degraded areas means the habitat within the Project Area is not considered important. The Project will have a marginal impact on the availability of breeding, feeding, migration, and resting resources for this species and as such is considered unlikely to seriously disrupt the life cycle of any ecologically significant proportion of the population.
- Satin Flycatcher – a migratory species under the EPBC Act. This species is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. It is also found in New Guinea. Satin Flycatcher is not a commonly seen species, especially in the far south of its range,

where it is a summer breeding migrant and is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. It is a migratory species, moving northwards in winter to northern Queensland and Papua New Guinea, returning south to breed in spring (Ibid). The population size is assumed to be reasonably large, as there have been 14,000 records of the Satin Flycatcher since 1990 on Atlas of Living Australia. Mobility of the species suggests that it is unlikely that any local or regional population would be genetically isolated from the remainder of the Australian population.

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

Geology and landforms

The Project Area is apart on the Nandewar IBRA Bioregion and predominantly falls within the Keepit Slopes and Plain NSW (Mitchell) Landscape (Att 2 Middlebrook Solar Farm BDAR, Section 2.2, page 7) (Att 2 Middlebrook Solar Farm BDAR, Section 2.4, pages 8 to 9).

The Nandewar bioregion is characterised by box woodlands that occur on clay or loam soils, typically at low to mid elevation in agriculturally productive areas. The principal dominants of these box woodlands are White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*), Blakely's Red Gum (*Eucalyptus blakelyi*) and Grey Box (*Eucalyptus moluccana*). Bimbil Box (*Eucalyptus populnea subsp. bimbil*), Fuzzy Box (*Eucalyptus conica*) and Western Grey Box (*Eucalyptus microcarpa*) also occur, particularly in the western half of the bioregion.

Keepit Slopes and Plains have a complex geology of folded and faulted sedimentary and metamorphic rocks with minor interbedded volcanics. Rock types include; Silurian-Devonian chert, slate, phyllite, tuff, schist and Carboniferous conglomerate, sandstone, mudstone, andesite and small areas of limestone. General elevation 500 to 800 m, local relief 250 m, with some peaks reaching 1100 m. Shallow stony soils on ridges. Texture contrast soils on almost all slopes shifting in colour from red-brown on upper slopes to yellow with harsh subsoils prone to gully development on lower slopes.

There are no caves, karsts, or cliffs within the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 2.9, page 13).

Remnant Vegetation

The majority of the Project Area has been cleared of native vegetation and is used for stock grazing and cropping which are the dominant land uses in the locality (Att 2 Middlebrook Solar Farm BDAR, Section 2.1, page 7).

The Project Area is significantly cleared and heavily fragmented. The remnant woody vegetation along Spring Creek provides the best connectivity and runs in a north to south direction through the Project Area. This vegetation connects to a large area of Eucalyptus woodland growing on hilltops east of the proposal.

Some woody vegetation remains along Banyandah Creek in the western portion of the Project Area. However, connectivity between the disturbance footprint and broader Project Area is poor. The northern section has patch connectivity until Banyandah Creek feeds into Spring Creek in the north. The southern section of Banyandah Creek continues south outside the Project Area, however, woody vegetation becomes scattered shortly after (s Att 2 Middlebrook Solar Farm BDAR, Section 2.8, page 13).

A small, thin ribbon of woody vegetation associated with Banyandah Creek extends outside the Project Area in the south-west. The vegetation this adjoins is fragmented and unlikely to represent a viable corridor for less mobile fauna or gliders (Att 2 Middlebrook Solar Farm BDAR, Section 2.8, page 13).

The vegetation types in the native vegetation areas ranged from exotic and disturbed to high condition (Att 2 Middlebrook Solar Farm BDAR, Section 3.3.2, page 41). There are 409 scattered trees within the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 2.4, pages 8 to 9). The following three PCTs were identified within the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 3.2.3, pages 19 to 29):

- PCT 433 - *White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion,*
- PCT 599 - *Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion*

- PCT 84 - *River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion.*

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.

Historic heritage

There is one listed Historic Heritage Place being Goonoo Goonoo homestead and group of buildings (Att 1 Middlebrook Solar Farm EIS, Section 6, Page 194, Figure 6-51), which is located approximately 5 km west of the Project. Goonoo Goonoo Homestead and group of buildings is ***not*** a Commonwealth listed heritage place or item.

As cited from Heritage NSW (Department of Premier and Cabinet 2020): The Goonoo Goonoo Station Group of Buildings is highly significant and is not a place of Aboriginal Cultural Heritage significance. Historically, it represents one of the first settlements of the Peel Valley and was the headquarters of the Australian Agricultural Company dealings in the area. The buildings are linked to the historically significant figures of Edward Parry, Henry Dangar, Henry Dumaresq, Phillip Parker King and Phillip Gidley King, son and grandson of Governor King. Some of the buildings have significant technical and aesthetic merit. They have as a group a very high potential to yield cultural information concerning the running of a pastoral homestead in the 19th century and is considered to be representative of such homesteads. The group of buildings is therefore considered to possess rare aspects of cultural history.

- There is no potential for direct impacts for the Goonoo Goonoo Station Group as there is no construction activities being undertaken on this property or within close proximity of the buildings.
- The visual assessment undertaken as part of the EIS, determined the overall impact on Goonoo Goonoo Station as a result of the Project would be low.

World Heritage and Heritage Registers

No World Heritage Areas are present in the Project Area, nor within 10km of the Project Area.

Heritage registers including the World Heritage List, National Heritage List, and the State Heritage Register were searched, and no heritage items were found to occur within the Project Area.

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

The Project Area is located on Gamilaraay country and encompasses both Tamworth and Nungaroo Local Aboriginal Land Councils.

There is Aboriginal archaeological material present within the Project Area and its surrounds. It is likely that other artefacts will be present within the development footprint, although in similar low densities. The proposed level of disturbance for the construction of the solar farm will likely impact some of the stone artefacts recorded during the field survey and others that may be present within other areas of the development footprint.

Site survey

A site survey was undertaken and 19 isolated fines, 11 artefact scatters and two possible modified trees were recorded. Of the 19 isolated finds, 11 artefact scatters and two possible modified trees were recorded. Eight isolated finds and 4 artefact scatters are situated within the Project Area and the Disturbance Footprint.

These 12 newly recorded sites would be impacted by the proposed development. The impact to these 12 sites is likely to be most extensive where earthworks occur such as the installation of cabling and the transmission line poles, which may involve the removal, breakage or displacement of artefacts.

It should also be noted that two of these low-density artefact scatter sites (Middlebrook Solar Farm Project AFT 4 and AFT 20 (Att 3 Middlebrook Solar Farm ACHAR, Section 4, Page 57, Figure4-2) will only be partially impacted. Both total and partial harm to any site is considered an impact on the sites and the Aboriginal objects by the development in its present form.

The previously recorded AHIMS site (Kiah Creek ISO 1) is located directly adjacent to the Project Area and is therefore considered likely to be impacted by the access road works. During the most recent survey, it was unable to be located however, as such has been deemed as low risk.

The proposed construction methodology for the Middlebrook Solar Farm will, however, result in only small areas of disturbance. The construction of access and maintenance tracks may involve some grading but given the general cleared nature of the majority of the terrain, this is likely to be minimal. The installation of the solar arrays involves drilling or screwing the piles into the ground and no widespread ground disturbance work such as grading is required to accomplish this. The major ground disturbance will likely be for the construction of the substation near the existing transmission line, trenching for cables and vehicle movement during construction.

The remaining 18 sites with stone artefacts within the Project Area, the two possible modified trees, and the area of archaeological sensitivity along Spring Creek will not be impacted by the proposed development. Due to detailed design and avoidance of high value sites (Spring Creek), the assessment of harm overall for the Project is assessed as low.

A detailed ACHAR has been undertaken and areas of high value have been excluded from the development footprint (Att 3 Middlebrook Solar Farm ACHAR, Section 4, Page 52, Figure 4-2).

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 is located within the Namoi River Catchment of the Peel River within the Murray Darling Basin. The Project Area is within a temperate climate characterised by warm to hot summers and mild winters. A review of the Strahler orders onsite shows the Project Area is traversed by several named and unnamed waterways (Att 1 Middlebrook Solar Farm EIS, Section 7, Page 241 Figure 7-1).

The main watercourse (Spring Creek) traverses the eastern portion of the Project Area in a southeast to north-west direction and is categorised as a Strahler fifth and sixth order stream. Banyandah Creek (third order stream) and Algona Creek (fifth order stream), which are both tributaries of Spring Creek, traverse the western and eastern portions of the site, respectively. The Project Area also contains numerous other minor un-named tributaries of the above creeks, most of which are first or second order watercourses. All watercourses within the Project Area can be described as ephemeral and would only contain flowing water during and shortly after rainfall events. There are approximately 25 small farm dams. The Project Area typically falls from south-east to north-west with elevation ranging from about 635 m to 460 m AHD. On its eastern flank, the area is bound by relatively steep terrain which rises to an elevation of about 850 m AHD (Att 1 Att 1 Middlebrook Solar Farm EIS, Section 7, Page 241 Figure 7-1).

Specialist hydrologic studies have been undertaken and shows that flooding within the Project Area and surroundings is primarily classified as a H1 hazard (generally safe for vehicles, people and buildings) vulnerability in the 1% and 5% Annual exceedance probability (AEP) except for

- Flooding within Spring Creek reaching H6 (unsafe for vehicles and people, all building types considered vulnerable to failure.

- Bandyandah and Algona Creeks, typically H5 (unsafe for vehicles and people) with all buildings vulnerable to structural damage, some less robust buildings subject to failure) but reaching H6 in some areas.

Connectivity to any Ramsar Wetland

Three Ramsar Wetlands are in excess of 900 km upstream of the Project Area:

- Riverland, 900 - 1000 km upstream from Ramsar site
- The Coorong and Lakes Alexandrina and Albert Wetland , 1100 - 1200 km upstream from Ramsar site
- Banrock Station Wetland Complex, 1000 - 1100km upstream from Ramsar site

(Att 1 Middlebrook Solar Farm EIS, Section 7, Page 243, Figure 7-2).

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	Yes	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. *

No World Heritage Areas are present in the Project Area, nor within 10 km of the Project Area.

Heritage registers including the World Heritage List, National Heritage List, and the State Heritage Register were searched, and no heritage items were found to occur within the Project Area. Therefore, it is believed that the proposal will not have a direct or indirect impact on any World Heritage Areas.

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. *

No National Heritage Places are present in the Project Area nor within 10 km of 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
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. *

No Ramsar wetlands are located within 10 km of the Project Area, with the closest being the Riverland Ramsar site, which is over 900 km from the Project Area, downstream within the Murray Darling basin in South Australia.

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	Common name
No	No	Anomalopus mackayi	Five-clawed Worm-skink, Long-legged Worm-skink
No	No	Anthochaera phrygia	Regent Honeyeater
No	No	Aphelocephala leucopsis	Southern Whiteface
No	No	Aprasia parapulchella	Pink-tailed Worm-lizard, Pink-tailed Legless Lizard
No	No	Botaurus poiciloptilus	Australasian Bittern
No	No	Cadellia pentastylis	Ooline
No	No	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris ferruginea	Curlew Sandpiper
No	No	Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo
No	No	Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat
No	No	Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)
No	No	Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)
No	Yes	Dichanthium setosum	bluegrass
No	No	Eucalyptus nicholii	Narrow-leaved Peppermint, Narrow-leaved Black Peppermint
No	No	Euphrasia arguta	
No	No	Falco hypoleucos	Grey Falcon
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Grantiella picta	Painted Honeyeater
No	No	Hirundapus caudacutus	White-throated Needletail
No	No	Lathamus discolor	Swift Parrot
No	No	Lepidium aschersonii	Spiny Peppercress
No	No	Lepidium monoplocoides	Winged Pepper-cress
No	No	Litoria booroolongensis	Booroolong Frog
No	No	Maccullochella peelii	Murray Cod
No	No	Melanodryas cucullata cucullata	South-eastern Hooded Robin, Hooded Robin (south-eastern)

Direct impact	Indirect impact	Species	Common name
No	No	Neophema chrysostoma	Blue-winged Parrot
No	No	Nyctophilus corbeni	Corben's Long-eared Bat, South-eastern Long-eared Bat
No	No	Petaurus australis australis	Yellow-bellied Glider (south-eastern)
No	No	Petrogale penicillata	Brush-tailed Rock-wallaby
No	Yes	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)
No	No	Polytelis swainsonii	Superb Parrot
No	No	Prasophyllum sp. Wybong (C.Phelps ORG 5269)	a leek-orchid
No	No	Pseudomys novaehollandiae	New Holland Mouse, Pookila
No	No	Pteropus poliocephalus	Grey-headed Flying-fox
No	No	Rostratula australis	Australian Painted Snipe
No	No	Stagonopleura guttata	Diamond Firetail
No	No	Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea
No	No	Thesium australe	Austral Toadflax, Toadflax
No	No	Uvidicolus sphyrurus	Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko
No	No	Vincetoxicum forsteri	

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. *

Threatened Ecological Communities

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (CEEC under the EPBC Act)

The Proposed Action is expected to have both a direct (0.22 ha) and indirect impacts on this CEEC. The extent of EPBC listed Box-gum Woodland CEEC within the local area is estimated to be 38.84 ha. As trees of this TEC within 75 m of each other are considered part of the same patch, patches of the community extend outside the Project Area to the south for many hundreds of hectares.

The Proposed Action would have a direct impact on this TEC through removal of approximately 0.22 ha within the Disturbance Footprint. assessed for the NSW Development Application. This equates to 1.7% of the TEC within the Project Area and less than 0.01% in the locality (10 km radius of Project Area). As such 98.27% of Box-gum Woodland within the Project Area is to be retained. An Assessment of Significance (AoS) was undertaken to assess the severity of this impact (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.1, Pages 3 - 4). The AoS concluded that a significant impact was unlikely based on most of the TEC being excluded including wooded areas and higher condition patches.

Indirect impacts may be caused by construction, operation, and maintenance activities and may include:

- trimming tree branches
- erosion and sedimentation
- altered hydrology
- introduction and dispersal of weeds
- increased risk of flora and fauna disease and pathogens
- generation of excessive dust
- chemical spills
- increased risk of bushfire

Threatened Flora

Bluegrass *Dichanthium setosum* (Vulnerable under the EPBC Act).

Targeted surveys were undertaken from 17 - 20 August 2020 within PCT 433 and PCT 599. Bluegrass was not recorded during these surveys (Att 2 Middlebrook Solar Farm BDAR, Table 4 - 5, Pages 73 - 78).

The AoS determined that a significant impact in the disturbance footprint is unlikely (Att 2 Middlebrook Solar Farm BDAR, Section 7.5. page 114)(Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.3, Pages 8 - 9). The reasons for this determination are as follows:

- No known individuals or populations of the species exist within the Project Area and the proposal is not known to impact on any populations
- Any population occurring within the Project Area that may have gone undetected is not considered likely to constitute an important population of the species
- Higher quality habitat areas have been excluded and if the species occurs nearby, colonisation of and dispersal through unimpacted areas would still be possible
- The remaining 46.88 ha of potential Bluegrass habitat will be excluded within the Project Area.

Indirect impacts are possible as there is the removal of 0.23 ha of potential habitat.

Threatened Fauna

Koala *Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)* (Endangered under the EPBC Act).

Habitat for Koala is present within the Project Area in the form of 72.13 ha of wooded areas including riparian vegetation as well as 409 scattered trees. The proposal has the potential to have direct and indirect impacts on the Koala.

Approximately 0.37 ha of wooded vegetation considered Koala habitat, in addition to 197 scattered trees, would be directly impacted by the proposal from within the disturbance footprint (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.2, Pages 5 - 7). Woody vegetation within the disturbance footprint considered Koala habitat, are a mix of high quality, disturbed and planted. This 0.37 ha is only 2.9% of habitat within the Project Area, and all of the 197 trees are Koala use trees including (Att 2 Middlebrook Solar Farm, BDAR, Appendix H, Pages H-I to H-VII):

- Blakely's Red Gum *Eucalyptus blakelyi* (37)
- Rough-barked Apple *Angophora floribunda* (1)
- White Box *Eucalyptus albens* (150)
- Yellow Box *Eucalyptus melliodora* (9)

Approximately 70.01 ha of woodland vegetation will be completely excluded, which is equivalent to 97.1% of woodland vegetation within the Project Area. 228 scattered trees will also be retained within the Project Area (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.2, Pages 5 - 7).

The EPBC Act Referral Guidelines for the Koala (DoE 2014) documents the 'Koala habitat assessment tool' was used to determine the impact of the proposal on habitat critical to the survival of the Koala (Att 2 Middlebrook Solar Farm BDAR, Section 7.5, Table 7-5, Pages 113 - 114). The assessment resulted in a score of 5 and, as such, habitat within the Project Area may be critical to the survival of the Koala. An AoS was undertaken as required.

The AOS determined a significant impact is unlikely (Att 2 Middlebrook Solar Farm BDAR, Section 7.5, Pages 112 - 114) (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.2, Pages 5 - 7). The reasons for this determination are as follows:

- No Koala or evidence of Koala were observed during targeted surveys for the species despite viable habitat being present. There are also no records of Koala are within 10 km of the Project Area
- Absence of a population of Koala in the locality
- Higher quality habitat areas have been excluded and if the species occurs nearby, colonisation of and dispersal through unimpacted areas would still be possible
- The proposal will not create a barrier to movement as passage through the Project Area will be maintained via creek lines and riparian corridors.

Indirect impacts to the Koala may include removal of foraging habitat and habitat fragmentation as a result of construction within the Project Area. Indirect impacts may be effectively mitigated with the implementation of the safeguards detailed in the attached BDAR and accompanying EIS (Att 2 Middlebrook Solar Farm BDAR, Section 8, Pages 117 - 121).

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

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

Threatened Ecological Communities

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland under the EPBC Act)

The clearing of 0.22 ha of this CEEC from the disturbance footprint is not considered to be a Significant Impact. Although the proposal has a direct impact on the TEC, it would remove only 0.22 ha within the disturbance footprint. This equates to 1.7% of the TEC within the Project Area and less than 0.01% in the locality. The AoS undertaken to assess the severity of this impact (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.1, Pages 3 - 4) concluded that a significant impact was unlikely based on most of the

TEC being excluded, including wooded areas and higher condition patches. Mitigation measures to lessen the impact of clearing up to 0.22 ha of the TEC are address below (Att 2 Middlebrook Solar Farm BDAR, Section 8, Pages 117 - 121):

1. Clearing activities will be timed to avoid critical life cycle events, such as breeding or nesting of species known to utilise the Project Area (including migratory birds)
2. Clearing protocols will include pre-clearing surveys, daily surveys, staged clearing and facilitation of clearing by a trained ecological or licensed trained spotter catcher during clearing events
3. Relocation of habitat features (fallen timber, hollow logs, and embedded rock) from within the Disturbance Footprint to provide supplementary habitat for displaced fauna
4. Clearing will be staged and supervised by an ecologist or trained spotter catcher to allow for resident fauna to relocate or be relocated where required.

A Biodiversity Management Plan developed in consultation with NSW BCS agency, will be prepared to detail specific protocols and show how these measures will be achieved to meet their intent.

Threatened Flora

Bluegrass *Dichanthium setosum* (Vulnerable under the EPBC Act)

No individuals were identified during field surveys (Att 2 Middlebrook Solar Farm BDAR, Table 4-5, Pages 73 - 78. Furthermore, an AoS has determined a Significant Impact is unlikely (Att 2 Middlebrook Solar Farm BDAR, Section 7.5, Page 114) (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.3, Pages 8 - 9). The reason for this determination is based on the following:

- No known individuals or populations of the species exist within the Project Area and the proposal is not known to impact on any populations
- Any population occurring within the Project Area that may have gone undetected is not considered likely to constitute an important population of the species
- Higher quality habitat areas have been excluded and if the species occurs nearby, colonisation of and dispersal through unimpacted areas would still be possible.

Threatened Fauna

Koala *Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)* (Endangered under the EPBC Act)

The clearing of 0.37 ha of habitat and the removal of 197 scattered trees from the disturbance footprint is not considered to be a Significant Impact. This is because although the proposal will have a direct impact on 0.37 ha of habitat, this is only 2.9% of the habitat within the Project Area.

An AoS determined that a significant impact is unlikely (Att 2 Middlebrook Solar Farm BDAR, Section 7.5 112 to 114) (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.2, Pages 5 - 7. The reason for this determination is based on the following:

- No Koala or evidence of Koala were observed during targeted surveys for the species despite viable habitat being present. There are also no records of Koala are within 10 km of the Project Area
- Higher quality habitat areas have been excluded and if the species occurs nearby, colonisation of and dispersal through unimpacted areas would still be possible.
- Absence of a population of Koala in the locality and the relatively poor quality of the vegetation to be removed,
- The proposal will not create a barrier to movement as passage through the Project Area will be maintained via creek lines and riparian corridors.

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

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

Att 2 Middlebrook Solar Farm BDAR, Section 7.5, Pages 112 - 114 summarises the potential for significant impacts and concludes that of the three MNES that occur or are likely to occur in the Project Area, the significant impact has been determined to be none. See Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.1, Pages 3 - 4 for AoS assessment of Box Gum Woodland CEEC, see Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.1, Pages 8 - 9 for Bluegrass and see Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.1, Pages 5 - 7 for Koala.

The project design has actively avoided direct impacts to the three MNES. The disturbance footprint design greatly limits the impacts to the three MNES through avoidance. The disturbance footprint avoids impacting the three MNES and their habitat by limited habitat removal:

- Box Gum Woodland CEEC: clearing of 0.22 ha of Box-gum Woodland CEEC from the disturbance footprint, equates to 1.7% of the TEC within the Project Area and less than 0.01% in the locality (10km radius). 98.27% of Box-gum Woodland within the Project Area is to be retained.
- Bluegrass: clearing / shading of 0.23 ha of habitat, equating to 8.4% of the habitat within the Project Area. 91.6% of Bluegrass habitat to be retained within the Project Area. Any individuals beneath panels will be shaded but are not likely to be removed.
- Koala: clearing of 0.37 ha of habitat and the removal of 197 scattered trees, equating to 2.9% of the habitat within the Project Area. 97.1% of Bluegrass habitat to be retained within the Project Area.

Where impacts cannot be excluded, mitigation measures have been developed to reduce the likelihood of impacts to environmental values. These mitigation measures include and are not limited to:

- Scheduling the timing of construction activities to reduce impacts
- Relocation of habitat features
- Clearing protocols including pre-clearing surveys, daily surveys and staged clearing.

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. *

Safeguards and mitigation measures will be implemented for the proposed works and are listed below for both direct and indirect impacts (Att 2 Middlebrook Solar Farm BDAR, Section 8, Pages 117 - 121).

Mitigation of Direct impacts

- Scheduling the timing of construction activities to reduce impacts (e.g. timing the construction for when migratory species are not at the site, or when particular species known to, or likely to use habitat on site, are not breeding or nesting)
- Relocation of habitat features (fallen timber, hollow logs, and embedded rock) from within the disturbance footprint to provide supplementary habitat for displaced fauna
- Implementation of clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of trained ecological or licensed trained spotter catcher during clearing events to allow for resident fauna to relocate or be relocated where required.

Mitigation of Indirect impacts

- Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance (e.g. removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed)
- Use of noise barriers or daily /seasonal timing of construction and operational activities to reduce impacts of noise
- Use of light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill
- Adaptive dust monitoring programs to control air quality
- Use of temporary fencing to protect significant environmental features such as riparian zones and Squirrel Glider species polygon
- Implementation of hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas

- Staff training and site briefing to communicate environmental features to be protected and measures to be implemented
- Preparation of a vegetation management plan.

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

Threatened Ecological Communities

The vegetation zones within the disturbance footprint that have been determined to conform to White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (CEEC under the EPBC Act) (Box-gum Woodland CEEC) are:

- Zone 1 PCT 433 Woodland High
- Zone 2 PCT 433 Woodland Disturbed
- Zone 5 PCT 599 Grassland High
- Zone 6 PCT 599 Woodland Disturbed.

These areas will be offset under the Biodiversity Assessment Method 2020 (BAM 2020) and require the following ecosystem credits (see Att 2 Middlebrook Solar Farm BDAR, Section 10.1.1, page 127):

- Zone 1 PCT 433 Woodland High – 4 credits
- Zone 2 PCT 433 Woodland Disturbed – 3 credits
- Zone 5 PCT 599 Grassland High – 6 credits
- Zone 6 PCT 599 Woodland Disturbed – 3 credits.

Threatened species

Due to Bluegrass and Koala not being detected during targeted surveys, and the AoS determining that a significant impact is unlikely, no offsetting is required for these species.

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	Common name
No	No	Actitis hypoleucos	Common Sandpiper
No	No	Apus pacificus	Fork-tailed Swift
No	No	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris ferruginea	Curlew Sandpiper
No	No	Calidris melanotos	Pectoral Sandpiper
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Hirundapus caudacutus	White-throated Needletail
No	No	Motacilla flava	Yellow Wagtail
Yes	Yes	Myiagra cyanoleuca	Satin Flycatcher

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

Yes

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

Two migratory bird species are considered likely to utilise habitat found within the Project Area (Att 2 Middlebrook Solar Farm BDAR, Section 5.4, Page 98):

- Rainbow Bee-eater (*Merops ornatus*)
- Satin Flycatcher (*Myiagra cyanoleuca*).

Migratory species may be impacted by the pre-construction or construction phases if they are present within the disturbance footprint at the time of works. Pre-construction and construction may impact migratory species through the removal and degradation of habitat, including open woodland for Rainbow Bee-eater and riparian areas for Satin Flycatcher. These vegetation types may serve as foraging habitat for both of these migratory species (i.e. 27.95 ha riparian PCT 84 for Satin Flycatcher and 2808.29 ha of existing cleared areas for Rainbow Bee-eater).

An AoS was conducted for both species which determined that given the very broad distribution of these species and their ability to utilise multiple habitats including degraded areas, the habitat within the Project Area is not considered important for either species (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.4, Pages 10 - 11). Furthermore, as birds are highly mobile, they will be able to move away from the disturbance footprint area for the duration of pre-construction construction.

Direct impacts

- Removal of foraging and dispersal habitat through the clearance of native vegetation
- Direct mortality or injury during clearing
- Direct mortality via vehicle collisions from construction or operational vehicles and machinery.

Indirect impacts:

- Reduction in habitat quality caused by erosion, dust or waterway sedimentation
- Disturbance from noise and lighting during construction
- Reduction in habitat quality caused by invasive plants introduce or spread during construction or operation
- Introduction or spread of introduced predators.

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

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

The AoS determined there would be no significant impact to either the Rainbow Bee-eater or the Satin Flycatcher (see Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.4, Pages 10 - 11). The AoS results are summarised below:

Rainbow bee-eater (*Merops ornatus*)

Rainbow Bee-eater is widespread, being found throughout mainland Australia as well as eastern Indonesia, New Guinea and, rarely, the Solomon Islands. In Australia it is widespread, except in desert areas, and breeds throughout most of its range, although southern birds move north to breed (Ibid). The population size is assumed

to be reasonably large, as there have been 30,000 records of the Rainbow Bee-eater since 1990 on Atlas of Living Australia. Mobility of the species suggests that it is unlikely that any local or regional population would be genetically isolated from the remainder of the Australian population.

Satin flycatcher (*Myiagra cyanoleuca*)

Satin Flycatcher is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. It is also found in New Guinea. Satin Flycatcher is not a commonly seen species, especially in the far south of its range, where it is a summer breeding migrant and is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. It is a migratory species, moving northwards in winter to northern Queensland and Papua New Guinea, returning south to breed in spring (Ibid). The population size is assumed to be reasonably large, as there have been 14,000 records of the Satin Flycatcher since 1990 on Atlas of Living Australia. Mobility of the species suggests that it is unlikely that any local or regional population would be genetically isolated from the remainder of the Australian population.

Rainbow Bee-eater and Satin Flycatcher were heard within the Project Area during targeted surveys. However, given the very broad distribution of these species and their ability to utilise multiple habitats included degraded areas, the habitat within the Project Area is not considered important habitat for either species.

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

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

Att 2 Middlebrook Solar Farm BDAR, Section 7.5.3, Page 115 summarises the potential for significant impacts and concludes that of the two migratory species that occur or are likely to occur in the Project Area, it has been determined there will be no Significant Impact (Att 4 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact, Section 1.4, Pages 10 - 11).

Given the very broad distribution of the species and their ability to utilise multiple habitats included degraded areas, the project design will not have direct impacts to the migratory birds.

Where impacts cannot be excluded, mitigation measures have been developed to reduce the likelihood of impacts to environmental values. These mitigation measures include and are not limited to:

- Scheduling the timing of clearing and construction activities to avoid breeding and migration periods
- Relocation of habitat features
- Clearing protocols including pre-clearing surveys, daily surveys and staged clearing.

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

Safeguards and mitigation measures

These measures will be implemented for the proposed works and are listed below for both direct and indirect impacts (Att 2 Middlebrook Solar Farm BDAR, Section 8, pages 117 - 121).

Direct impacts

- Scheduling the timing of construction activities to avoid impacts (e.g. timing the construction for when migratory species are not at the site, or when particular species known to, or likely to use the habitat on the site, are not breeding or nesting)
- Relocation of habitat features (fallen timber, hollow logs, and embedded rock) from within the disturbance footprint to provide supplementary habitat for displaced fauna, and

- Instigation of clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of trained ecological or licensed trained spotter catcher during clearing events to allow for resident fauna to relocate or be relocated where required.
- A Biodiversity Management Plan developed in consultation with NSW BCS agency, will be prepared to detail specific protocols and show how these measures will be achieved to meet their intent.

Indirect impacts

- Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance (e.g. removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed)
- Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise
- Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill
- Adaptive dust monitoring programs to control air quality
- Temporary fencing to protect significant environmental features such as riparian zones
- Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas
- Staff training and site briefing to communicate environmental features to be protected and measures to be implemented
- Preparation of a vegetation management plan to regulate activity in vegetation.

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

No offsetting is required for these 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. *

This controlling provision is not present in the Project Area.

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.

—

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. *

No Commonwealth Marine Areas are located within 10 km of the Project Area.

The Project Area is located approximately 188 km inland.

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. *

No Great Barrier Reef Marine Park areas are located within 10 km of the Project Area.

The Project Area is located approximately 188 km inland.

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 Project is not a mining development or a coal seam gas project.

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.

—

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. *

Commonwealth Land is not applicable to the Proposed Action.

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.

—

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. *

This controlling provision is not present in the Project Area.

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:

None

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)
- Threatened Species and Ecological Communities (S18)
- 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. *

The design of the Project is the result of an iterative process. The design has been adapted progressively as information regarding site constraints, and the potential impacts and risks associated with the development of the Project have become available.
Based on biodiversity, heritage and other investigations carried out for the EIS, the proposed layout achieves the objective of efficient electricity production while minimising environmental impacts overall.

Project alternatives

In considering the development of utility scale solar energy generation and energy storage in the local area, feasible alternatives that were considered included (Att 1 Middlebrook Solar Farm EIS, Section 2.5, Pages 20 - 23):

- *Not developing the Project* - this option would avoid the impacts of development identified but would forgo the benefits (i.e. reduction of greenhouse gases, development of new renewable energy supply and

additional electricity generation supply into the Australian grid),

- *Alternative technology types - s*uperior solar resources have been identified in NSW, providing excellent opportunities for solar projects in the Tamworth Regional area. Photovoltaic solar technology was chosen because it is cost-effective, low profile, durable and flexible regarding layout and siting. It is a proven and mature technology which is readily available for broadscale deployment at the site. Immediate grid access enables energy production without the need to construct additional transmission lines to connect to the network.
- *Alternative site locations* - the proposed site was selected because it provides the optimal combination of:
    - Low environmental constraints (predominantly cleared cropping and grazing land)
    - Low-rise terrain for cost-effective construction
    - High quality solar resource
    - Sparse residential dwellings
    - Suitable planning context
    - Acceptable flood risk
    - Artillery road access
    - Access to the distribution network
    - Sufficient levels of available capacity on the grid distribution system
- *Alternative scale of the Project - t*he scale of the Project has been influenced by:
    - Transmission grid capacity
    - Property boundaries
    - The location of existing onsite dams, vegetation, and plant communities
    - Consideration of Aboriginal cultural heritage values
    - Demand for new renewable electricity generation to meet generation targets
    - Commercial investment and viability considerations

The proposed scale of the solar farm successfully responds to the constraints and opportunities inherent in these factors.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 1 Middlebrook Solar Farm updated Project Area and Disturbance footprint.pdf Map showing the updated Project Area and Disturbance Footprint	11/12/2024	No	High
#2.	Document	Attachment 2 Consolidated updated project description_20240322 from Amended Report.pdf Updated Project Description as presented in the Amendment Report submitted as part of the NSW, State Approvals Process.	27/03/2024	No	High
#3.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023		High

1.2.7 Public consultation regarding the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 5 Middlebrook Solar Farm ACHAR.pdf Middlebrook Solar Farm Aboriginal Cultural Heritage Assessment Report	20/03/2024	No	High

1.3.2.16 (Person proposing to take the action) Nature of the trust arrangement in relation to the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 6 MSF Project Trust - Unit Trust Deed dated 12 July 2022.pdf	11/07/2022	Yes	

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Sustainability https://totalenergies.com/sustainability			High

2.2.5 Tenure of the action area relevant to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023	No	High

3.1.1 Current condition of the project area's environment

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023	No	High

3.1.2 Existing or proposed uses for the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023	No	High

3.1.3 Natural features, important or unique values that applies to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024		High

3.2.1 Flora and fauna within the affected area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment	04/04/2024	No	High

Report

3.2.2 Vegetation within the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High

3.3.1 Commonwealth heritage places overseas or other places that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023	No	High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 5 Middlebrook Solar Farm ACHAR.pdf Middlebrook Solar Farm Aboriginal Cultural Heritage Assessment Report	20/03/2024	No	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023		High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High
#2.	Document	Attachment 7 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact.pdf Middlebrook Solar Farm EPBC Act Assessments of Significance	07/07/2024	No	High

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High
#2.	Document	Attachment 7 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact.pdf	07/07/2024	No	High

Middlebrook Solar Farm EPBC Act Assessments of Significance

4.1.4.9 (Threatened Species and Ecological Communities) Why you do not think your proposed action is a controlled action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High

4.1.5.2 (Migratory Species) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High
#2.	Document	Attachment 7 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact.pdf Middlebrook Solar Farm EPBC Act Assessments of Significance	07/07/2024	No	High

4.1.5.6 (Migratory Species) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 7 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact.pdf Middlebrook Solar Farm EPBC Act Assessments of Significance	07/07/2024	No	High

4.1.5.9 (Migratory Species) Why you do not think your proposed action is a controlled action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High
#2.	Document	Attachment 7 Middlebrook Solar Farm EPBC Act Assessments of Significant Impact.pdf Middlebrook Solar Farm EPBC Act Assessments of Significance	07/07/2024	No	High

4.1.5.10 (Migratory Species) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence

#1.	Document	Attachment 4 Middlebrook Solar Farm BDAR.pdf Middlebrook Solar Farm Biodiversity Development Assessment Report	04/04/2024	No	High

4.3.8 Why alternatives for your proposed action were not possible

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 Middlebrook Solar Farm EIS.pdf Middlebrook Solar Farm Environmental Impact Statement	23/06/2023	No	High

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	31124444622
Organisation name	NGH PTY LTD
Organisation address	2010 NSW
Representative's name	Tammy Vesely
Representative's job title	Senior Project Manager
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☑ 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, **Tammy Vesely of NGH PTY LTD**, 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	639743310
Organisation name	MIDDLEBROOK SOLAR FARM PTY LTD
Organisation address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000
Representative's name	Sherry Mohajerani
Representative's job title	Senior Development Manager
Phone	0437877301
Email	sherry.mohajerani@totalenergies.com
Address	Level 26, 360 Elizabeth Street, Melbourne, VIC, 3000 Australia

☑ 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, **Sherry Mohajerani of MIDDLEBROOK SOLAR FARM 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, **Sherry Mohajerani of MIDDLEBROOK SOLAR FARM 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. *