Sunshine State Solar Farm and BESS

Application Number: **02963** Commencement Date: **20/06/2025** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Sunshine State Solar Farm and BESS

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 *

01/05/2027

1.1.4 Estimated end date *

31/12/2069

1.2 Proposed Action details

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

OX2 Holdings Pty Ltd (OX2) is progressing the development of Sunshine State Solar Farm and battery energy storage system (BESS) (the Project), located in Rollingstone, Queensland, approximately 50 km north of Townsville. The Project includes a photovoltaic (PV) solar farm with generating capacity of up to 150 megawatt (MW) of direct current (DC) and a 128MW, 2 hour BESS.

The Project is located at 25 Hencamp Creek Road, Rollingstone, on land formally described as Lot 1 on RP735801 and Lot 23 on RP859197 and is located within the Townsville City Council Local Government Area.

For the purposes of the referral, the total **Project Area is 185.92 ha** and the **Disturbance Footprint of the proposed Project is 172.87 ha**.

The Project aligns with the Queensland Government priorities and objectives to protected and enhance the environment and heritage by achieving a 70% renewable energy target by 2032 and net zero emissions by 2050. The Project is expected to power 55,000 homes and offset 200,000 tonnes of CO2 annually, and will help to achieve Queensland Government objectives to prioritise the delivery of an energy system that is affordable, reliable and sustainable.

Key Project infrastructure includes:

- PV arrays
- Solar tracking system
- BESS
- Grid connection assets
- Ancillary infrastructure .

Refer to **Att.1a, Section 1.4, pp 4-9** for further details of key infrastructure for the proposed action.

Project construction is anticipated to span a period of 18 months and comprise standard activities for solar development. Construction phases are outlined below.

General:

- Mobilisation of machinery and equipment to site (staggered throughout the construction phase as needed).
- Site establishment: installation of temporary construction compounds, workshops, warehouses, amenities, laydown and stockpiling areas within the nominated Disturbance footprint.
- Vegetation clearing: removal of vegetation within the Disturbance footprint (where required) via mechanical means. The majority of the Disturbance footprint is modified pasture which will only require mowing/slashing and not bulk earthworks or topsoil removal.
- Machinery and equipment maintenance includes general servicing and minor repairs such as oil and filter changes, hose replacements, refuelling and other top ups (i.e. hydraulic fluids, lubricants, coolant, etc.).
- Hot works: includes cutting, grinding, and welding.
- Concreting: where pre-cast foundations are not used, wet mix will be transported to the Site in agitators, no onsite concrete batching is proposed.
- Site rehabilitation: groundcover reestablishment to be completed progressively as individual locations or Project sections are completed.
- Internal Roads: Internal roads will typically be 4 m wide with a slight batter (typically around 1 in 6) on both sides of the road to keep water off the road surface. At this early stage of design, a detailed road cross section is not available. To construct the roads, stripping of topsoil and material to the design subgrade level or removing all organic topsoil, vegetation, silty sand (whichever is deeper) is required and ripping and homogenising the subgrade is required (as appropriate). The design subgrade level is unknown at this stage, but typically most roads have around 300 mm subgrade and around 200 – 300 mm pavement applied on top, which is anticipated for this Project.

- Equipment foundations and hardstands: The PCU (Inverters) are akin to the size of a 40-foot shipping container, which will typically be mounted on pile foundations (with deeper embedment than the foundations for the Solar Panels). A large space around the PCUs is to allow for a gravel hardstand/earthworks pad for the PCU foundation to sit on.

Solar farm:

- Earthworks: relatively minor amounts of cut and fill to establish required profile at infrastructure locations and access tracks, shallow trenching for subsurface cable installation, excavation for the installation of foundations and subsurface equipment. Establishment of compacted, unsealed track will occur in addition to laying and compaction of fill for temporary and permanent hardstand areas.
- Solar array: Installation of galvanised steel pole support structures – pile driving methods are proposed to minimise ground disturbance and exposure of topsoil, and to minimise loss of existing groundcover. The pile installation are the foundations for the supporting structure on which the solar panels are mounted. Each individual pile is not shown on the various figures, but these encompass the areas shown with Solar Panels on the layout.
- The piles will be driven to a depth of roughly 2.5 m on average; for the 235,000 solar panels (approximate) to be installed, there will be roughly 30 – 40,000 piles serving as foundations. Pile to pile distance will be roughly 5 m east to west, and 10 m in the north / south direction.
- There is no large-scale ground subsidence risk on this site, so the disturbance will be localised per pile installed.
- Install buried cable – trenches will be excavated and cables/conduits will be installed prior to backfilling. If conduits are used, the cable will be pulled through the conduit post trench backfill as per the construction sequence. The trenches typically run parallel to the internal roads, but in some instances run in a north / south direction.
- There is roughly 8 km of DC trenches and 8 km of trenches. The DC Trenches are around 1m wide, and around 0.7m to 1m deep. The trenches are around 0.5m wide, and around 1 – 1.2m deep.
- Install PV panels – lift panels into place and attach to pole support structures.
- There will typically be foundations for key equipment such as transformers, auxiliary transformers, harmonic filters, collection station and control building. These are typically installed atop concrete slabs or onto bored piles.

BESS and Substation:

- Substation and Switchyard: Concrete foundations will be poured for transformers and other equipment, buildings and enclosures (e.g. hut / control room, equipment housing etc.) will be erect, subsurface cabling and other buried infrastructure installed, in addition to the switchgear, earthing and protection systems, communications equipment and other as per design. Fencing and signage will also be installed.
- BESS: Concrete foundations will be poured or installed, buildings and enclosures will be erected, subsurface cabling and other buried infrastructure will be installed. Battery modules, inverters, communications, safety systems and other ancillary equipment will also be installed.
- Electrical works (underground (UG)) general: cable joining, facility interconnection and grid connection will be undertaken.
- Site finishing: fauna friendly rural wire perimeter fencing around the perimeter of Project area will be installed, in addition to security fencing around the BESS and substation. Signage and bollards will be erected where required and gravel surfaces will be in place where needed.
- The BESS units are typically 20 or 40 foot shipping containers which will be mounted onto concrete slabs or bored piles.

Commissioning:

- Testing and commissioning of plant / equipment.

Demobilisation:

- Progressive disassembly and removal of all construction machinery, equipment, and materials from Site.
- Final site stabilisation and rehabilitation works.

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? *

Commonwealth Legislation

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) - assessment of Matters of National Environmental Significance (MNES) within the Project Area was undertaken. No Threatened Ecological Communities (TEC), threatened flora or threatened fauna were assessed as ‘Known to occur’ or ‘Likely to occur’ within the Project Area. This referral has been prepared in accordance with the Significant Impact Guidelines 1.1, and consideration of the Referral Guidance for Endangered Koala, EPBC Referral Guidance for 14 Birds Listed as Migratory and the EPBC Act Environmental Offsets Policy.

State Legislation

- *Planning Act 2016* - the Project requires a development permit for a material change of use (MCU) for a 'Renewable Energy Facility'. The Project obtained development approval from Townsville City Council in 2016 and has undergone a minor change to the development approval in December 2024 comprising the addition of the BESS (MCU18/0120.02).
- *Nature Conservation Act 1992* - A low-risk Species Management Program (SMP) will be required to authorise and manage impacts to animal breeding places during construction.
- *Aboriginal Cultural Heritage Act 2013* - all works must be undertaken in accordance with the Cultural Heritage Duty of Care to ensure impacts to heritage values are avoided and mitigated.
- *Biosecurity Act 2014* - field ecology surveys have identified the presence of pest plants and animals, including those with classifications under the Biosecurity Act. Weeds listed as weeds of national significance were also noted during survey activities. Management and mitigation measures will be implemented on-site to avoid the spread of weed and pest species.

Local Planning Scheme

The Project's MCU approval was assessed under the Townsville City Plan and originally approved by Townsville City Council in 2016. Following a subsequent minor change to the development approval, the Project is currently approved under development permit ref. MCU18/0120.02.

The development permit requires the Project be developed in accordance with stated conditions that relate to matters including decommissioning, stormwater quality management, erosion and sediment control and vegetation management.

Secondary approvals will further be required under the Townsville City Plan prior to the commencement of works, such as operational works permits for earthworks.

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. *

Initial Public consultation was undertaken by the developer, Esco Pacific. This included stakeholder engagement such as Townsville City Council and near neighbour engagement via letter, meetings and community information sessions.

OX2 are now undertaking a review of this engagement and developing a Community and Stakeholder Engagement Management Plan. This will provide an overview of how engagement will be undertaken between OX2 and the community and stakeholders moving forward. This includes:

- the purpose and objectives
- the strategic approach to engagement
- an overview of the project, approval pathway and key messages
- an overview of the study area demographics relevant to engagement
- a detailed stakeholder list and analysis, based on anticipated levels of interest and influence on the project and process
- a summary of previous engagement activities
- community benefit sharing
- complaints handling
- a schedule of proposed engagement activities.

OX2 will liaise with Townsville City Council to work with them on a Community Benefits package and if this may best be formalised as a Community Benefit Agreement to be consistent with the revised legislation framework.

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.

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Alternatively, email us at privacy@awe.gov.au.

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	75637138008
Organisation name	ATTEXO GROUP PTY LTD
Organisation address	4006 QLD

Referring party details

Name	Steven Tarte
Job title	Principal Consultant - Approvals
Phone	0421643710
Email	steven.tarte@attexo.com.au
Address	315 Brunswick Street, Level 4, Fortitude Valley, Queensland 4006, Australia

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	610264358
Organisation name	Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229
Organisation address	Suite 403, L4/65 Dover St, Cremorne VIC 3121

Person proposing to take the action details

Name	Grace Stewart
Job title	Senior Development Manager
Phone	0428585715
Email	Grace.stewart@ox2.com
Address	Suite 403, L4/65 Dover St, Cremorne, VIC 3121, 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. *

Sunshine State Solar Farm Pty Ltd (ABN 610 264 358) will undertake the proposed action as trustee for the Sunshine State Solar Farm Trust (ABN 39 614 291 229). The relevant trust deed is included as **Att.2**.

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. *

Sunshine State Solar Farm Pty Ltd (ACN 610 264 358) as trustee for the Sunshine State Solar Farm Trust (ABN 39 614 291 229) will undertake the proposed action. There are no past or present proceedings against the person undertaking the action.

The Sunshine State Solar Farm Pty Ltd is a wholly-owned indirect subsidiary of OX2 AB. OX2 AB is an entity established and registered in Sweden, and is the parent body of the OX2 corporate group.

For context, OX2 entered the Australian market by acquiring ESCO Pacific in 2023. OX2 has a record of responsible environmental management across its global markets. OX2 Australia has a pipeline of 11 projects in development or construction and seven solar farms reaching their commercial operation date in the last 7 years. The construction and development of all of our projects is undertaken line with best practice environmental management.

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

OX2's Environmental Policy is included as **Att.3** and their Sustainability Policy included as **Att.4**. OX2's Environmental Policy and Sustainability Policy apply to Sunshine State Solar Farm Pty Ltd (ACN 610 264 358) as trustee for the Sunshine State Solar Farm Trust (ABN 39 614 291 229) who will undertake the proposed action.

As indicated, Sunshine State Solar Farm Pty Ltd is a wholly-owned indirect subsidiary of OX2 AB. OX2 AB is an entity established and registered in Sweden, and is the parent body of the OX2 corporate group. OX2 entered the Australian market by acquiring ESCO Pacific in 2023. OX2 has a record of responsible environmental management across its global markets. OX2 Australia has a pipeline of 11 projects in development or construction and seven solar farms reaching their commercial operation date in the last 7 years. The construction and development of all of our projects is undertaken line with best practice environmental management.

OX2 has a strong commitment to providing renewable energy solutions while maintaining the well-being of people, the planet and the environment. Their environmental policy framework places emphasis on good governance, climate and nature contribution, sustainable leadership and local engagement as well as the benefits of working proactively, continuously and strategically with the environment.

The Environmental Policy describes the environmental commitments which apply to all employees, which include compliance with all relevant laws and regulations, consideration of all impacts on the environment and continuous improvement of environmental performance.

The Sustainability Policy provides a governing platform for the sustainability work for all business decisions. This includes commitments to international standards on responsible business conduct, clear definition of roles and responsibilities and established reporting frameworks. OX2 is working towards their defined 2030 sustainability targets with a priority of long-term, sustainable performance over short-term gain.

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	610264358
Organisation name	Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229
Organisation address	Suite 403, L4/65 Dover St, Cremorne VIC 3121

Proposed designated proponent details

Name	Grace Stewart
Job title	Senior Development Manager
Phone	0428585715
Email	Grace.stewart@ox2.com
Address	Suite 403, L4/65 Dover St, Cremorne, VIC 3121, 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	75637138008
Organisation name	ATTEXO GROUP PTY LTD
Organisation address	4006 QLD
Representative's name	Steven Tarte
Representative's job title	Principal Consultant - Approvals
Phone	0421643710
Email	steven.tarte@attexo.com.au
Address	315 Brunswick Street, Level 4, Fortitude Valley, Queensland 4006, Australia

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	610264358
Organisation name	Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229
Organisation address	Suite 403, L4/65 Dover St, Cremorne VIC 3121
Representative's name	Grace Stewart
Representative's job title	Senior Development Manager
Phone	0428585715
Email	Grace.stewart@ox2.com
Address	Suite 403, L4/65 Dover St, Cremorne, VIC 3121, 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

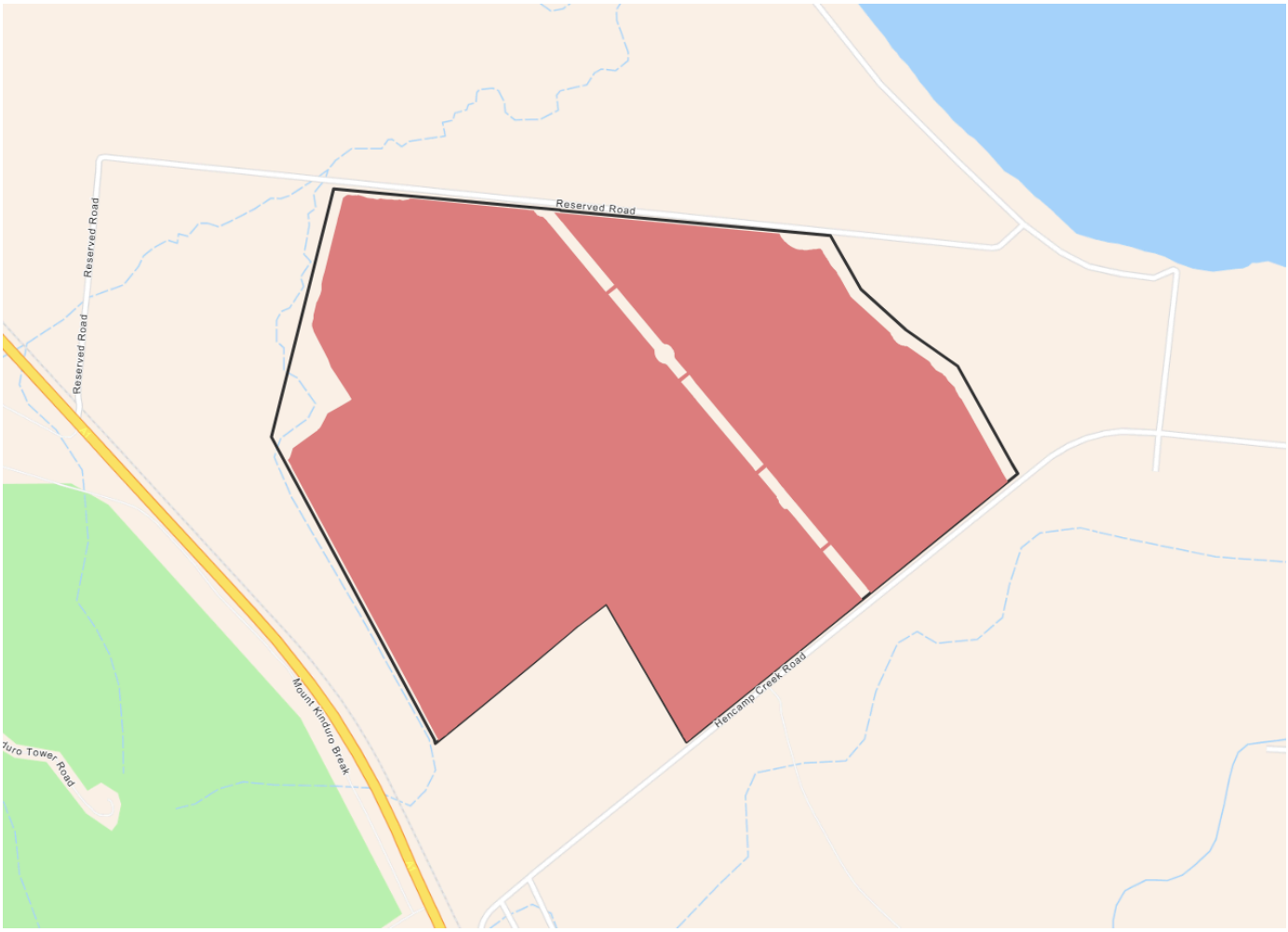
1.4 Payment details: Payment allocation

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: 185.92 Ha **Disturbance Footprint:** 172.87 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

25 Hencamp Creek Road, Rollingstone

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

Queensland

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 located within two freehold land parcels formally described as Lot 1 on RP735801 and Lot 12 on RP859197.

3. Existing environment

3.1 Physical description

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

The Project Area is located approximately 50 km north-west of Townsville and 45 km south-west of Ingham in the Townsville local government area. The Project Area is located within the Rural zone under the Townsville City Plan. Previous land uses and resulting site conditions are consistent with this zoning, whereby the land was previously used for sugarcane farming and is cleared of vegetation and undeveloped. The Project Area is currently used for cattle grazing.

The Project Area's historical clearing and use as a sugarcane farm involving high pesticides and fertiliser loads has resulted in a highly modified environment. The Project Area has a general lack of native vegetation and habitat values compared to other locations in the region that support larger areas of native vegetation and are less disturbed.

The Project Area has relatively flat topography, between 3.5 m AHD in the east and 13 m AHD in the west.

The south-western corner of Lot 12 on RP859197, outside of the Project Area, is host to a pineapple plantation including a packing shed and homestead. The Project Area is similarly surrounded by Rural zoned properties that currently host cropping to the south and grazing activities to the north. The broader area includes land within the Environmental Management and Conservation zone, such as Paluma Range National Park and coastal foreshores and dunal systems.

Two easements (Easements BY and BS on SP211738) traverse the Project Area from south-east to north-west and contain the Powerlink 132kV Ingham South to Yabula South and 132kV Yabula South to Tully transmission lines.

Road reserves form the northern and southern boundary of the Project Area, with a rail corridor and the Bruce Highway adjacent to the western border. The sealed and public Hencamp Creek Road forms the southern boundary of the Site. A small watercourse (Stream order 1) runs along the western boundary of the Project Area.

The Project Area is accessible from the southern boundary via Hencamp Creek Road, which adjoins the Bruce Highway (Townsville - Ingham section).

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

Existing Land Use

The Project Area is currently used for cattle grazing, with sugarcane farming as the historical dominant land use. Cattle grazing is being undertaken as an interim land use while development activities for the proposed action progress. The Project Area is likely to return to sugarcane farming in the event the proposed action does not proceed. The south-western corner of Lot 12 on RP859197, outside of the Project Area, is host to a pineapple plantation including a packing shed and homestead.

Two transmission lines (132kV Ingham South to Yabula South line and 132kV Yabula South to Tully line) run diagonally through the centre of the Project Area.

The existing land use is generally consistent with that of the surrounding area, which comprises low-intensity cropping and grazing, as well as undeveloped natural areas including Paluma Range National Park and the nearby coastal foreshore.

Proposed Land Use

The proposed land use consists of the following Project elements:

- **PV Array:**
  - The PV array will cover the majority of the Disturbance Footprint (approximately 170 ha). The number of rows of PV panels within the array depends on the specific module model chosen, and the detailed design and configuration of the subarrays or “blocks”. The panels will be mounted on a single-axis tracking system and separated into rows with enough physical space to allow access between modules for maintenance purposes and to avoid PV shading issues.
  - Aboveground DC cabling will connect each module in a string (approximately 235,000 modules) to field combiner boxes mounted adjacent to the solar panels. The combiner boxes would sit approximately 1.0 m off the ground. Underground DC cabling will then connect the combiner boxes to the central inverters.
  - Central inverters, step-up transformers and switchgear in 40-foot containers or container skid pads (PCU) will be located within each array block, which convert DC electricity generated by the solar panels into AC electricity for connection to the national electricity grid. Underground AC cabling will run from the PCUs to the solar farm collector station and substation.
- **Solar Tracking System**:
  - Each solar panel will be fixed to a metal mounting structure. The mounting structure would be piled into the ground without the need for any concrete. The mounting structure will slowly and silently track (in a single axis) the horizontal (east to west) movement of the sun each day to ensure optimal exposure to the sun. There is an alternative option to install a fixed tilt mounting structure. Both mounting structure options would not exceed 3.5m in height.
  - The tracking system will be designed and constructed in accordance with Australian Standards.
- **BESS:**
  - The proposed Disturbance Footprint for the BESS and supporting equipment is approximately 2.48 ha.
  - The battery units will be supplied in containers (20-foot or 40-foot), which will be mounted on a foundation.
  - The BESS will include one or more inverters which convert DC current to grid compliant AC current. Buried cables would connect the battery assembly to the inverters. The battery inverters and transformer will be connected to the collector station and substation via underground or overhead cables.
- **Grid Connection Assets:**
  - A switchyard.
  - A substation, including switchyard auxiliary transformers, harmonic filters and a main voltage step-up transformer.

    - A new overhead line (approximately 100m in length) will be required to connect the project to the existing network.
- **Ancillary Infrastructure:**
    - underground high AC voltage reticulation cabling
    - aboveground and underground DC cabling
    - perimeter fencing around the site and fixed CCTV system within the fenced perimeter of the Project area.
    - collection station and control buildings, including site office, operation and maintenance facilities, spare parts SCADA system.
    - internal site access tracks, parking, laydown areas.
    - internal fire trail and bushfire APZ.
    - meteorological stations.
    - utilities including telecommunications, water (rainwater tanks), and wastewater (septic tank) for amenity buildings.
    - temporary infrastructure associated with site construction, including a site compound and storage areas.

The solar farm and associated infrastructure will span the existing lease area of the site (i.e. the Project Area), leaving the balance of Lot 12 on RP859197 to retain existing land uses of the pineapple business in the south and uncultivated vegetated land to the west.

The design and siting of the Project has been informed by the following criteria:

- Highly modified environments with reduced environmental values. The Project Area's historical clearing, historical use as a sugarcane farm (which requires high pesticides and fertiliser loads), and general lack of native vegetation and habitat values has negligible environmental values compared with other locations in the region that support larger areas of native vegetation and are less disturbed. Locating the Project in cleared areas effectively applies the 'avoid' mitigation hierarchy by firstly avoiding areas with native vegetation and habitat values.
- Relatively flat topography to simplify the construction process, reduce grading and earthwork requirements, and optimise the overall efficiency of the Project. A flat site reduces the amount of bulk earthworks and soil disturbance which has the potential to increase erosion and generate sediment.
- Proximity to existing grid infrastructure (and with available grid capacity) to reduce the Disturbance Footprint of transmission infrastructure, thereby reducing the need for extensive new transmission lines and the associated impact. This minimises environmental impacts and enhances Project efficiency.
- High solar irradiance to reduce the number of solar panels and the Disturbance Footprint required to generate the same amount of energy.
- Existing road access for transportation of Project components.

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

Paluma Range National Park is located west of the Project Area, on the opposite side of the Bruce Highway and the North Coast rail line. Portions of the Paluma Range National Park are also mapped as the Wet Tropics of Queensland World Heritage Area. Both the National Park and the World Heritage Area encompass large areas of contiguous vegetation, which is anticipated to provide significant habitat for a range of native species.

The Project Area is located approximately 500 m west of the Pacific Ocean, separated by a heavily vegetated dunal system. The proposed action is therefore within 1 km of the boundary of the Great Barrier Reef (GBR) Marine Park (GBRMP), GBR World Heritage Area (GBRWHA) and GBR National Heritage Place (GBRNHP). The Project area is within the Black sub-catchment, within the Burdekin catchment, which ultimately drains into the GBRMP, GBRWHA, and GBRNHP.

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

The Project Area is very flat with a maximum elevation of 13 m in the west and slightly decreasing eastward towards the coast to an elevation of approximately 3.5 m Australian Height Datum. Directly west of the Project Area is Paluma Range National Park which presents mountainous terrain with the closest peak at 215 m and increasing in elevation further west. There are no hills or mountains present within the Project Area.

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.

Flora

Field surveys to identify were undertaken in accordance with the relevant State and Commonwealth survey guidelines as described in **Att.1a, Section 3.3.1, pp 19-20 and Section 3.3.5, pp 23-27**.

The vegetation within the Project Area and 100 m buffer (including the mapped RE and HVR, non-remnant areas, and all identified broad habitat types) assessed during the field surveys identified that the vegetation within the 100 m buffer only (and not within the Project Area) has the potential to conform to the following TECs:

- The 'critically endangered' Littoral Rainforest and Coastal Vine Thickets of Eastern Australia TEC.
- The 'endangered' broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland TEC.

Targeted assessments of the vegetation were undertaken to confirm if the vegetation meets the key diagnostic characteristics and condition thresholds of each TEC. This is further discussed in **Att.1a, Section 5.2, pp 56-60.**

The PMST identified 11 threatened flora species as having the potential to occur within a 10 km buffer of the Project Area and 100 m buffer. Field surveys, including targeted surveys in all areas of suitable habitat, did not identify any threatened flora species under the EPBC Act within the Project Area and 100 m buffer. Given the historical clearing within the Project Area and the on-going use of the Project Area for cattle farming, there is limited potential for threatened flora species or their suitable habitat to be present within the Project area.

Three weed species listed as Restricted Matters under the *Biosecurity Act 2014* (Qld) were identified during field surveys, including two Weeds of National Significance:

- Hymenachne (*Hymenachne amplexicaulis*)
- Lantana (*Lantana camara*)..

Fauna

Field surveys to identify fauna were undertaken in accordance with the relevant State and Commonwealth survey guidelines as described in **Att.1a, Section 3.3.1, pp 19-20 and Section 3.3.5, pp 23-27.**

A total of 74 fauna species were observed during field surveys, comprised of the following:

- one reptile
- two mammals
- five frogs
- 66 birds.

A full list of all fauna species observed during the field surveys is provided in **Att.1B, Appendix F**.

Despite three days of survey effort across the Project Area and 100 m buffer in all broad habitat types, no threatened fauna species were observed during the field surveys.

A total of 18 fauna habitat assessments were undertaken, including in each broad habitat type. The fauna habitat assessments identified the following in regard to fauna habitat within the Project Area and 100 m buffer:

- The Project area comprises heavily grazed pasture dominated by exotic grasses and herbs which provides negligible habitat value for threatened fauna species.
- Three broad habitat types dominated by native vegetation were observed, which provide a range of habitat values for native fauna species. These are predominantly located outside of the Project area.
- Individual regrowth native trees (primarily Acacia spp.) were observed within the Project area.

- Two farm dams were observed. These were assessed as providing permanent surface water, but limited to negligible habitat for threatened aquatic and wetland species, including migratory birds such as Latham's snipe or Australian painted snipe as the constructed fam dams do not provide the required microhabitat features required by both species.
- Significant vegetated areas surrounding the Project area including vine forest associations and extensive *Melaleuca viridiflora* low open forest to low woodland are present outside the Project area, which are likely to provide high quality habitat for native fauna species.

Due to the historical clearing within the Project Area and the historical and current land-use as cattle grazing, suitable habitat for threatened fauna species within the Project Area was identified as absent. The habitat values for each broad habitat type present within the Project Area and 100 m buffer is summarised within **Att.1a, Section 7.2.2, pp 67-69.**

Aquatic Fauna

Field surveys identified there are no aquatic habitats within the Project Area. Whilst two constructed farm dams are present, they are anticipated to not provide suitable habitat for threatened species due to their artificial design, anticipated poor water quality, and lack of ecological complexity. The dams are likely to experience high pesticides and fertiliser input, high sediment loads, and have no connectivity to natural waterways, limiting the movement and genetic diversity of aquatic fauna. Additionally, the dams support invasive species such as cane toads, which outcompete and predate on native species. The absence of suitable habitat features such as submerged vegetation, natural flow regimes, and suitable breeding or refuge areas, further reduces the dam's capacity to sustain threatened aquatic species.

A likelihood of occurrence assessment undertaken for aquatic fauna identified that all aquatic species were assessed as being 'Unlikely to occur' within the Project Area, which does not support any aquatic habitat suitable for threatened aquatic species. Refer to **Att.1b, Appendix E** for the likelihood of occurrence assessment.

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

Land Zones and Soils

Under the Queensland RE framework, land zones are categories that describe the major geologies and associated landforms and geomorphic processes in Queensland. The differences between land zones result in marked differences in the function of ecosystems and their associated biodiversity and this is due in part to the effects that geology (lithology, structure, alteration) has on landform, hydrology and landscape processes (geomorphology and soil formation). There are two land zones across the Project Area:

- Land Zone 3 – Recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes and associated wave built lunettes.
- Land Zone 2 – Quaternary coastal dunes and beach ridges. Includes degraded dunes, sand plains and swales, lakes and swamps enclosed by dunes, as well as coral and sand cays.

Alluvial soils on Land Zone 3 are usually fertile (chemically and physically). Soil fertility reflects the chemical properties of the geology and soils of the catchment from which they are derived. A diversity of species utilise the alluvial environment ranging from rain forests, vine thickets, eucalypt forests and woodlands, grasslands, sedgelands, forblands and shrublands.

Soils on Land Zone 2 are generally not developed for agriculture due to low soil moisture availability and low fertility. Soils in low lying areas and swamps are often poorly drained further limiting productivity. Vegetation communities are diverse both floristically and structurally. Heathlands and Corymbia/Acacia dominant forests and woodlands are the dominant vegetation communities. Rain forests and vine forests may also be locally dominant. Melaleuca forests/woodlands and various low heathlands/sedgelands occur in the swamps.

Connectivity

A Statewide Biodiversity Corridor and the associated Buffer area are mapped over the Project Area and associated with the Paluma Range National Park/Wet Tropics of Queensland World Heritage Area. The landscape surrounding the Site is dominated by vegetated areas interspersed with rural development and agricultural land uses which fragment the vegetation with cleared area. There is significant vegetation to the west of the Project Area, on the opposite side of the Bruce Highway, associated with the National Park and World Heritage Area. This vegetation is anticipated to provide significant and important fauna movement opportunities.

Vegetation

The Project Area has undergone significant historical clearing, with aerial imagery displaying that vegetation and fauna habitat values have been severely limited and managed for agricultural practices since at least 1998 (refer **Att.1a, Section 4.6, pp 40-42**).

The Project Area predominantly comprises non-remnant vegetation, with areas of high-value growth and remnant vegetation located around the periphery of the Project Area. Siting of the Project Area and Disturbance Footprint has been undertaken with the intent to avoid impacts to these areas of native vegetation, which have the potential to conform to the following TECs:

- The ‘critically endangered’ Littoral Rainforest and Coastal Vine Thickets of Eastern Australia TEC.
- The ‘endangered’ broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland TEC.

Refer to **Att.1a, Section 5.2, pp 56-60** for further discussion of the identification of these TECs during field surveys.

Habitat Types

Five broad habitat types are identified within the Project Area and 100 m buffer based on the dominant canopy species, vegetation structure and associated habitat attributes. The habitat types are described in detail in **Att.1a, Section 4.8, pp 43-55** and summarised below.

The following habitat types are found within the Project Area:

- Cleared pasture areas - prominent within the Project Area and was observed to support high density exotic grasses and herbs including *Sorghum* sp., *Megathyrsus maximus*, *Paspalum* sp., *Echinochloa colona*, and *Macroptilium atropurpureum*. This broad habitat type has been highly disturbed due to a history of intensive agricultural practices, including sugarcane farming and, more recently, cattle grazing. As a result, exotic flora species dominate the vegetation. Sparse individual *Acacia leptocarpa* are present across the cleared areas.
- Constructed farm dams - this broad habitat type consists of two constructed farm dams within the Project Area. Both dams were observed to be full of water and may provide year-round surface water. The dams comprise of steep slopes with no wet-meadow areas or shallow water areas, and with only sparse woody native vegetation fringing the dams, with no shrub cover. The subaquatic exotic grass *Hymenachne amplexicaulis* is present as a dominant species surrounding the dams, which also supports other exotic species. Native species, including native riparian and aquatic species were present in only very low densities.
- *Melaleuca viridiflora* low open forest to low woodlands - this broad habitat type was observed to have a canopy dominated by *Melaleuca viridiflora*, with minor occurrences of other Eucalypts and *Pandanus* spp. to an average height of 7 m (range: 4 m – 10 m) with an average cover of 63 % (range: 40% – 70%). The shrub layer was observed to be sparse, consisting primarily of regrowth canopy species. The ground layer varied considerably, ranging from depauperate areas dominated by dense exotic grasses (e.g. *Hymenachne amplexicaulis*) to more diverse areas with a mix of native and introduced grasses and herbs including *Xanthorrhoea* sp. Most areas of this habitat type show signs of disturbance, particularly those within or near the Project Area boundary where exotic herbs and pasture grasses, common in the cleared areas, have invaded the ground layer of adjacent vegetation via edge effects.

The following habitat types are found within the 100 m buffer of the Project Area:

- Notophyll vine forests - this broad habitat type was observed to support a complex canopy structure, with a mid-dense canopy (>50%) to an average height of 7 m and a dense subcanopy (>80%) that included multiple shrub layers and vines. The canopy was dominated by *Canarium australasicum*, *Canarium acutifolium*, *Terminalia arenicola*, and *Polyscias elegans*, while a range of native species were dominant in the subcanopy and shrub layer, including *Celtis paniculata*, *Planchonia careya*, and *Alphitonia excelsa*. The ground layer was observed to be sparse and dominated by native grasses and herbs, including *Oplismenus aemulus* and *Tacca leontopetaloides*. Weeds were observed to be present in only low densities, with the exotic grass species *Megathyrsus maximus*, being present along the edge of the broad habitat type (where the vegetation was adjacent to cleared areas).
- Open forest dominated by *Corymbia* species with dense vine thicket understory - this broad habitat type is restricted to the eastern portion of the buffer area, where the canopy was observed to be dominated by *Corymbia tessellaris* and *Corymbia clarksoniana* to an average height of 25 m with a canopy cover of between 50 – 80%. The dense understorey comprised a multiple sub-canopy, shrub layers, and vines, and was dominated by native species including *Huberantha nitidissima, Acacia polystachya, Terminalia arenicola*, *Chionanthus ramiflorus*, *Polyscias elegans*, *Pavetta australiensis*, *Chionanthus ramiflorus*, *Alyxia spicata*, *Smilax australis*, *Tinospora smilacina*, and *Stephania japonica*. The ground layer was observed to be sparse and comprised a range of native grasses and herbs, such as *Oplismenus aemulus* and *Tacca leontopetaloides*. Weeds were observed to be present along the boundary of this broad habitat and cleared areas, and in only low densities away from the impacts of edge effects.

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.

The Project Area is located within 1 km from the coast, adjacent to the Coral Sea, and the boundary of the Great Barrier Reef (GBR) Marine Park (GBRMP), GBR World Heritage Area (GBRWHA) and GBR National Heritage Place (GBRNHP). The Project area is within the Black sub-catchment, within the Burdekin catchment, which ultimately drains into the GBRMP, GBRWHA, and GBRNHP.

The GBR holds a range of significant values, and these are afforded protection under three of the nine prescribed MNES identified in the EPBC Act, including:

- The environment in the Great Barrier Reef Marine Park (GBRMP; sections 24B and 24C)
- The world heritage values of a declared World Heritage property (sections 12and 15A)
- The national heritage values of a National Heritage place (sections 15B and 15C).

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

The Nywaigi People are the traditional custodians for the land on which the Project Area sits.

OX2 will undertake all works in accordance with the Cultural Heritage Duty of Care requirements under the *Aboriginal Cultural Heritage Act 2003* (Qld).

The Aboriginal and Torres Strait Islander Heritage Strategy (ATSIHS) for the GBRMP states the Traditional Owners view Indigenous heritage as ‘everything in sea country’ (GBRMPA, 2019). The Great Barrier Reef Marine Park (GBRMP) Authority applies the broad definition of Indigenous heritage to mean the tangible and intangible expressions of Traditional Owners’ relationships with country, people, beliefs, knowledge, law, language, symbols, ways of living, sea, land and objects: all of which arise from Indigenous spirituality, including heritage places and / or values.

Notwithstanding the overall cultural value that the GBRMP represents for Traditional Owners, certain elements of the reef are known to represent particularly significant values for Indigenous groups. For instance, certain species within the GBR, such as whales and dolphins, hold totemic value for some Traditional Owner groups. The GBR also comprises traditional burial and sacred sites, some of which are underwater due to rising sea levels.

3.4 Hydrology

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

The Project Area is located within the Black River Basin which flows to the east, before discharging into Pacific Ocean, north of Townsville. The Project area borders coastal dunes, which are directly adjacent to the coastline and the boundary of the Great Barrier Reef Marine Park (GBRMP), Great Barrier Reef World Heritage Area (GBRWHA) and Great Barrier Reef National Heritage Place (GBRNHP). Hydrologically, the Project Area is approximately 1,500 m from the GBRMP, GBRWHA and GBRNHP. The proposed action will not have any direct impacts to these areas, however activities outside of the Great Barrier Reef have potential to cause indirect water quality impacts associated with increased sediment loads, chemical pollution and disturbance of acid sulfate soils. An description of the potential impact pathways associated with these indirect impacts, an assessment each potential impact and the relevant avoidance, mitigation and management measures is included in **Att.1a, Section 12.5, pp 106-108 and Section 12.6 pp 109-117**.

There is one watercourse in the north-west of the Project Area and a second adjacent watercourse that flow in an east-west or north-south direction towards the Pacific Ocean. The Project Area drains towards the east and north, with flows conveyed through adjacent waterways and drainage channels. Both watercourses converge into Scrubby Creek before discharging into the Pacific Ocean.

The first order watercourse appears to have been historically modified as the channel runs directly north-south along the perimeter of the Project Area, consistent with the current extent of clearing. The second order watercourse appears to follow a natural ephemeral creek line. Both watercourses support riparian vegetation. The Disturbance Footprint avoids both watercourses and provides/maintains buffers to the watercourses.

To the west of the Project Area is mountainous terrain which forms the headwaters of both watercourses. The upstream catchment of these watercourses is located within the Paluma Range National Park and occur on land which is mostly uncleared.

The water features within the Project Area are ephemeral and temporarily hold only low flow in intermittent pools of water when not in flow. Due to the ephemeral nature of the waterways, the small, shallow, and disconnected pools, and impacted water quality, the waterways are unlikely to provide aquatic habitat values.

The waterways mapped under the Queensland *Vegetation Management Act 1999* (and their stream order) which traverse through the Site are shown within **Att.1a, Section 4.1, pp 34-35**.

A Palustrine wetland is mapped to the north-west of the Project Area, which overlaps the second order watercourse. Lacustrine and Palustrine wetlands are also mapped to the north-east of the Project Area, adjacent the eastern boundary of Lot 12 on RP859197 and the ocean, respectively. There are no mapped wetlands within the Disturbance Footprint.

The Palustrine wetlands to the north-east of the Project Area is mapped as containing the following wetland values:

- Wetlands within the Queensland Vegetation Management Map
- Matters of state environmental significance – high ecological significance wetlands
- Wetlands of High Ecological Significance.

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	Yes	Yes
S15B	National Heritage	Yes	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	No	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	Yes	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.

Direct impact	Indirect impact	World heritage
No	Yes	Great Barrier Reef

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

Yes

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

As the Project is not located within the Great Barrier Reef (GBR), the Project will not to have any direct impacts to the GBR World Heritage Area (GBRWHA). However, activities outside the GBR have the potential to indirectly impact the GBR or GBRWHA. Potential indirect impacts from the Project are associated with water quality impacts from increased sediment loads, chemical pollution, and disturbance of acid sulfate soils.

Potential impact pathways refer to the mechanisms or processes through which a development may impact the environment. The key potential impact pathways that are relevant to the Project with respect to the GBR include the following:

- Erosion and sediment – i.e., land disturbance activities may increase sediment transport into nearby waterways, which flow into the GBR.
- Nutrient/pesticide mobilisation – i.e., land disturbance activities may cause soil erosion, mobilising nutrients and/or pesticides into nearby waterways, which flow into the GBR.
- Chemical pollution – i.e., the use of chemicals on site may result in spills that could enter waterways flowing to the GBR.
- ASS – i.e., the excavation or drainage of ASS may result in acid mobilising to nearby waterways, which flow into the GBR.

The potential impacts to the GBRWHA that may occur as result of the proposed action in each phase of the development area presented in **Att.1a, Section 12.5.2, Table 12.3, pp 106-108**.

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

No

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

The proposed action was assessed against the EPBC Act Significant Impact Guidelines for a WHA and was identified as being unlikely to have a significant impact on the GBRWHA.

The indirect impacts to the GBRWHA associated with the proposed action contributing to worsening water quality via sedimentation, nutrient and pesticide pollution, and/or disturbance of ASS causing contamination, have been assessed as having a low residual risk rating, based on the biophysical conditions of the Site, the nature of the proposed action, and the avoidance, mitigation and management actions to be implemented.

The proposed action is anticipated to reduce pressures on the GBR, as the Project would change the land use from cattle grazing/sugarcane cropping to a solar farm, the application of nutrients and pesticides that are associated with the current, and previous land uses of the Project Area would cease. In addition, the water quality impacts associated with the historical land use would also be reduced throughout the 40-year operational phase of the Project. Finally, as a renewable energy project, the proposed action is positivity contributing to Australia's commitment to reduce its greenhouse gas emissions, which is the leading cause of climate change, and the key threat to the long-term health of the GBR.

The significant impact assessment is provided in **Att.1a, Section 12.7.2, Table 12.10 and Table 12.11, pp 120-124**.

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

No

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

The proposed action is unlikely to have a significant impact on the GBRWHA; for the purposes of this Referral, the GBRWHA is not considered a relevant controlling provision.

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

The indirect impacts to the GBRWHA associated with the proposed action include:

- Increased erosion causing sediment to migrate into the GBR
- Mobilisation of nutrients/pesticides migrating into the GBR
- Chemical spill on site migrating into the GBR
- Oxidation of acid sulfate soil leaching acidic waters into the GBR.

A range of avoidance and mitigation measures have been implemented and developed for the proposed action across all project phases. In support of this, a site-specific Preliminary Erosion and Sediment Control Plan (P-ESCP) has been prepared and attached as **Att.1c, Appendix I**. The P-ESCP considers the site characteristics such as soils, hydrology and drainage patterns and climatic conditions to determine the best practice management and mitigation measures for the Project in accordance with legislative context and standards. International Erosion Control Association (IECA) 2008 have guided preparation of the P-ESCP and informed best practice erosion and sediment controls for the site.

The Project has committed to minimising earthworks during the higher-risk wet season months and will not undertake earthworks associated with the laydown areas, BESS, or access tracks (a total area of 11.82 ha) between January and March (inclusive). By avoiding construction of components with substantial earthworks requirements during the period of highest rainfall risk, the potential for erosion and sediment generation is significantly reduced. This approach reflects a clear application of the mitigation hierarchy, prioritising avoidance and minimisation of environmental impacts.

The avoidance and mitigation measures for the proposed action relevant to indirect impacts to the GBRMP are summarised below and in **Att.1c, Appendix I, Section 4, pp 27-45** and **Att.1a, Section 12.6, Table 12.7, pp 109-117.**

Construction

- Site selection, Project design and construction methodology have allowed for the proposed action to avoid significant amounts of land disturbance, avoid surface stripping earthworks and maximise buffers to waterways, resulting in a low risk of contributing sedimentation impacts downstream
- A number of mitigation measures will be implemented, including staging of earthworks, limiting all Project activity to the disturbance footprint, appropriate stockpile management, soil stabilisation and progressive rehabilitation
- A range of best practice erosion and sediment controls will be adopted on site in accordance with IECA (e.g. silt fences, sediment basins).
- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- While the potential for acid sulfate soil contamination is considered very low, the sampling will be undertaken prior to construction to minimise the risk of disturbance. Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Operation

- Due to the nature of the proposed action, there is low operational risk of contributing to sedimentation impacts downstream.
- The site will nonetheless be kept destocked to avoid the impact of cattle trampling and low rates of groundcover
- Site access will be limited to established entry and exit points
- Bare ground will be avoided through regular maintenance of groundcover and stabilisation where necessary.

- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Decommissioning

- Due to the nature of the proposed action, there is low risk of contributing to sedimentation impacts downstream during decommissioning.
- A Decommissioning Plan (or similar) will be developed for the Project which will include an ESCP.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

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

Offsets for the GBRWHA are not proposed as there is unlikely to be a significant impact on the GBRWHA.

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.

Direct impact	Indirect impact	National heritage
No	Yes	Great Barrier Reef

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

Yes

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

As the Project is not located within the Great Barrier Reef (GBR), the Project will not to have any direct impacts to the GBR National Heritage Place (GBRNHP). However, activities outside the GBR have the potential to indirectly impact the GBR or GBRNHP. Potential indirect impacts from the Project are associated with water quality impacts from increased sediment loads, chemical pollution, and disturbance of acid sulfate soils.

Potential impact pathways refer to the mechanisms or processes through which a development may impact the environment. The key potential impact pathways that are relevant to the Project with respect to the GBR include the following:

- Erosion and sediment – i.e., land disturbance activities may increase sediment transport into nearby waterways, which flow into the GBR.
- Nutrient/pesticide mobilisation – i.e., land disturbance activities may cause soil erosion, mobilising nutrients and/or pesticides into nearby waterways, which flow into the GBR.
- Chemical pollution – i.e., the use of chemicals on site may result in spills that could enter waterways flowing to the GBR.
- ASS – i.e., the excavation or drainage of ASS may result in acid mobilising to nearby waterways, which flow into the GBR.

The potential impacts to the GBRNHP that may occur as result of the proposed action in each phase of the development area presented in **Att.1a, Section 12.5.2, Table 12.3, pp 106-108**.

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

No

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

The proposed action was assessed against the EPBC Significant Impact Guidelines for a NHP and was identified as being unlikely to have a significant impact on the GBRNHP.

The indirect impacts to the GBRNHP associated with the proposed action contributing to worsening water quality via sedimentation, nutrient and pesticide pollution, and/or disturbance of ASS causing contamination, have been assessed as having a low residual risk rating, based on the biophysical conditions of the Site, the nature of the proposed action, and the avoidance, mitigation and management actions to be implemented.

The proposed action is anticipated to reduce pressures on the GBR, as the Project would change the land use from cattle grazing/sugarcane cropping to a solar farm, the application of nutrients and pesticides that are associated with the current, and previous land uses of the Project Area would cease. In addition, the water quality impacts associated with the historical land use would also be reduced throughout the 40-year operational phase of the Project. Finally, as a renewable energy project, the proposed action is positivity contributing to Australia's commitment to reduce its greenhouse gas emissions, which is the leading cause of climate change, and the key threat to the long-term health of the GBR.

The significant impact assessment is provided in **Att.1a, Section 12.7.2, Table 12.10 and Table 12.11, pp 120-124.**

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

No

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

The proposed action is unlikely to have a significant impact on the GBRNHP; for the purposes of this Referral, the GBRNHP is not considered a relevant controlling provision.

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

The indirect impacts to the GBRNHP associated with the proposed action include:

- Increased erosion causing sediment to migrate into the GBR
- Mobilisation of nutrients/pesticides migrating into the GBR
- Chemical spill on site migrating into the GBR
- Oxidation of acid sulfate soil leaching acidic waters into the GBR.

A range of avoidance and mitigation measures have been implemented and developed for the proposed action across all project phases. In support of this, a site-specific Preliminary Erosion and Sediment Control Plan (P-ESCP) has been prepared and attached as **Att.1c, Appendix I**. The P-ESCP considers the site characteristics such as soils, hydrology and drainage patterns and climatic conditions to determine the best practice management and mitigation measures for the Project in accordance with legislative context and standards. International Erosion Control Association (IECA) 2008 have guided preparation of the P-ESCP and informed best practice erosion and sediment controls for the site.

The Project has committed to minimising earthworks during the higher-risk wet season months and will not undertake earthworks associated with the laydown areas, BESS, or access tracks (a total area of 11.82 ha) between January and March (inclusive). By avoiding construction of components with substantial earthworks requirements during the period of highest rainfall risk, the potential for erosion and sediment generation is significantly reduced. This approach reflects a clear application of the mitigation hierarchy, prioritising avoidance and minimisation of environmental impacts.

The avoidance and mitigation measures for the proposed action relevant to indirect impacts to the GBRMP are summarised below and in **Att.1c, Appendix I, Section 4, pp 27-45** and **Att.1a, Section 12.6, Table 12.7, pp 109-117.**

Construction

- Site selection, Project design and construction methodology have allowed for the proposed action to avoid significant amounts of land disturbance, avoid surface stripping earthworks and maximise buffers to waterways, resulting in a low risk of contributing sedimentation impacts downstream
- A number of mitigation measures will be implemented, including staging of earthworks, limiting all Project activity to the disturbance footprint, appropriate stockpile management, soil stabilisation and progressive rehabilitation
- A range of best practice erosion and sediment controls will be adopted on site in accordance with IECA (e.g. silt fences, sediment basins).
- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- While the potential for acid sulfate soil contamination is considered very low, the sampling will be undertaken prior to construction to minimise the risk of disturbance. Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Operation

- Due to the nature of the proposed action, there is low operational risk of contributing to sedimentation impacts downstream.
- The site will nonetheless be kept destocked to avoid the impact of cattle trampling and low rates of groundcover
- Site access will be limited to established entry and exit points
- Bare ground will be avoided through regular maintenance of groundcover and stabilisation where necessary.

- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Decommissioning

- Due to the nature of the proposed action, there is low risk of contributing to sedimentation impacts downstream during decommissioning.
- A Decommissioning Plan (or similar) will be developed for the Project which will include an ESCP.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

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

Offsets for the GBRNHP are not proposed as there is unlikely to be a significant impact on the GBRNHP.

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.

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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. *

In accordance with the PMST report generated through this referral portal, there are no Ramsar Wetlands within 30 km of the Project Area. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** will not have direct or indirect impacts to Ramsar Wetlands.

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	Balaenoptera musculus	Blue Whale
No	No	Botaurus poiciloptilus	Australasian Bittern
No	No	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris canutus	Red Knot, Knot
No	No	Calidris ferruginea	Curlew Sandpiper
No	No	Carcharodon carcharias	White Shark, Great White Shark
No	No	Caretta caretta	Loggerhead Turtle
No	No	Casuarius casuarius	Southern Cassowary
No	No	Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
No	No	Chelonia mydas	Green Turtle
No	No	Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]
No	No	Dasyurus maculatus gracilis	Spotted-tailed Quoll (North Queensland), Yarri
No	No	Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
No	No	Egernia rugosa	Yakka Skink
No	No	Eretmochelys imbricata	Hawksbill Turtle
No	No	Erythrotriorchis radiatus	Red Goshawk
No	No	Falco hypoleucos	Grey Falcon
No	No	Fregetta grallaria grallaria	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Geophaps scripta scripta	Squatter Pigeon (southern)

Direct impact	Indirect impact	Species	Common name
No	No	Hipposideros semoni	Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat
No	No	Hirundapus caudacutus	White-throated Needletail
No	No	Leichhardtia araujacea	
No	No	Leichhardtia brevifolia	
No	No	Lepidochelys olivacea	Olive Ridley Turtle, Pacific Ridley Turtle
No	No	Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit
No	No	Lindsaea pulchella var. blanda	
No	No	Litoria dayi	Australian Lace-lid, Lace-eyed Tree Frog, Day's Big-eyed Treefrog
No	No	Macroderma gigas	Ghost Bat
No	No	Mesembriomys gouldii rattoides	Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat
No	No	Myrmecodia beccarii	Ant Plant
No	No	Natator depressus	Flatback Turtle
No	No	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Orcaella heinsohni	Australian Snubfin Dolphin
No	No	Petauroides minor	Greater Glider (northern), Greater Glider (north-eastern Queensland)
No	No	Petaurus gracilis	Mahogany Glider
No	No	Phaius australis	Lesser Swamp-orchid
No	No	Phalaenopsis rosenstromii	Native Moth Orchid
No	No	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	Phlegmariurus tetrastichoides	Square Tassel Fern
No	No	Poephila cincta cincta	Southern Black-throated Finch

Direct impact	Indirect impact	Species	Common name
No	No	Pristis pristis	Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish
No	No	Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish
No	No	Pteropus conspicillatus	Spectacled Flying-fox
No	No	Pteropus poliocephalus	Grey-headed Flying-fox
No	No	Rhincodon typus	Whale Shark
No	No	Rhinolophus robertsi	Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat
No	No	Rostratula australis	Australian Painted Snipe
No	No	Saccolaimus saccolaimus nudicluniatus	Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat
No	No	Sousa sahulensis	Australian Humpback Dolphin
No	No	Sphyrna lewini	Scalloped Hammerhead
No	No	Sternula albifrons	Little Tern
No	No	Tephrosia leveillei	
No	No	Tringa nebularia	Common Greenshank, Greenshank
No	No	Tyto novaehollandiae kimberli	Masked Owl (northern)
No	No	Varanus mertensi	Mertens' Water Monitor, Mertens's Water Monitor
No	No	Xeromys myoides	Water Mouse, False Water Rat, Yirrkoo

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland
No	No	Littoral Rainforest and Coastal Vine Thickets of Eastern Australia

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

No

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

As no threatened flora or fauna species and only limited suitable habitat were observed within the Project Area, none were assessed as being 'Likely to occur' within the Project Area. the Project is anticipated to avoid all direct or indirect impacts to nationally threatened flora and fauna species. Refer to **Att.1b, Appendix E** for the Likelihood of Occurrence.

The Project Area and Disturbance Footprint have been designed to avoid threatened ecological communities (TECs). A 40 m buffer zone from the outer edge of the patch has been applied to the field validated extent of the Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland TEC. The 40 m buffer zone has been derived from the Listing Advice, which identifies that the buffer zone is to help protect and manage the ecological community acting as a barrier to further direct disturbance such as from altered water flows and other threats such as edge effects or weed intrusion. With the implementation of the buffer zone, the Project will avoid all direct and indirect impacts to the TEC. No infrastructure is proposed within the buffer zone and there will be no clearing of native vegetation within the buffer zone. An Asset Protection Zone (APZ) is proposed which overlaps with the BLTT TEC buffer zone; however, only in areas where the buffer zone extends over cleared pasture which only supports exotic grasses.

The Listing Advice for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia does not include a nominated buffer zone from the outer edge of the patch to assist with minimising direct and indirect impacts. A nominal 40 m buffer has been applied to outer edge of the field validated extent of the TEC to help protect and manage the ecological community and act as a barrier to further minimise disturbance such as from altered water flows and other threats such as edge effects or weed intrusion. With the implementation of the buffer zone, the Project will avoid all direct and indirect impacts to the TEC. No infrastructure is proposed within the buffer zone and there will be no clearing of native vegetation within the buffer zone. An APZ is proposed which overlaps with the TEC buffer zone; however, only in areas where the buffer zone extends over cleared pasture which only supports exotic grasses.

As there are no TEC within the Project area, the Project will avoid all impacts to the TEC. The Project will also avoid impacts to the buffer zone as no infrastructure is proposed within the buffer zone and there will be no clearing of native vegetation within the buffer zones. Whilst an APZ is proposed to overlap with the buffer zones in some areas, the APZ is only proposed where there is currently pasture dominated by exotic grasses and will maintain the current conditions of exotic grass.

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	Anous stolidus	Common Noddy
No	No	Anoxypristis cuspidata	Narrow Sawfish, Knifetooth Sawfish
No	No	Apus pacificus	Fork-tailed Swift
No	No	Balaenoptera edeni	Bryde's Whale
No	No	Balaenoptera musculus	Blue Whale
No	No	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris canutus	Red Knot, Knot
No	No	Calidris ferruginea	Curlew Sandpiper
No	No	Calidris melanotos	Pectoral Sandpiper
No	No	Carcharhinus longimanus	Oceanic Whitetip Shark
No	No	Carcharias taurus	Grey Nurse Shark
No	No	Carcharodon carcharias	White Shark, Great White Shark
No	No	Caretta caretta	Loggerhead Turtle
No	No	Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
No	No	Chelonia mydas	Green Turtle
No	No	Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile
No	No	Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo
No	No	Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
No	No	Dugong dugon	Dugong
No	No	Eretmochelys imbricata	Hawksbill Turtle

Direct impact	Indirect impact	Species	Common name
No	No	Fregata ariel	Lesser Frigatebird, Least Frigatebird
No	No	Fregata minor	Great Frigatebird, Greater Frigatebird
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Hirundapus caudacutus	White-throated Needletail
No	No	Hirundo rustica	Barn Swallow
No	No	Lamna nasus	Porbeagle, Mackerel Shark
No	No	Lepidochelys olivacea	Olive Ridley Turtle, Pacific Ridley Turtle
No	No	Limosa lapponica	Bar-tailed Godwit
No	No	Megaptera novaeangliae	Humpback Whale
No	No	Mobula alfredi	Reef Manta Ray, Coastal Manta Ray
No	No	Mobula birostris	Giant Manta Ray
No	No	Motacilla flava	Yellow Wagtail
No	No	Natator depressus	Flatback Turtle
No	No	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Orcaella heinsohni	Australian Snubfin Dolphin
No	No	Orcinus orca	Killer Whale, Orca
No	No	Pandion haliaetus	Osprey
No	No	Phaethon lepturus	White-tailed Tropicbird
No	No	Pristis pristis	Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish
No	No	Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish
No	No	Rhincodon typus	Whale Shark
No	No	Sousa sahulensis	Australian Humpback Dolphin
No	No	Sternula albifrons	Little Tern
No	No	Tringa nebularia	Common Greenshank, Greenshank

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

No

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

Field surveys were conducted within the Study area in accordance with Commonwealth and State survey guidelines (refer **Att.1a, Section 3.3, pp 19-27** for description of relevant survey methods), focusing on areas of higher quality habitat.

No migratory species protected under the EPBC Act were recorded. Given the history of clearing and ongoing cattle grazing within the Project Area, the potential of the Project Area to support migratory species is limited. As a result, the Project Area was assessed as providing minimal suitable habitat for previously recorded threatened migratory species.

The likelihood of occurrence undertaken for the Project did not identify an migratory species as 'Known to occur' or 'Likely to occur' within the Project Area due to there being only negligible habitat values for migratory species. Refer to **Att.1b, Appendix E** for the likelihood of occurrence assessment for migratory species.

4.1.6 Nuclear

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

No

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

There are no nuclear activities proposed as part of the action. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** do not include nuclear activities and will have no direct or indirect impacts.

4.1.7 Commonwealth Marine Area

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

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

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

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

No

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

In accordance with the PMST report generated through this referral portal, there are no Commonwealth Marine Areas within 30 km of the Project Area. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** will not have direct or indirect impacts to Commonwealth Marine Areas.

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? *

Yes

4.1.8.2 Briefly describe why your action has a direct and/or indirect impact on this protected matter. *

As the Project is not located within the Great Barrier Reef (GBR), the Project will not to have any direct impacts to the GBR Marine Park (GBRMP). However, activities outside the GBR have the potential to indirectly impact the GBR or GBRMP. Potential indirect impacts from the Project are associated with water quality impacts from increased sediment loads, chemical pollution, and disturbance of acid sulfate soils.

Potential impact pathways refer to the mechanisms or processes through which a development may impact the environment. The key potential impact pathways that are relevant to the Project with respect to the GBR include the following:

- Erosion and sediment – i.e., land disturbance activities may increase sediment transport into nearby waterways, which flow into the GBR.
- Nutrient/pesticide mobilisation – i.e., land disturbance activities may cause soil erosion, mobilising nutrients and/or pesticides into nearby waterways, which flow into the GBR.
- Chemical pollution – i.e., the use of chemicals on site may result in spills that could enter waterways flowing to the GBR.
- ASS – i.e., the excavation or drainage of ASS may result in acid mobilising to nearby waterways, which flow into the GBR.

The potential impacts to the GBRMP that may occur as result of the proposed action in each phase of the development area presented in **Att.1a, Section 12.5.2, Table 12.3, pp 106-108**.

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

No

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

The proposed action was assessed against the EPBC Significant Impact Guidelines for the GBRMP and was identified as being unlikely to have a significant impact on the GBRMP.

The indirect impacts to the GBRMP associated with the proposed action contributing to worsening water quality via sedimentation, nutrient and pesticide pollution, and/or disturbance of ASS causing contamination, have been assessed as having a low residual risk rating, based on the biophysical conditions of the Site, the nature of the proposed action, and the avoidance, mitigation and management actions to be implemented.

The proposed action is anticipated to reduce pressures on the GBR, as the Project would change the land use from cattle grazing/sugarcane cropping to a solar farm, the application of nutrients and pesticides that are associated with the current, and previous land uses of the Project Area would cease. In addition, the water quality impacts associated with the historical land use would also be reduced throughout the 40-year operational phase of the Project. Finally, as a renewable energy project, the proposed action is positivity contributing to Australia's commitment to reduce its greenhouse gas emissions, which is the leading cause of climate change, and the key threat to the long-term health of the GBR.

The significant impact assessment is provided in **Att.1a, Section 12.7.2, Table 12.9, pp 120-121**.

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

No

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

The proposed action is unlikely to have a significant impact on the GBRMP; for the purposes of this Referral, the GBRMP is not considered a relevant controlling provision.

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

The indirect impacts to the GBRMP associated with the proposed action include:

- Increased erosion causing sediment to migrate into the GBR
- Mobilisation of nutrients/pesticides migrating into the GBR
- Chemical spill on site migrating into the GBR
- Oxidation of acid sulfate soil leaching acidic waters into the GBR.

A range of avoidance and mitigation measures have been implemented and developed for the proposed action across all project phases. In support of this, a site-specific Preliminary Erosion and Sediment Control Plan (P-ESCP) has been prepared and attached as **Att.1c, Appendix I**. The P-ESCP considers the site characteristics such as soils, hydrology and drainage patterns and climatic conditions to determine the best practice management and mitigation measures for the Project in accordance with legislative context and standards. International Erosion Control Association (IECA) 2008 have guided preparation of the P-ESCP and informed best practice erosion and sediment controls for the site.

The Project has committed to minimising earthworks during the higher-risk wet season months and will not undertake earthworks associated with the laydown areas, BESS, or access tracks (a total area of 11.82 ha) between January and March (inclusive). By avoiding construction of components with substantial earthworks requirements during the period of highest rainfall risk, the potential for erosion and sediment generation is significantly reduced. This approach reflects a clear application of the mitigation hierarchy, prioritising avoidance and minimisation of environmental impacts.

The avoidance and mitigation measures for the proposed action relevant to indirect impacts to the GBRMP are summarised below and in **Att.1c, Appendix I, Section 4, pp 27-45** and **Att.1a, Section 12.6, Table 12.7, pp 109-117.**

Construction

- Site selection, Project design and construction methodology have allowed for the proposed action to avoid significant amounts of land disturbance, avoid surface stripping earthworks and maximise buffers to waterways, resulting in a low risk of contributing sedimentation impacts downstream
- A number of mitigation measures will be implemented, including staging of earthworks, limiting all Project activity to the disturbance footprint, appropriate stockpile management, soil stabilisation and progressive rehabilitation
- A range of best practice erosion and sediment controls will be adopted on site in accordance with IECA (e.g. silt fences, sediment basins).
- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- While the potential for acid sulfate soil contamination is considered very low, the sampling will be undertaken prior to construction to minimise the risk of disturbance. Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Operation

- Due to the nature of the proposed action, there is low operational risk of contributing to sedimentation impacts downstream.
- The site will nonetheless be kept destocked to avoid the impact of cattle trampling and low rates of groundcover
- Site access will be limited to established entry and exit points
- Bare ground will be avoided through regular maintenance of groundcover and stabilisation where necessary.

- Application of nutrient and pesticides, and disturbance of legacy nutrient and pesticides, will be avoided.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

Decommissioning

- Due to the nature of the proposed action, there is low risk of contributing to sedimentation impacts downstream during decommissioning.
- A Decommissioning Plan (or similar) will be developed for the Project which will include an ESCP.
- OX2 will avoid storing more than minor volumes of chemicals on-site, which will be stored away from waterways and drainage lines. Storage and handling of chemicals on-site will be in accordance with best practice and all legislative requirements.
- Appropriate management measures for unexpected finds of acid sulfate soils will be implemented on-site.

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

Offsets for the GBRMP are not proposed as there is unlikely to be a significant impact on the GBRMP.

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

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

No

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

The proposed action does not include large coal mining development or coal seam gas and therefore does not trigger the water resource controlling provision. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** will not have direct or indirect impacts on water resources.

4.1.10 Commonwealth Land

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

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

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

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

No

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

In accordance with the PMST report generated through this referral portal, there is no Commonwealth land within 30 km of the Project Area. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** will not have direct or indirect impacts to Commonwealth land.

4.1.11 Commonwealth Heritage Places Overseas

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

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

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

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

No

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

In accordance with the PMST report generated through this referral portal, there are no Commonwealth heritage places overseas within 30 km of the Project Area. The activities proposed as part of the action and subsequent potential impacts identified in **Att.1a, Section 1.4, pp 4-10 and Section 10, pp 78-87** will not have direct or indirect impacts to Commonwealth heritage places overseas.

4.1.12 Commonwealth or Commonwealth Agency

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

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

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

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 only realistic alternatives to taking the action are to not undertake the action, or to undertake the action at a different location. However, the development of renewable energy projects on land such as that contained within the Project area (being an area previously cleared and currently and historically being used for sugarcane farming) is considered the preferable means of attaining renewable energy, rather than developing within locations that demonstrate high biodiversity, amenity, and agricultural land values.

The Project aligns with Queensland Government priorities and objectives to protect and enhance the environment and heritage by achieving a 70% renewable energy target by 2032 and net zero emissions by 2050. The Project is expected to power 55,000 homes and offset 200,000 tonnes of CO2 annually.

The Project will help to achieve Queensland Government objectives to prioritise the delivery of an energy system that is affordable, reliable and sustainable. At the Project location, solar energy is the most yielding development type, with a high solar irradiance across the Project Area. Wind and pumped-hydro schemes are not viable at this location. The BESS will store up to 128MW of energy which can supply 2 hours of electricity. It will store energy for use when it's needed most. It will provide reliable and affordable power, helping utilities quickly deliver electricity during peak times, outages, or shortages. This will improve energy security for Queensland.

The impacts associated with not undertaking the action include the following:

- Renewable energy projects, including solar farms, are a critical way to reduce impacts associated with climate change. This is a documented threating process to MNES, including the Great Barrier Reef (GBR). In this regard, doing nothing to transition to renewable energy could exacerbate climate change impacts.

The impacts associated with undertaking the action at a different location include the following:

- A site further inland would likely have a lower potential of impacting the GBR. However, the current Project has implemented mitigation measures deemed sufficient to result in no impacts to the values of the GBR. Therefore, locating the Project further away from the coast would have negligible benefits to reducing potential impacts to the GBR.
- A site with direct hydraulic connectivity to the GBR would likely have a higher unmitigated risk of impacting the GBR via erosion and sediment. The waterways within and near the Project Area have vegetated buffers to assist in minimising erosion and sediment transport and there are no waterways or drainage channels within the Project Area. The Project Area is setback approximately 500 m from the Pacific Ocean and is separated from the ocean by a heavily vegetated dunal land system. The Disturbance Footprint has been setback from the nearby waterways, with vegetated buffers provided.
- There are minimal ecological values within the Project Area and proposed Disturbance Footprint. Whereas other sites may have higher ecological values and may involve direct impacts to areas with MNES value or areas where MNES have been confirmed.
- The Project Area is traversed by overhead transmission infrastructure allowing for a direct connection to the grid via grid connection assets. Other sites may require the development of a transmission line to connect the generation facility to an external connection point which may involve direct impacts to areas with MNES value or areas where MNES have been confirmed.
- If the solar farm does not proceed, the Project Area is likely to return to sugarcane farming, which has high pesticide and fertiliser loads, both of which negatively impacts the water quality values of the GBR.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	26/06/2025	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	Att.2 Trust Deed.pdf	20/12/2023	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.	Document	Att.3 OX2 Environmental Policy 2024.pdf OX2 Environmental Policy	16/04/2024	No	High
#2.	Document	Att.4 OX2 Sustainability Policy 2024.pdf OX2 Sustainability Policy	19/12/2023	No	High

3.2.1 Flora and fauna within the affected area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High
#2.	Document	Att.1b Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	26/06/2025	No	High

3.2.2 Vegetation within the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.1.2 (World Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.1.6 (World Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.1.10 (World Heritage) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High
#2.	Document	Att.1c Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	26/06/2025	No	High

4.1.2.2 (National Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.2.6 (National Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.2.10 (National Heritage) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High
#2.	Document	Att.1c Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.3.3 (Ramsar Wetland) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.4.3 (Threatened Species and Ecological Communities) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1b Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.5.3 (Migratory Species) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High
#2.	Document	Att.1b Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.6.3 (Nuclear) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.7.3 (Commonwealth Marine Area) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.8.2 (Great Barrier Reef) Why your action has a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.8.6 (Great Barrier Reef) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.8.10 (Great Barrier Reef) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High
#2.	Document	Att.1c Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.9.3 (Water resource in relation to large coal mining development or coal seam gas) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.10.3 (Commonwealth Land) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

4.1.11.3 (Commonwealth heritage places overseas) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att.1a Sunshine State Solar Farm and BESS MNES Assessment Report.pdf MNES Assessment Report	25/06/2025	No	High

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	75637138008
Organisation name	ATTEXO GROUP PTY LTD
Organisation address	4006 QLD
Representative's name	Steven Tarte
Representative's job title	Principal Consultant - Approvals
Phone	0421643710
Email	steven.tarte@attexo.com.au
Address	315 Brunswick Street, Level 4, Fortitude Valley, Queensland 4006, 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. *

☑ By checking this box, I, **Steven Tarte of ATTEXO GROUP 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	610264358
Organisation name	Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229
Organisation address	Suite 403, L4/65 Dover St, Cremorne VIC 3121

Representative's name	Grace Stewart
Representative's job title	Senior Development Manager
Phone	0428585715
Email	Grace.stewart@ox2.com
Address	Suite 403, L4/65 Dover St, Cremorne, VIC 3121, 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, **Grace Stewart of Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229**, 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, **Grace Stewart of Sunshine State Solar Farm Pty Ltd as trustee for the Sunshine State Solar Farm Trust ABN 39614291229**, 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. *