

Preliminary Environmental Assessment

Suntop Solar Farm

transport | community | environment | industrial | food & beverage | energy



Prepared for:

Client representative:

Date:

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Rev 00

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1. Introduction

1.1 Overview of the Project

Photon Energy (Photon) propose to construct and operate a 260-megawatt (MW) photovoltaic solar (PV) farm (the “Proposal”). The Proposal would be located at 909 Suntop Road, Suntop, NSW, 2820 and contained within Lot 1-2- 3 DP 506925, Lot 122 DP 753238 and Lot 90 DP 657805 (the “Site”). The Site is approximately 502 hectares and is currently used for agriculture specifically cropping. The preliminary design for the solar farm would occupy approximately 280 hectares (the “development footprint”) out of the 502 hectares (equivalent to approximately 56%) with the remaining land retaining its existing agricultural use.

The Proposal includes installation of groups of north facing PV modules (approximately 2m x 1m) on mounting structures approximately 3m in height. An estimated 787 892 PV panels will be installed at a 25° angle. The PV mounting structure would comprise steel posts driven approximately 1.6m below ground using a pile driver. Additional support structures would be attached to the steel mounting structures and the PV modules would then be attached to the support structures.

Power generated by the facility will be transmitted via existing powerlines, in an easement owned by TransGrid, to the local energy grid via a new substation to be installed on the site.

Works are also required to upgrade existing powerlines to facilitate connection to the Transgrid line from the Proposal. The existing powerlines will be upgraded by TransGrid. Assessment and approval of these works does not form part of this Proposal.

1.2 Purpose of this Report

The capital investment value of the proposed development is estimated at \$286 million. As such it is deemed as State Significant Development (SSD) and an Environmental Impact Statement (EIS) is therefore required.

This Preliminary Environmental Assessment (PEA) has been prepared to support a request to the Department of Planning and Environment (DPE) for Secretary’s Environmental Assessment Requirements (SEARs). The SEARs will be used to guide the preparation of an Environmental Impact Statement (EIS) for the Proposal under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The PEA provides the following:

- An overview of the relevant planning legislation and approvals process (Section 5)
- An outline of the Proposal justification and alternatives considered (Section 3)
- A description of the solar farm and its construction and operation (Section 2)
- An outline of the preliminary environmental assessment (Section 0)
- An outline of stakeholder consultation for the Proposal (Section 4)
- A proposed scope for the subsequent EIS (Section 7).

2. The Proposal

2.1 Site Location

The Site is located at 909 Suntop Road, Suntop, NSW, 2820, approximately 20km from Wellington town centre in the Wellington Local Government Area (LGA) and approximately 21km west of the Mitchell Highway (A32) as shown in Figure 2-1.

The Site is not located in close proximity to urban or dense residential areas. The Proposal would be contained within Lot 1-2- 3 DP 506925, Lot 122 DP 753238 and Lot 90 DP 657805 (refer Figure 2-2).

The proposed development footprint is anticipated to cover only a section of the area detailed above (refer to the proposed layout detailed in **Appendix A**) however this PEA has taken a conservative approach and has assessed the environmental constraints contained within the Site, that is the lot boundaries outlined in Figure 2-2 unless otherwise stated. A full page overview of the Site location is provided in Appendix B.



Figure 2-1: Location of the Proposed Site (Source: Google Maps)



Figure 2-2: Locality map of the Proposal showing lot boundaries (Source: Six maps)

2.2 Site Description

The Site comprises a series of large fenced paddocks containing irrigated crops accessible via Suntop Road to the north. The paddocks have been levelled and largely cleared for agricultural purposes (specifically cropping) and currently contain several built structures including agricultural sheds and one residential dwelling.

There is scattered rows and clusters of vegetation across the site as described in Table 1 below.

Table 1 Vegetation on the Site

Description	Location
Cluster of vegetation approximately 0.4ha	Lot 90 DP657805
Rows of sporadic mature trees	Western boundary of Lot 2 and 3 DP 506925 Southern boundary of Lot 1 and 2 DP 506925 Western and eastern boundaries of Lot 122 DP 753238 Eastern border of Lot 90 DP657805
LEP 'Biodiversity Region'	Along the edge of Suntop Road, located at the northern boundary of Lot 3 DP 506935, Lot 122 DP 753238 and Lot 90 DP 657805

The type and presence of vegetation on the site has been identified via aerial imagery and would be confirmed during field work as outlined in Section 6.2.1.

It is understood that the development footprint will avoid the majority of vegetation present on the site where possible and that any vegetation to be removed will be identified during field work and assessed as outlined in Section 5.2.1.

There are 7 dams within the Site ranging in size from 0.2ha to 0.5ha. The two largest dams are contained in the middle of Lot 2 DP 506925, and the south-west corner of Lot 3 DP 506925. Irrigation channels are also present throughout the Site to facilitate water movement for agricultural purposes. Surface hydrology, landform and soils have been heavily modified by the paddock development and irrigation works. It is understood that the development footprint will avoid the existing surface water bodies on the site where possible including a buffer of 40m between infrastructure and any waterway. The surface water and hydrology across the site will be confirmed during field work and assess as outlined in Section 6.2.4.

There is an existing 132kV TransGrid Transmission line, which runs from the eastern boundary of Lot 93 DP 753238, through the northern boundary of the Site, and exits through the western boundary of Lot 3 DP 506925 (Appendix A). There will be a new 132 kV substation installed on Site, towards the northern-most end of the border between Lot 122 DP 753238 and Lot 90 DP 657805.

Works are required to upgrade existing powerlines to support the energy generated from the Proposal. The existing powerlines will be upgraded by TransGrid. Assessment and approval of these works does not form part of this Proposal.

2.3 Site Locality

The Site is located in the Wellington LGA, which has recently amalgamated with Dubbo to form the Dubbo Regional Council. The site has road access from the Mitchell Highway (A32) 21km west of the site, as well as Renshaw McGirr Way, approximately 5km east of the site.

The Site is in an agricultural region, 20km to the west from the town of Wellington. The majority of built structures in the region are in the town of Wellington, which is mostly low density residential areas or large lot residences. There is a significant area of dense forest between Wellington and the region of Suntop called Mount Arthur Reserve about 5km west from the Site location. Outside the town and surrounding the Site, built structures include sparsely distributed rural-residences which are usually located some distance from roads.

Sensitive receivers within 1km of the development are identified in **Appendix A**. There is one rural-residence located adjacent the Site (6) and Photon is in the process of commencing consultation with this resident. Consultation will be undertaken with all stakeholders as described in Section 4.

There are six rural-residences located with 1km of the Site:

- Lot 53 DP 753238, located approximately 486m west of the Site (1)
- Lot 97 DP 753238, located approximately 755m north of the Site (2)
- Lot 2 DP 983890, located approximately 250m to the north of the Site (3)
- Lot 92 DP 753238, located approximately 240m north of the Site (4)
- Lot 51 DP 1082497, located approximately 420m to the east of the Site (5)
- Lot 90 DP 657805, located immediately north of the Site (6).

There are also several other properties within 2km of the Site that may be affected due to the flat nature of the landscape and the lack of vegetation screening:

- Lot 17 DP 753246, located approximately 1.9km north-west of the Site
- Lot 1 DP 963275, located approximately 1.8km east of the Site
- Lot 2 DP 842435, Located approximately 1.7km east of the Site
- Lot 50 DP 753238, located approximately 1.1km north of the Site
- Lot 17 DP 753238, located approximately 1.9km north-east of the Site.

Local topography is generally flat with a gentle slope towards the north-west of the site boundary. Highpoints within 10km of the Site include; Mount Duke (540m), Mount Arthur (525m) and Bushrangers Hill (406m). Mount Arthur is part of the Mount Arthur Reserve, located 5km west of the Site occupying an area of 2,123ha with dense native vegetation.

The closest major water course is the Macquarie River, which is located approximately 7.7km north of the Site. The creek (unnamed) running through the Site flows into Barney's Creek, approximately 2.5km north of Site. This creek (unnamed) is classified a first order stream, as it is located at the top of a catchment as a 'headwater' flow. Barney's creek, flows into Little River which is a major tributary of the Macquarie River. The head waters of Little River have been historically very saline, although the water quality of the creek running through the site may be slightly higher, due to potential flow through granite groundwater flow system. There are also several man-made agricultural dams in neighbouring plots.

The environment around the Site is predominantly cleared agricultural land. The dominant land use for Suntop comprises of grazing (55%) and cropping (21%). A region within the neighbouring eastern lots, of approximately 350ha has been identified as Karst landscape. A Karst landscape is characterised by the presence of underground cavern networks created from the dissolution of bedrock by surface water or groundwater. It is plausible that this underground network may intersect underneath the proposed Site.

2.4 Proposal Description

The Proposal would cover approximately 56% of the land available on the Site (refer **Appendix A**) and would consist of the following elements:

- 280 hectares of solar PV modules on mounting structures
- 138 central inverters located within the Site
- Underground cabling
- A transformer kiosk to connect to existing electrical infrastructure
- Two maintenance storage containers
- One Substation
- Cyclone security fencing with 24/7 surveillance cameras
- Maintenance and access tracks within the Site.

2.4.1 Construction

The construction phase of the Proposal is expected to take nine to twelve months and employ up to 100 people, using local labour and resources where possible.

It is anticipated that the solar farm would be constructed in 1ha stages – with up to 10 stages in construction at any one time.

Minor earthworks would be required for the preparation of the Site and in most cases a concrete slab would be required to support the ancillary infrastructure. Most of the auxiliary infrastructure would be pre-fabricated off-site, delivered and then assembled on-site. Further design of the auxiliary infrastructure would be outlined in the EIS.

The key infrastructure components and construction activities for the Proposal are shown in Table 2-2.

Table 2-2 Key Components of Proposal

Component	Details	Construction Activities	Image Reference
PV Panels (solar modules)	<p>Solar module consists of mounting system, the solar panels and cabling.</p> <p>Approximately 787,892 PV panels sized at approximately 2m x 1m with 72 cell panels. An indicative layout of the PV panels is shown in Appendix A.</p> <p>The static panel will be tilted at 25° pointing north.</p> <p>Support structures for mounting the PV panels will stand up to 3m high with steel posts as foundations. The mounting system using pile drivers.</p>	<p>Excavate and install posts (pile driven).</p> <p>Attach support structures to posts.</p> <p>Mount panels on support structure (crane mounted).</p>	Refer Figure 2-3
Electrical connections/inverters	<p>Wiring between PV panels and inverter systems.</p> <p>138 x 1.6MW Ingeteam CON40 inverters each 12.2m (l) x 2.4m (w) x 2.9m (h).</p>	<p>Install/connect electrical wiring.</p> <p>Footings installed for inverters and transformers, mount inverters and transformers on footings.</p> <p>Connect inverters.</p>	Refer Figure 2-4 and Figure 2-6
Collection circuits	Copper and Aluminium interconnection cabling.	Trenching, cable laying and backfill.	N/A
Transmission kiosk	<p>The kiosk will be situated in a well-drained area clear of obstructions and away from any watercourses.</p> <p>The exact location will be determined and assessed within the EIS.</p> <p>The transmission kiosk is expected to be 30m x 30m in size.</p> <p>The kiosk would connect to existing TransGrid infrastructure</p>	Kiosk foundations, cable laying.	N/A
Substation			

Component	Details	Construction Activities	Image Reference
Access works	Access tracks required for operations will be on undisturbed ground remaining between panel installations. These will be wide enough for maintenance vehicles to move through. The indicative layout is shown in Appendix A .		Refer to Appendix A
Maintenance	Two 40' shipping containers for storage of maintenance equipment.	Footings, install container.	N/A
Safety and Security	Security cyclone chain wire fencing bordering the entire Site. Fencing is expected to be between 2m to 2.4m high.	Excavate and form footings (concrete). Install posts and attach mesh.	N/A



Figure 2-3 Example of Solar PV Panels



Figure 2-4 Example Central Inverter



Figure 2-5 Example ground mounting arrangements



Figure 2-6 Example Transformer

2.4.2 Infrastructure Layout

PV infrastructure on Site will comprise of groups of PV panels located 3m above ground with a 10m set back from the Site boundaries. The PV infrastructure will be mounted on structures comprising galvanized steel posts driven 1.6m below ground using a pile driver (refer 5). Support structures would be joined to the steel posts and the PV modules would be fixed to the support structures. Electrical cabling would be attached beneath the modules and would connect the individual PV modules to each other. Inverters will be located centrally to groups of PV panels and groups of panels will be connected to each other by underground cables. The PV modules are in a fixed position facing north.

The final infrastructure layout is yet to be finalised however a preliminary layout plan is included in **Appendix A** and the Proposal will be contained solely within the Site which includes areas required for stockpiling and materials laydown during construction.

2.4.3 Power generation

Energy generated by each PV module would be transferred via cables to central inverters. Central inverters collect electricity from an area of panels, convert it from direct current (DC) to alternating current (AC). The energy is conveyed from the central inverter to the site transmission kiosk. The kiosk will be located onsite and will increase the voltage to a level that can be transmitted via upgraded TransGrid powerlines. The power generated would be transmitted approximately.

2.4.4 Transmission

The Proposal would require the upgrade of electrical infrastructure within an existing TransGrid easement. Currently, the 132kV TransGrid Transmission line runs from the eastern boundary of Lot 93 DP 753238, through the northern boundary of the Site, and exits through the western boundary of Lot 3 DP 506925 (Appendix A). The upgraded powerlines will run to the new 132 kV substation which will be installed on Site, on the northern-most end of the border between Lot 122 DP 753238 and Lot 90 DP 657805. Additional cabling will be required to connect the solar arrays to the new powerlines. Whether these powerlines will be underground or aerial has yet to be determined.

2.4.5 Access

Access to the Site will be via Suntop Road, which runs along the northern boundary of the Proposal and joins to Renshaw McGirr Way, ultimately intersecting with the Mitchell Highway (A32), 21km west of the Site. These roads would be the major transport routes for haulage and Site vehicles during construction and operation.

The Site will be secured by wire cyclone fencing and a locked gate off Suntop Road. The fencing is expected to be between 2 to 2.4m high.

During construction, traffic generated by the works would include construction worker vehicles and delivery vehicles. During the peak construction period, the traffic volume is expected to be up to 40 heavy vehicles mostly B-double trucks, and 50 light commercial vehicles travelling to site per day.

2.4.6 Operation

The Proposal would operate 24 hours a day, 7 days a week however this would not involve the presence of staff on-site or active operations. During operation, the PV panels would generate electricity which would be fed into the power grid via the substation.

Irregular maintenance activities will be undertaken during standard working hours (except in an emergency) and are expected to include:

- Panel cleaning
- Repairs or replacement of infrastructure, as required
- Mowing activities to control vegetation.

Minimal operational plant and equipment will be required for operation of the facility including ad hoc maintenance vehicles (Utility Vehicle Mazda BT-50 or similar) and other equipment associated with the activities outlined above.

The solar farm would generate limited noise during operations. Noise sources would include; maintenance activities with associated vehicles and equipment, and operational noise from the transformer. Maintenance activities would be undertaken during day light hours (except for emergencies).

There will be not be a permanent office building, no on-site amenities and no lighting during operation of the Proposal. The Site will be surrounded by Security cyclone chain wire fencing approximately 2m to 2.4m high with a secure gate on the northern end of the Site. Two shipping containers will be permanently located on a compacted hard stand on the Site and used for storage of maintenance equipment. The exact location will be determined and assessed within the EIS.

2.4.7 Decommissioning

The solar farm has an operational timeline of 25 years. After 25 years infrastructure would be updated for continued use or the plant will be permanently removed. Should the decision be made to remove the plant, then the Site would be returned as close as possible to its existing condition.

3. Proposal Justification and Need

3.1 Strategic Justification

Australia is a signatory to various international agreements, conventions and protocols. Some, including the United Nations Framework Convention on Climate Change, the Paris Agreement and the Kyoto Protocol, involve commitments requiring action relating to climate change and greenhouse gas emissions. Both the NSW and the Australian Government have developed renewable energy targets and strategies to meet these targets, reduce greenhouse gas emissions and provide reliable energy to the public through the acquisition of renewable energy certificates (REC) (DEE 2016).

3.1.1 The Australian Government's Renewable Energy Target (RET) scheme

In 2001, the Commonwealth Government introduced the Mandatory Renewable Energy Target (MRET) Scheme to increase the amount of renewable energy being used in Australia's electricity supply. A condition of the scheme is that energy retailers and businesses that use a large amount of energy must obtain a certain percentage of their energy from renewable sources.

Since January 2011 the RET scheme has been separated into two parts—the Small-scale Renewable Energy Scheme (SRES) and the Large-scale Renewable Energy Target (LRET). Energy Proposals supported under LRET include utility-scale solar plants, wind farms, hydro-electric power stations and geothermal (DEE 2016).

The Proposal has a maximum power output up to 260MW and would produce an estimated 2,277GWh per year of renewable electricity which would assist in meeting the LRET.

3.2 Alternatives to the Proposal

The Proposal did not consider alternative infrastructure or infrastructure layouts but did consider alternative locations and the option of not completing the project.

3.2.1 Alternative locations

Photon understands that the Proposal meets the definition of State Significant Development under the *State Environmental Planning Policy (State and Regional Development)* (refer to section 5.1.2). Due to the minimum requirements of this planning process a desktop environmental site analysis was undertaken by KMH Environmental/pitt&sherry in May 2017. The desktop assessment aimed to identify environmental aspects that may require additional, detailed and/or specialist assessment or have the potential impact upon the scope, construction or operation of the Proposal. The environmental site assessment assessed nine sites across NSW and was designed to complement and inform Photon's own commercial / financial / site analysis to identify a suitable location for the solar farm.

The current location was considered a preferred location due to:

- Minimal clearing of trees is required
- The rural environment with fewer neighbours overlooking the site leading to lower visual amenity impact
- The proximity to transmission lines and access to electricity grid
- Ease of access to and from the Mitchell Highway
- The topography of the site is relatively flat and requires minimal earthworks.

3.2.2 The 'do nothing' option

The consequences of not proceeding with the Proposal would be to forgo the benefits of the Proposal, resulting in:

- The loss of a source of renewable energy that would assist the Australian and NSW Government to reach their targets such as 20% renewable energy by 2020, *'attract renewable energy investment and Proposals, build community support for renewable energy, and attract and grow expertise in renewable energy technology'* (DPI 2013)
- The loss of cleaner energy and reduced greenhouse gas emission
- The loss of additional electricity generation and supply into the Australian grid
- Loss of social and economic benefits through the provision of direct and indirect employment opportunities locally and regionally during construction and operation of the solar farm.

The 'do nothing' option may avoid any potential environmental impacts associated with the proposal however, as outlined in Section 0 no significant environmental impacts have been identified. It is considered the benefits of the Proposal significantly outweigh any potential environmental impacts whilst contributing to ecologically sustainable development.

3.3 Proposal benefits

The Proposal would provide the following benefits:

- Produce renewable energy that does not produce greenhouse gases
- Assist in reducing the reliance on fossil fuels in Australia by providing a cleaner and sustainable substitute.
- Develop the solar power industry and supply chain in Australia
- Develop Australian intellectual property and know-how in solar power
- Assist with Australia's commitments under national and international agreements
- Generate local economic benefits by generating jobs, encouraging regional development and maximising the use of local contractors and equipment hire
- Some materials during construction will be sourced locally through liaison with local industry representatives however most of the materials will be procured from Sydney or Melbourne due to the technical nature of the technology.

4. Consultation

A Stakeholder and Community Engagement Plan will be prepared and implemented during preparation of the EIS. The plan will identify community, business and regulatory stakeholders and outline consultation activities to be undertaken.

The principal objectives and requirements of the consultation plan are to:

- Identify and engage with stakeholders (including government agencies) to notify them of the Proposal, the approvals process, and how they can engage with the Proponent
- Determine the communication tools and methodology for consultation
- Provide stakeholders with consistent and accurate information regarding the Proposal
- Inform nearby communities to raise awareness of the Proposal, especially those who may potentially be affected by the Proposal
- Provide directly affected stakeholders an opportunity to discuss the development and potential impacts
- Implement a system to effectively record, consider, manage and respond to stakeholder feedback
- Understand and address community concerns through consultation and the Environmental Impact Statement (EIS) process
- Anticipate any issues and communicate these to stakeholders as early as possible.

5. Statutory and Planning Framework

5.1 NSW Legislation

5.1.1 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) is the principal piece of legislation covering assessment and determination of development proposals in NSW. It aims to encourage the proper management, development and conservation of resources, environmental protection and ecologically sustainable development. The development assessment and approval system in NSW is set out in Parts 4 and 5 of the EP&A Act.

The Proposal would be assessed under Part 4 of the EP&A Act.

5.1.2 State Environmental Planning Policy (State and Regional Development) 2011

Under Schedule 1, Part 20 of the *State Environmental Planning Policy (State and Regional Development) 2011* electricity generating works with a capital investment value of more than \$30million or a capital investment of more than \$10million and located in an environmentally sensitive area of State significance are deemed State significant developments.

The solar farm has an estimated capital investment value greater than \$30 million and is therefore classified as ‘*State significant development*’ under Part 4 of the EP&A Act. An Environmental Impact Statement (EIS) must be prepared and submitted to Department of Planning and Environment (DP&E) for approval. The EIS is to be prepared in accordance with the SEARs issued by DP&E.

5.1.3 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to enable the efficient delivery of infrastructure across NSW. It offers to provide a consistent planning regime for infrastructure, ensuring greater flexibility in the location of infrastructure and service facilities. This policy requires the identification of an environmental assessment category into which different types of infrastructure and services development fall.

Clause 34(7) of the SEPP provides that development for the purpose of ‘*solar energy systems*’ may be carried out with consent on any land, except as prescribed by sub clause 34(8). The solar farm is located within a Primary production (RU1) zone and is permissible with consent under the ISEPP.

Clause 45 of the ISEPP will also apply as the Site intends to connect with existing transmission lines that traverse the boundary of the Site and as such has the potential to affect an electricity transmission line.

Clause 104 of ISEPP refers to traffic generating developments. Schedule 3 lists the types of developments that must be referred to Roads and Maritime Services (Roads and Maritime).

Clause 104 also applies to developments that have the capacity to accommodate 200 or more vehicles. Clause 104 does not apply as traffic generated is below the trigger and Schedule 3 does not include electricity generating works.

5.1.4 Wellington Local Environment Plan 2012

The Proposal is located within the Wellington LGA and is subject to the Wellington Local Environment Plan 2012 (Wellington LEP).

Under the Wellington LEP 2012 the Site is zoned as **Primary Production (RU1)**.

The objectives of the zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base
- To encourage diversity in primary industry enterprises and systems appropriate for the area
- To minimise the fragmentation and alienation of resource lands
- To minimise conflict between land uses within this zone and land uses within adjoining zones
- To provide for a range of tourism-related uses that support the agricultural industry or are compatible with agricultural uses.

The Proposal is generally compliant with these objectives as it:

- Can be considered a sustainable primary industry that extracts renewable energy (a natural resource)
- Is complementary to surrounding land uses
- Is highly reversible and will not impact the future productivity of the land.

Electricity generation is not listed among developments which are permitted consent for the zone however, under clause 34(7) of the ISEPP the Proposal is permissible with consent.

The Wellington LEP also prescribes the following relevant Additional Local Provisions;

Groundwater Vulnerability

The objectives of this clause are:

- To maintain the hydrological functions of key groundwater systems
- To protect vulnerable groundwater resources from depletion and contamination as a result of development.

The Proposal is generally compliant with these objects as construction is unlikely to intercept with groundwater and minimal further land clearing is required. The EIS would consider the potential for contamination risks.

Karst Topography Subsidence Risk

The objectives of this clause are to ensure that development in areas of subsidence risk from karst topography:

- Does not disturb the underlying geotechnical conditions of the land
- Is restricted on unsuitable land
- Does not endanger life or property.

The Proposal is compliant with these objectives as the Site is not located on Karst significant land. The adjacent eastern Lots have been classified as Karst significant land, and therefore the Proposal will further investigate as outlined in 6.2.4.

5.1.5 Other Relevant Legislation

Legislation	Relevance to Project
<i>Threatened Species Conservation Act 1995</i> (TSC Act) provides legal status for biota of conservation significance in NSW.	Biodiversity is addressed in section 6.2.1.
<i>Roads Act 1993</i> (Roads Act) provides for the classification of roads and for the declaration of the Roads and Maritime Services (Roads and Maritime) and other public authorities as roads authorities for both classified and unclassified roads. It also regulates the carrying out of various activities in, on and over public roads.	The Proposal does not involve works or activities in, on or over public roads therefore approval from the road authority for the works is not required. Consultation with Roads and Maritime will occur in accordance with Section 5.13.
<i>Protection of the Environment Operations Act 1997</i> (POEO Act) is administered by the Environmental Protection Authority and provides for a system of environmental protection licences for scheduled development work and activities, as well as the ability to issue environmental protection notices for pollution and waste management. Environmental offences are also described under the POEO Act.	The Proposal is not defined as a scheduled activity under this act; therefore, under section 48 of the POEO Act an Environment Protection Licence is not required.

Other NSW State legislation that may be relevant to the proposed Project includes the following:

- Contaminated Land Management Act 1997
- Fisheries Management Act 1994
- Heritage Act 1977
- National Parks and Wildlife Act 1974
- Native Title (New South Wales) Act 1994
- Native Vegetation Act 2003
- Noxious Weeds Act 1993
- Rural Fires Act 1997
- SEPP 33 – Hazardous and Offensive Development
- SEPP 44 – Koala Habitat Protection
- SEPP 55 – Remediation of land
- Waste Avoidance and Resource Recovery 2001
- Water Act 1912
- Water Management Act 2000.

The extent to which this legislation applies to the Proposal would be documented in the EIS.

5.2 Commonwealth Legislation

5.2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of the Environment (DoE) and provides a legal framework to protect and manage nationally important flora, fauna, ecological communities and heritage places defined as ‘*matters of national environmental significance*’ (MNES). An action that “*has, will have or is likely to have a significant impact on a matter of National Environmental Significance*” (MNES) may not be undertaken without prior approval from the Commonwealth Minister, as provided under Part 9 of the EPBC Act.

A referral must be made for actions that are likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World heritage properties
- National heritage places
- Wetlands of International importance
- Listed nationally threatened species and ecological communities
- Listed migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions including uranium mining
- Water resources in relation to coal seam gas or large mining development.

A search of the NSW Wildlife Atlas (26 July 2017) identified 3 listed threatened ecological communities and 3 listed threatened species within 10 km of the proposed project area.

A search of the EPBC Act Protected Matters (26 May 2017) identified 2 listed threatened ecological communities, 27 listed threatened species and 10 migratory species within 10km of the proposed project area. The EPBC Protected Matters search also identified 16 listed marine species and 29 invasive species.

The extent to which this legislation applies to the Proposal, and whether an EPBC referral is required, would be assessed in the flora and fauna impact assessment as part of the EIS.

Native Title Act 1993

The *Native Title Act 1993* recognises that Aboriginal people have rights and interests to land and waters that derives from their traditional laws and customs. Native title may be recognised in places where Indigenous people continue to follow their traditional laws and customs and have maintained a link with their traditional country. It can be negotiated through a Native Title Claim, an Indigenous Land Use Agreement (ILUA) or future act agreements.

The *Native Title Act 1993* administers processes relating to the recognition, protection and determination of native title and dealings with native title land.

A native title search was undertaken for the area potentially impacted by the proposed development in July 2017. The results identified there are no native title claims, aboriginal sites or places recorded or declared near the Project area.

6. Preliminary Environmental Assessment

6.1 Methodology

A broad preliminary risk analysis was carried out utilising desktop search results to identify key environmental issues for the Project.

Key issues were those identified as requiring further detailed or specialist assessment and investigation. It is likely that these issues may require specific Site management issues.

Other issues were those that are considered to require some further assessment but are likely to be managed by routine industry environmental management measures.

A detailed risk assessment would be conducted during preparation of the EIS.

6.2 Assessment of Key Issues

6.2.1 Biodiversity

Existing Environment

The Site is currently used for agriculture specifically cropping and as such the Site has been subject to substantial disturbance. Potential fauna habitat may be limited by the previous disturbance caused by agricultural use.

A review of aerial photographs and site history has identified that the Site has been predominantly cleared of over-storey vegetation for the farming of irrigated crops. Remaining vegetation is outlined in the table below.

Description	Location
Cluster of vegetation approximately 0.4ha	Lot 90 DP657805
Rows of sporadic mature trees	Western boundary of Lot 2 and 3 DP 506925 Southern boundary of Lot 1 and 2 DP 506925 Western and eastern boundaries of Lot 122 DP 753238 Eastern border of Lot 90 DP657805
LEP 'Biodiversity Region'	Along the edge of Suntop Road, located at the northern boundary of Lot 3 DP 506935, Lot 122 DP 753238 and Lot 90 DP 657805

Due to the number of exotic species found in this region, and previous land use, it is likely that the vegetation growing within the Site, are predominantly exotic species.

Nearby environmental features include Barneys Creek and Curra Creek, Mount Arthur Reserve, Mount Duke and Bushrangers Hill, all located within a 10km radius from the Proposal. There is one natural waterway (unnamed creek) that runs through the centre of the Site (from west to east). This creek is classified a first order stream, as it is located at the top of a catchment as a 'headwater' flow. It is therefore unlikely to harbour significant density of viable fish populations.

A search of the NSW Wildlife Atlas (26 July 2017) identified 3 listed threatened ecological communities and 3 listed threatened species within 10 km of the Site. A search of the EPBC Act Protected Matters (10 July 2017) identified 2 listed threatened ecological communities, 27 listed threatened species and 10 migratory species within 10km of the Site. The EPBC Protected Matters search also identified 16 listed marine species and 29 invasive species.

Threatened Ecological Communities

- White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland.
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.

Threatened Flora

- *Androcalva procumbens*
- *Eurasia arguta*
- Tarengo Leek Orchid (*Prasophyllum petilum*)
- A leek-orchid (*Prasophyllum sp. Wybong*)
- Small Purple-pea, Mountain Swainson-pea, (*Swainsona recta*)
- *Tylophora linearis*

Threatened Fauna

Birds

- Regent Honeyeater (*Anthochaera phrygia*)
- Australasian Bittern (*Botaurus poiciloptilus*)
- Curlew Sandpiper (*Calidris ferruginea*)
- Painted Honeyeater (*Grantiella picta*)
- Swift Parrot (*Lathamus discolor*)
- Malleefowl (*Leipoa ocellatea*)
- Eastern Curlew (*Numenius madagascariensis*)
- Superb Parrot (*Polytelis swainsonii*)
- Australian Painted Snipe (*Rostratula australis*)

Fish

- Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow (*Galaxias rostratus*)
- Trout Cod (*Maccullochella macquariensis*)
- Murray Cod (*Maccullochella peelii*)
- Macquarie Perch (*Macquaria australasica*)

Mammals

- Large-eared Pied Bat, Large Pied Bat (*Chalinolobus dwyeri*)
- Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (*Dasyurus maculatus maculatus*)
- Corben's Long-eared Bat, South-eastern Long-eared Bat (*Nyctophilus corbeni*)

- Greater Glider (*Petauroides Volans*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Koala (*Phascolarctos cinereus*)

Reptiles

- Pink-tailed Worm-lizard, Pink-tailed Legless Lizard (*Aprasia parapulchella*)
- Striped Legless Lizard (*Delma impar*)

The initial list of subject species above does not include ‘*migratory species*’ listed under the EPBC as many of these would likely be assessed as unlikely possible occurrences within the proposed site given the absence of significant stands of native vegetation. However, this would be assessed in the flora and fauna impact assessment as part of the EIS.

Potential Impacts

The following impacts upon biodiversity have been considered as having potential to occur during **construction** of the Proposal:

- Clearing, removal and disturbance of vegetation
- Clearing of habitat (such as food sources, foraging habitat, breeding habitat, tree hollows). Includes loss of habitat connectivity and nest sites
- Introduction and spread of invasive species and weeds
- Disturbance to fauna
- Disturbance to aquatic flora and fauna.

The following impacts upon flora and fauna have been considered as having potential to occur during **operation** of the Proposal:

- Microclimate impacts under the PV array (shading, water availability, temperature and humidity)
- Weed growth and spread
- Movement barrier and collision hazard created by perimeter fencing.

Further Assessment

A flora and fauna impact assessment (F&FIA) would be undertaken and would include:

- Detailed desktop review to identify threatened species, populations and ecological communities with potential to occur having regard to the NSW Biodiversity Offsets Policy for Major Projects and in accordance with the Framework for Biodiversity Assessment.
- Detailed flora and fauna surveys. This would include:
 - Targeted surveys of potentially occurring threatened species and endangered ecological communities.
 - Fauna habitat survey including paddock tree survey (identification of paddock tree species, hollows and nests) and water bird survey (dam) with descriptions of the fauna habitats occurring on-site.
 - Floristic survey of vegetation communities and descriptions of the vegetation communities occurring on-site.
 - Where appropriate habitat is identified anabat surveys and koala scat searches would be undertaken
- Investigate potential impacts of construction and operation of the Proposal on flora and fauna and provide project specific mitigation options.

- Recommendations regarding referral requirements under EPBC Act as required.

Preparation of assessments of significance for threatened species likely to occur on-site in accordance with Section 5A of the EP&A Act as required.

6.2.2 Noise

Existing Environment

The Site is located within an agricultural area on the outskirts of Wellington township in a rural setting. Background noise levels are characterised by agricultural activities, local traffic and some wildlife noise. Current noise generating activities on the Site include the operation of machinery relating to crop cultivating and harvest. As such, background noise levels are likely to be low.

There are six rural-residences located within 1km of the Site:

- Lot 53 DP 753238, located approximately 486m west of the Site (1)
- Lot 97 DP 753238, located approximately 755m north of the Site (2)
- Lot 2 DP 983890, located approximately 250m to the north of the Site (3)
- Lot 92 DP 753238, located approximately 240m north of the Site (4)
- Lot 51 DP 1082497, located approximately 420m to the east of the Site (5)
- Lot 90 DP 657805, located immediately north of the Site (6).

Potential Impacts

The following noise impacts have been considered as having potential to occur during **construction** of the Proposal:

- Noise from fixed and mobile plant and equipment which includes:
 - Telehandlers
 - Piledrivers
 - Cable trenching equipment
 - A mobile Crane
 - Various delivery and utility vehicles.
- Noise from increased traffic along Suntop Road from worker vehicles and delivery trucks during construction.

The noisiest activity during construction will be pile driving however noise impacts will be limited to the construction period which is estimated to take (approximately nine to twelve months) and will only be conducted during standard construction hours.

The following noise impacts have been considered as having potential to occur during **operation** of the Proposal:

- Noise from vehicle movements and some maintenance equipment use.

However due to the limited activities and short duration of these activities during operation of the Proposal there will be negligible to no noise impacts during operation.

Further assessment

A noise and vibration impact assessment would be undertaken and include:

- Assessment of construction noise in accordance with the Department of Environment, Climate Change NSW (DECC) Interim Construction Noise Guidelines (ICNG), July 2009
- Qualitative operational noise assessment
- Identification of appropriate mitigation measures.

6.2.3 Visual amenity and landscape character

Existing Environment

The Site is located within a rural area and surrounded by large fenced flat paddocks largely cleared of trees and sparsely distributed rural-residences. Local topography has a gentle slope from the eastern edge of Lot 90 DP 657805 (400m) to the western boundary of Lot 3 DP 506925 (380m). There are several elevated areas within a 10km radius including; Mount Duke (540m), Mount Arthur (525m) and Bushrangers Hill (406m).

Nearby environmental features include the Macquarie River located approximately 7.7km north of the Site and a number of associated tributaries. The area also contains a number of man-made agricultural dams.

The environment around the Site is predominantly cleared agricultural land. The dominant land use for Suntop comprises of grazing (55%) and cropping (21%).

There is limited major infrastructure within a 10km radius of the Site. Suntop Road (a sealed, single lane, two-way road) runs along the northern boundary of the Site and joins to Renshaw McGirr Way, ultimately intersecting with the Mitchell Highway (A32), 21km west of the Site. Electrical infrastructure consists of an existing TransGrid easement running from the eastern boundary of Lot 93 DP 753238, through the northern boundary of the site, and exiting through the western boundary of Lot 3 DP 506925 (Appendix A). Proposed substation will be installed on the northern edge of the Site, as displayed in Appendix A. There is a large dam north of the Site.

There are six (uninvolved) residences within 1km of the Site (listed below). Consultation will be undertaken as described in Section 4. The closest residential dwelling is immediately adjacent the proposal fronting Suntop Road (6).

These six rural-residential dwellings have potentially sensitive private viewpoints of the Site.

- Lot 90 DP 657805, located immediately to the north of the Site (6)
- Lot 53 DP 753238, located approximately 486m west of the Site (1)
- Lot 97 DP 753238, located approximately 755m north of the Site (2)
- Lot 2 DP 983890, located approximately 250m to the north of the Site (3)
- Lot 92 DP 753238, located approximately 240m north of the Site (4)
- Lot 51 DP 1082497, located approximately 420m to the east of the Site (5).

There are also several other properties within 2km of the Site that may be affected due to the flat nature of the landscape and the lack of vegetation screening:

- Lot 17 DP 753246, located approximately 1.9km north-west of the Site
- Lot 1 DP 963275, located approximately 1.8km east of the Site
- Lot 2 DP 842435, Located approximately 1.7km east of the Site

- Lot 50 DP 753238, located approximately 1.1km north of the Site
- Lot 17 DP 753238, located approximately 1.9km north-east of the Site.

The majority of these residences have some localised vegetation screening around their properties.

The desktop assessment also identified the public viewpoint of Suntop Road, located along the northern boundary of the site, as it is the nearest sealed, through road in the immediate area.

Potential Impacts

The proposal has the potential to impact upon visual amenity and landscape character during construction and operation.

The following visual impacts have been considered as having potential to occur during **construction** of the Proposal:

- Construction facilities, including portable structures and laydown areas
- Excavations and earthworks
- Machinery present, including a mobile crane
- Minor civil works to facilitate access
- Dust and reduced air quality from traffic on unsealed road.

These construction impacts would be temporary and limited to the length of the construction period. Therefore, they are not expected to have a long term visual impact.

During operation it is not proposed to operate any night lighting.

The following visual impacts have been considered as having potential to occur during operation of the Proposal:

- Visual impact to existing public and private viewpoints
- Sun-glint and glare and reflectivity.

Further assessment

A visual and landscape character impact assessment, would be prepared as part of the EIS to investigate potential visual impacts of the Proposal and mitigation options. The impact assessment would include:

- Impact to landscape character of the site and the surrounding area
- Visual impact to the surrounding viewpoints, both public and private
- Potential visual impacts of the development including glare and reflectivity.

6.2.4 Surface Water, Groundwater and Hydrology

Existing Environment

There is one natural waterway (unnamed creek) that runs through the centre of the Site (from west to east). This stream is classified a first order stream, as it is located at the top of a catchment as a 'headwater' flow. The nearest significant waterway is the Macquarie River, located approximately 7.7km north of the Site. Other natural water courses in the area include: Barneys Creek, Curra Creek, Gundy Creek, Bell River and Little River, which are all tributaries of the Macquarie River.

The Site contains man made waterways including 2 large dams, several smaller dams and irrigation channels. This site is not located in a Flood Planning Area according to the Wellington LEP (2012).

A search of the Department of Primary Industries (Office of Water) water monitoring network found two groundwater bores near the Proposal Site. The groundwater depth of this bore was 15m. A review of the Wellington LEP 2012 did not indicate that the Site is at risk of acid sulphate soils or salinity. The Site has also been classified as groundwater vulnerable under the Wellington LEP.

Potential Impacts

The proposal has the potential to impact upon surface water, groundwater and hydrology of the Site during construction and operation.

Construction of the Proposal may increase the transport of exposed sediment to the creek (unnamed) in a medium to heavy rainfall event. As vehicles will be travelling on unsealed roads, dust and erosion is likely if no mitigation methods are in place. Increased sedimentation may increase creek turbidity, and negatively impact growth of aquatic flora and fauna. As identified in section 6.2.1, this creek is unlikely to harbour significant density of viable fish populations. Due to the depth of groundwater in the area it is unlikely that construction would intercept groundwater. It is likely the surface water from the creek (unnamed) and the groundwater systems connect within the vicinity of the site. If surface water is contaminated, there is therefore a greater risk of flow on groundwater contamination.

The following surface water, groundwater and hydrology impacts have been considered as having potential to occur during **construction** of the Proposal:

- Accidental spill or discharge of chemicals or hydrocarbons, such as fuels and oils in vehicles and/or equipment. Potential to contaminate both surface water and groundwater table
- Erosion of soil and sedimentation through storm-water runoff and transport of eroded sediments to waterways (natural or man-made)
- Dewatering sediment laden water from excavations
- Flooding during construction also has the potential to result in erosion as well as water quality impacts from items such as soil, gross-pollutants, chemicals and hydrocarbons
- Onsite activities resulting in change to the groundwater table (use of groundwater for on-site water supply).

The following surface water, groundwater and hydrology impacts have been considered as having potential to occur during **operation** of the Proposal:

- Accidental spill or discharge of chemicals or hydrocarbons, such as fuels and oils in vehicles and/or equipment. Potential to contaminate both surface water and groundwater table.

Water demand for the project will be relatively small as the construction of the solar PV farm is not water intensive. If surface or groundwater extraction is required to meet the projects demand for water an

assessment of impacts to water will be included in the EIS. Construction and operation activities are not expected to impact on flooding behaviour in the area.

Further Assessment

Potential impacts to water quality (surface and groundwater) and hydrology on surrounding land, including impediments to the flow of water will be considered in the EIS. The impact assessment would include:

- A water quality assessment
- A detailed surface water and hydrology impact assessment
- A groundwater impact assessment.

The EIS would also identify erosion and sediment control measures that would be implemented to mitigate any impacts.

6.2.5 Traffic and Site Access

Existing Environment

Vehicle access to the Site will be via an unsealed private driveway off Suntop Road. From the desktop analysis, this access road may be shared with the adjacent property. There are no formal roads or car parking arrangements and pedestrian access is restricted. Access arrangements will be further investigated during the EIS.

Suntop Road (a sealed single lane, two-way Council owned road) runs along the northern boundary of the Site and joins to Renshaw McGirr Way, ultimately intersecting with the Mitchell Highway (A32), 21km west of the Site. These roads will be utilized for access to the Site and would be the major transport route for haulage and Site vehicles during construction and operation.

It is proposed that construction and operation traffic would pass through the town of Wellington to access Mitchell Highway (A32). The potential impacts of this access and haulage route would be identified in the EIS.

Potential Impacts

The proposal has the potential to impact upon traffic in the region during construction and operation.

The following traffic and access impacts have been considered as having potential to occur during **construction** of the Proposal:

- Increased traffic generation. During the peak construction period, traffic is expected to be 40 heavy vehicles mostly B-double trucks and 50 light commercial vehicles per day. This equates to a total of 90 movements a day
- Increased occurrence of road damage due to heavy vehicle use
- Increased noise and congestion impacting traffic flow within Wellington town centre
- Dust generation and movement from unsealed access road, to sealed Suntop Road and associated air and surface water quality issues.

The following traffic and access impacts have been considered as having potential to occur during **operation** of the Proposal:

- Increased traffic generation. Traffic generated by the operation of the solar farm would consist of worker's light vehicles and the occasional truck delivering maintenance materials.

At this stage, the Proposal does not involve works or activities in, on or over public roads therefore approval from the road authority for the works is not required.

Further Assessment

A Traffic Impact Assessment will be undertaken as part of the EIS including consultation with Roads and Maritime and Dubbo Regional Council regarding preferred access and haulage routes.

6.2.6 Soils and Geology

Existing Environment

Soils at the Site have been extensively disturbed by agricultural activities such as paddock levelling, repeated cultivation and construction of irrigation channels. The Wellington 1:100,000 Geological Series Sheet (Department of Planning and Environment (DPE)) has marked the area as 'Scv' – Canowindra volcanics (Garnetiferous quartz-feldspar-cordierite porphyritic lava, tuff, ashtone, ignimbrite). A search of the Department of Primary Industries (Office of Water) water monitoring network found two groundwater bores near the Proposal Site (1;2). The Geologists Log revealed a shallow to medium topsoil thickness (0m-0.5m; 0m-1m), a clay B horizon (0.5m – 18m; 1m – 3m) and a granite bedrock, with an intermediate weathered profile between hard granite and clay B horizon (18m – 30m; 3m – 25m).

There is one natural waterway (unnamed creek) that runs through the centre of the Site (from west to east). This stream is classified a first order stream, as it is located at the top of a catchment as a 'headwater' flow. A review of the Wellington LEP 2012 did not indicate that the Site is at risk of acid sulphate soils or salinity.

A region within the neighbouring eastern lots, of approximately 350ha has been identified as Karst landscape. A Karst landscape is characterised by the presence of underground cavern networks created from the dissolution of bedrock by surface water or groundwater. It is plausible that this underground network may intersect underneath the proposed Site.

Potential Impacts

The proposal has the potential to impact upon soils and geology in the region during construction and operation.

The following soil and geology impacts have been considered as having potential to occur during **construction** of the Proposal:

- Minor excavations and vegetation removal may cause: soil erosion and sedimentation (including potential for sediment laden run-off)
- Vehicle movement may cause soil compaction, or disturbance and dispersion of soil including dust generation
- Karst subsidence occurring causing land slope increase, infrastructure damage and/or sink holes.

The following soil and geology impacts have been considered as having potential to occur during **operation** of the Proposal:

- There will be minimal operational impacts on the soil, as vehicle use will be restricted to single utility vehicle visiting site at irregular maintenance intervals
- Karst subsidence occurring causing land slope increase, infrastructure damage and/or sink holes.

The land associated with the Site has not been identified as Karst Landscape. Potential for neighbouring Karst subsidence is therefore unlikely as a result of Proposal construction, as ground penetration will be restricted to depths of 1.6m for installation of galvanized steel posts using a pile driver.

Dust and sedimentation resulting from vehicle movement across unsealed roads, could be mitigated through sealing the site access road as well as an Erosion and Sediment Control Plan for the site.

Further Assessment

An Erosion and Sediment (ERSED) Control Plan will be prepared and implemented as part of the CEMP. ERSED controls (e.g. silt curtains, sediment fences, booms etc.) will be designed, installed and maintained in accordance with Managing Urban Stormwater: soils and construction 4th Edition, (*Landcom, 2004*), aka the '*Blue Book*'.

A Geotechnical assessment will be performed on site to ensure Karst landscape does not encroach on to land designated for the Proposal construction.

6.3 Other Environmental Issues

Issue	Existing Environment	Potential Impacts	Mitigation Measures
Planning, Land Use and Property	<p>The Site is contained within the Wellington LGA where the dominant land use is agriculture, forestry and fishing (48% in 2011) (ABS, 2011). The Site is currently used for cultivating irrigated crops. There are limited patches of vegetation, however most plant communities have been disturbed due to the altered water regimes and physical disturbance of soil associated with cropping activities. The Site has several man-made drainage channels.</p>	<p>The Proposal will alter the land use of the Site from agricultural to electricity generating for the duration of the project life cycle. However, agriculture will continue on portions of the Site not included in the development footprint.</p> <p>Although the Proposal has the potential to impact on agricultural use of the Site during construction and operation, the relatively small loss of productive land at a regional scale is not considered likely to have a significant impact on the overall agricultural productivity of the region.</p> <p>The solar farm would be decommissioned at the end of its operational life, removing all above ground infrastructure and returning the Site to its original use as a Primary Production area.</p> <p>Planning, land use and property impacts and risk would be assessed in the EIS.</p>	<p>The EIS will assess the compatibility of the proposed land use with existing and adjacent land uses in the area.</p>
Air quality	<p>The air quality in the study area is expected to be fair and typical of rural settings in NSW with low population density with no major industrial pollution sources.</p> <p>Existing sources of air pollution are expected to include vehicle emissions, dust from agricultural practices and smoke from post-harvest burnings.</p>	<p>The construction of the Proposal is not anticipated to have a significant impact on air quality, and would mostly be related to dust during construction from activities such as:</p> <ul style="list-style-type: none"> • Movement of construction traffic on unsealed roads within the Site. • Vegetation removal. 	<p>The mitigation measures would require a CEMP be prepared to manage air quality impacts during the construction phase.</p> <p>Dust and sedimentation resulting from vehicle movement across unsealed roads, could be mitigated through</p>

Issue	Existing Environment	Potential Impacts	Mitigation Measures
	<p>During colder months, solid fuel heating may result in a localised reduction in air quality, particularly if temperature inversions operate overnight.</p>	<ul style="list-style-type: none"> Excavations for cabling. <p>Air quality may be temporarily impacted by exhaust emissions from increased numbers of vehicles in the area during construction.</p> <p>No impacts to air quality are anticipated during operation.</p> <p>Air quality impacts and risk would be assessed in the EIS.</p>	<p>sealing at least the site access road. This option should be assessed through the Erosion and Sediment Control Plan.</p>
Non-Aboriginal Heritage	<p>A search of the NSW Heritage Register on 27 July 2017 for the Wellington LGA identified six items listed under the NSW Heritage Act; Blacks Camp, John Fowler 7nhp Steam Road Locomotive, Nubrygyn Inn and Cemetery, Stuart Town Railway Station Group, Wellington Convict and Mission Site – Maynggu Ganai and Wellington Post Office. The closest local heritage item is the Wellington Post Office, approximately 19.4km east of the Site.</p> <p>The search also had 158 items listed under the Wellington LEP – Environmental heritage. The closest local heritage item is the ‘Road Formations (Three Eras), located at 737 Renshaw McGirr Way (“Elysian Farm”), 10.3km east of the Proposal.</p>	<p>Given the distance of heritage items from the Site there is a low risk of impact to heritage items.</p> <p>Unexpected or unidentified non-Aboriginal heritage items may be uncovered during the construction of the Proposal however this is considered low risk given the Sites current level of disturbance.</p> <p>The Proposal is unlikely to harm any known non-Aboriginal site or item. No further archaeological survey or testing is proposed.</p> <p>Should the site inspection for the EIS identify any old structures or items that would potentially have historic significance this will be reassessed.</p> <p>Non-Aboriginal heritage impacts and risk would be assessed in the EIS.</p>	<p>The mitigation measures would require an unexpected finds procedure be prepared as part of the Construction Environmental Management Plan (CEMP) to manage potential heritage finds during the construction phase.</p> <p>In the event of an item of heritage significance being uncovered at the Site after works commence, the NSW Heritage Division should be contacted prior to further work being undertaken at the Site.</p> <p>Works would not recommence in the area of the find until written approval is provided by a heritage consultant or archaeologist.</p>
Aboriginal heritage	<p>A search of the Office of Environment and Heritage’s AHIMS database on 26 July 2017 indicated that there are no registered sites within 10km of the proposed works.</p>	<p>There is a low risk of impact to Aboriginal heritage items, as no registered sites have been recognised within a 10km radius of proposed works.</p>	<p>A due diligence assessment will be completed in accordance with the <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in</i></p>

Issue	Existing Environment	Potential Impacts	Mitigation Measures
	<p>Additionally, there are no landscape features that are likely to indicate the presence of Aboriginal objects within 200m of the Site.</p>	<p>Unexpected or unidentified Aboriginal heritage items may be uncovered during the construction of the Proposal however this is considered low risk given the Sites current level of disturbance.</p>	<p><i>New South Wales</i> (ECCW 2010).</p> <p>The mitigation measures would require an unexpected finds procedure be prepared as part of the CEMP to manage potential heritage finds during the construction phase.</p> <p>In the event of an item of heritage significance being uncovered at the Site after works commence, the NSW Office of Environment and Heritage (OEH) should be contacted prior to further work being undertaken at the Site.</p> <p>Works would not recommence in the area of the find until written approval is provided by NSW OEH.</p> <p>If skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and OEH contacted.</p>
Contaminated Land	<p>A search of the NSW Environmental Protection Authority (NSW EPA) contaminated land records was undertaken on 1 June 2017. The results of the search illustrated that there are no records under Section 58 of the Contaminated Land Management Act 1997 of</p>	<p>There is potential that contaminants may be uncovered during excavation activities at the Site.</p> <p>There would remain a minor risk of soil contamination in the event of a chemical spill (e.g. fuels) during construction and operation.</p>	<p>A CEMP will be prepared to include an unexpected finds procedure for any unexpected contamination identified during site construction.</p>

Issue	Existing Environment	Potential Impacts	Mitigation Measures
	<p>contaminated sites within 1km of the Site.</p> <p>There is potential for contamination to be present on site associated with former and current agricultural activities (e.g. pesticides or fuel spills).</p>	<p>Risk associated with contamination at the Site is considered to be low and therefore no detailed investigation is likely to be required within the EIS.</p> <p>Contaminated land impacts and risk would be assessed in the EIS.</p>	
Socio economic	<p>The Proposal is in the Wellington LGA which has a population of 8,969 people (ABS, 2011) and covers an area of 4,113 square kilometres. The main town and rural centre is Wellington with a population of 4,540. Wellington is a tourist destination, due to its close proximity to the Mount Arthur Reserve and Wellington Caves. Wellington has now merged with Dubbo City Council to cover an area of 7,536 square kilometres.</p> <p>The unemployment rate is approximately 8.7%, compared to the national rate of 5.6%. The main industry for employment in the Wellington district is agriculture, forestry and fishing (48 per cent in 2011), construction (8 per cent), rental (5 per cent) and Transport, postal and Warehousing (5 per cent) (ABS 2011). The Proposal area is currently used for agriculture.</p>	<p>The Proposal would reduce the availability of agricultural land but would generate economic benefits during construction and operation, including local employment opportunities.</p> <p>The potential adverse social impacts associated with the Proposal relate to amenity aspects including noise, air quality and traffic during construction and visual amenity during operation.</p> <p>The potential for other adverse social impacts are limited as:</p> <ul style="list-style-type: none"> • The PV panels are relatively close to the ground (3m). • The PV panels will absorb light rather than reflect it, reducing the visual impacts <p>The EIS would assess potential social and economic impacts of the Proposal.</p>	<p>Employment opportunities for local sub-contractors should be maximised where possible.</p>
<p>Bushfire Risk / Hazards /</p> <p>Electromagnetic Interference</p>	<p>The Site has been predominantly cleared for agriculture and currently grows crops.</p> <p>A search of the Rural Fire Service (RFS) online search</p>	<p>The Proposal is unlikely to be affected by bushfire, or pose a significant bushfire risk.</p> <p>Activities associated with construction of the Proposal</p>	<p>All infrastructure would be installed in accordance with AS 3000:2007 Electrical installations.</p>

Issue	Existing Environment	Potential Impacts	Mitigation Measures
	<p>tool on 30 June 2017 did not identify the land as fire prone (RFS 2017).</p> <p>A review of the Wellington LEP 2012 did not identify any fire prone land associated with the Proposal.</p> <p>The frequency of fire on the Site and surrounding area is unknown.</p>	<p>that may cause or increase the risk of bush fire include:</p> <ul style="list-style-type: none"> • Site preparation activities such as mowing, slashing and use of other petrol-powered tools. • Operating a petrol, LPG or diesel-powered motor vehicle over land containing combustible material. • Operating plant fitted with power hydraulics on land containing combustible material. • Storage of fuel. • Bushfire impacts and risk would be assessed in the EIS. 	<p>Safe clearance distances would be defined and maintained.</p> <p>Assessment against the International Commission on Non – Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to time-varying Electric, Magnetic and electromagnetic fields.</p>
Waste Management	<p>The generation of waste currently on the site would be consistent with ‘typical’ agricultural activities.</p>	<p>The Proposal would generate several waste streams and utilise a variety of materials during the construction phase these include:</p> <ul style="list-style-type: none"> • Green waste. • Excavated material from localised cut and fill and trenching (although this is proposed to be used as backfill). • Packaging from transport of PV panels including wood/plastic pallets, cable drums, plastic wrapping, straps, paper and cardboard. • General rubbish including domestic waste from construction workers. • Biological waste (sewage) from construction amenities. <p>Operational waste</p> <ul style="list-style-type: none"> • Repair, replacement or removal of infrastructure 	<p>A Waste Management Plan would be incorporated into the CEMP, applying the principles to avoid, re-use and recycle to minimise wastes.</p> <p>All waste will be disposed by a licensed contractor to an appropriately licenced facility.</p> <p>All records demonstrating lawful disposal of waste are required to be kept for at least six years.</p>

Issue	Existing Environment	Potential Impacts	Mitigation Measures
		<p>components (such as PV module, inverters and electrical cabling).</p> <ul style="list-style-type: none"> • Green waste from mowing activities. 	
<p>Utilities (Electricity network)</p>	<p>TransGrid manages and operates the high voltage electricity transmission network in NSW. TransGrid has restrictions on development within powerline easements.</p> <p>TransGrid guidelines state that activities and encroachments are prohibited within a transmission line easement, including 'the installation of fixed plant or equipment', and 'the placing of obstructions within 20 metres of any part of a transmission line structure or supporting guy wire'. Roads or tracks within 10 metres of the centre-line of a transmission line 132kV are prohibited although roads that cross the transmission line as a thoroughfare may be permitted.</p> <p>Currently, the 132kV TransGrid Transmission line runs from the eastern boundary of Lot 93 DP 753238, through the northern boundary of the Site, and exits through the western boundary of Lot 3 DP 506925 (Appendix A). There will be a new 132 kV substation that will be installed on Site, on the northern-most end of the border between Lot 122 DP 753238 and Lot 90 DP 657805</p>	<p>The proposed works would involve works adjacent to these utilities. The Proposal will need to connect to the TransGrid electricity network.</p> <p>The EIS would assess potential impacts of the Proposal on utilities.</p>	<p>Consultation will occur with TransGrid as part of the EIS.</p>

6.4 Cumulative Impacts

6.4.1 Other Projects and developments

Cumulative impacts, for the purpose of this assessment, relate to the combined potential effects of different impact areas of the Proposal (i.e. construction traffic combined with visual impact) as well as the potential interaction with other Proposals in the local area (e.g. the combined effects of adjacent Proposals, during construction, operation and decommissioning).

An assessment of cumulative impacts in the EIS will include a review of the Department of Planning's Major Projects Register (July 2017) and a review of the Wellington Shire Councils development applications tracker.

6.4.2 Further Assessment

Potential cumulative impacts will be considered in the EIS via a Cumulative Impact Assessment. The assessment would include:

- Combined potential effects of different impact areas of the Proposal
- Potential interaction with other Proposals in the local area
- Identification of recommended mitigation measures to minimise any potential impacts.

7. Summary of proposed EIS scope

7.1 Proposed EIS Scope for Key Issues

Table 7-1 provides a summary of the proposed EIS assessment scope for key environmental issues. This scope would be refined (if necessary) following receipt of the SEARs for the project.

Table 7-1 Proposed EIS Scope for Key Issues

Issue	Proposed Environmental Impact Statement Scope
Biodiversity	<p>A flora and fauna impact assessment (F&FIA) would be undertaken and would include:</p> <ul style="list-style-type: none"> Detailed desktop review to identify threatened species, populations and ecological communities with potential to occur Detailed flora and fauna surveys. This would include: <ul style="list-style-type: none"> Targeted surveys of potentially occurring threatened species and endangered ecological communities Fauna habitat survey including paddock tree survey (identification of paddock tree species, hollows and nests) and water bird survey (dam) with descriptions of the fauna habitats occurring on-site Floristic survey of vegetation communities and descriptions of the vegetation communities occurring on-site Where appropriate habitat is identified anabat surveys and koala scat searches would be undertaken. Investigate potential impacts of construction and operation of the Proposal on flora and fauna and provide project specific mitigation options Recommendations regarding referral requirements under EPBC Act as required Preparation of assessments of significance for threatened species likely to occur on-site in accordance with Section 5A of the EP&A Act as required.
Noise	<p>A noise and vibration impact assessment would be undertaken and include:</p> <ul style="list-style-type: none"> Assessment of construction noise in accordance with the Department of Environment, Climate Change NSW (DECC) Interim Construction Noise Guidelines (ICNG), July 2009 Qualitative operational noise assessment Identification of appropriate mitigation measures.
Visual amenity and landscape character	<p>A visual and landscape character impact assessment, would be prepared as part of the EIS to investigate potential visual impacts of the Proposal and mitigation options. The impact assessment would include:</p> <ul style="list-style-type: none"> Impact to landscape character of the site and the surrounding area Visual impact to the surrounding viewpoints, both public and private.

Issue	Proposed Environmental Impact Statement Scope
Surface Water, Groundwater and Hydrology	<p>Potential impacts to water quality and flooding on surrounding land, including impediments to the flow of water will be considered in the EIS. The impact assessment would include:</p> <ul style="list-style-type: none"> • A water quality assessment • A detailed surface water and hydrology impact assessment • A groundwater impact assessment.
Traffic and Site Access	<p>A Traffic Impact Assessment will be undertaken as part of the EIS. A traffic management plan will need to be undertaken as part of a Construction Environmental Management Plan.</p>
Soils & Geology	<p>An Erosion and Sediment (ERSED) Control Plan will be prepared and implemented as part of the CEMP. ERSED controls (e.g. silt curtains, sediment fences, booms etc.) will be designed, installed and maintained in accordance with Managing Urban Stormwater: soils and construction 4th Edition, (<i>Landcom, 2004</i>), aka the '<i>Blue Book</i>'.</p> <p>A Geotechnical assessment will be performed on site to ensure Karst landscape does not encroach on to land designated for the Proposal construction.</p>

7.2 Proposed EIS Scope for Other Environmental Issues

Table 7-2 provides a summary of the proposed EIS assessment scope for other environmental issues. This scope would be refined (if necessary) following receipt of the SEARs for the project.

Table 7-2 Proposed EIS Scope for Other Issues

Issue	Proposed Environmental Impact Statement Scope
Planning, Land Use and Property	The EIS will assess the compatibility of the proposed land use with existing and adjacent land uses in the area.
Air	The mitigation measures would require a CEMP be prepared to manage air quality impacts during the construction phase.
Non-Aboriginal Heritage	<p>The mitigation measures would require an unexpected finds procedure be prepared as part of the CEMP to manage potential heritage finds during the construction phase. In the event of an item of heritage significance being uncovered at the Site after works commence, the NSW Heritage Division should be contacted prior to further work being undertaken at the Site.</p> <p>Do not recommence works in the area of the find until written approval is provided by a heritage consultant or archaeologist.</p>
Aboriginal Heritage	<p>The mitigation measures would require an unexpected finds procedure be prepared as part of the CEMP to manage potential heritage finds during the construction phase.</p> <p>In the event of an item of heritage significance being uncovered at the Site after works commence, the NSW Office of Environment and Heritage (OEH) should be contacted prior to further work being undertaken at the Site.</p> <p>Works are not to recommence in the area of the find until written approval is provided by NSW OEH.</p> <p>If skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and OEH contacted.</p>
Contaminated Land	A CEMP will be prepared to include an unexpected finds procedure for any unexpected contamination identified during site construction.
Socio-economic	Employment opportunities for local sub-contractors should be maximised where possible
Bushfire / hazards	<p>All infrastructure would be installed in accordance with AS 3000:2007 Electrical installations.</p> <p>Safe clearance distances would be defined and maintained.</p>
Waste Management	<p>A Waste Management Plan would be incorporated into the CEMP, applying the principles to avoid, re-use and recycle to minimise wastes.</p> <p>All waste will be disposed by a licensed contractor to an appropriately licenced facility.</p> <p>All records demonstrating lawful disposal of waste are required to be kept for at least six years.</p>

Issue	Proposed Environmental Impact Statement Scope
Utilities	Consultation will occur with TransGrid as part of the EIS.
Cumulative Impacts	<p>Potential cumulative impacts will be considered in the EIS via a cumulative Impact Assessment. The assessment would include:</p> <ul style="list-style-type: none"> • An assessment of spatial and temporal environmental effects resulting from the above projects • Identification of recommended mitigation measures to minimise any potential impacts, where possible.

8. Conclusion

Photon Energy proposes to construct and operate a 260 MW solar farm using photovoltaic technology at 909 Suntop Road, Suntop, NSW, 2820. The proposed Site is approximately 502ha and covers several lots however the initial design for the solar farm is 280ha. The remaining land will retain its existing agricultural use.

The proposed solar farm at Suntop has an estimated capital investment value of \$286 million. This exceeds the \$30 million limit and is therefore classified as ‘*State significant development*’ under Part 4 of the EP&A Act. An Environmental Impact Statement (EIS) must be prepared and submitted to Department of Planning and Environment (DP&E) for approval. The EIS is to be prepared in accordance with the SEARs issued by Department of Planning and Environment (DP&E).

The project components, location and design may be subject to further changes as part of the ongoing design development and community consultation and clarifications may be made during the EIS process.

The following have been identified as key environmental aspects:

- Biodiversity
- Noise
- Visual amenity and landscape character
- Surface Water, Groundwater and Hydrology
- Traffic and Site Access
- Soils and Geology.

A PEA of the project’s potential impact has confirmed that the above aspects have the potential to result in impact to the environment (without the adoption of adequate environmental mitigation measures). Detailed assessment of these issues, and other potential environmental issues, would be undertaken as part of an EIS.

Following the receipt of the SEARs an EIS would be prepared and publicly exhibited, in accordance with the requirements of Part 4.1 of the EP&A Act. The EIS would include:

- A full description of the development, including its components and construction activities (including ancillary components and activities if required)
- A statement of the objectives of the project
- A summary of the strategic need for the project with regard to its critical State significance and relevant State Government policy
- An analysis of any feasible alternatives to the project
- A description of feasible options within the project.
- A description of how alternatives to and options within the project were analysed to inform the selection of the preferred alternative/option
- A concise description of the general biophysical and socio-economic environment that is likely to be impacted by the project (including offsite impacts)
- A demonstration of how the project design has been developed to avoid or minimise likely adverse impacts
- The identification and assessment of key issues
- A statement of the outcome(s) the proponent would achieve for each key issue

- Consideration of the interactions between measures proposed to avoid or minimise impact(s), between impacts themselves and between measures and impacts
- An assessment of the cumulative impacts of the project taking into account other projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed; and
- Statutory context of the project as a whole.

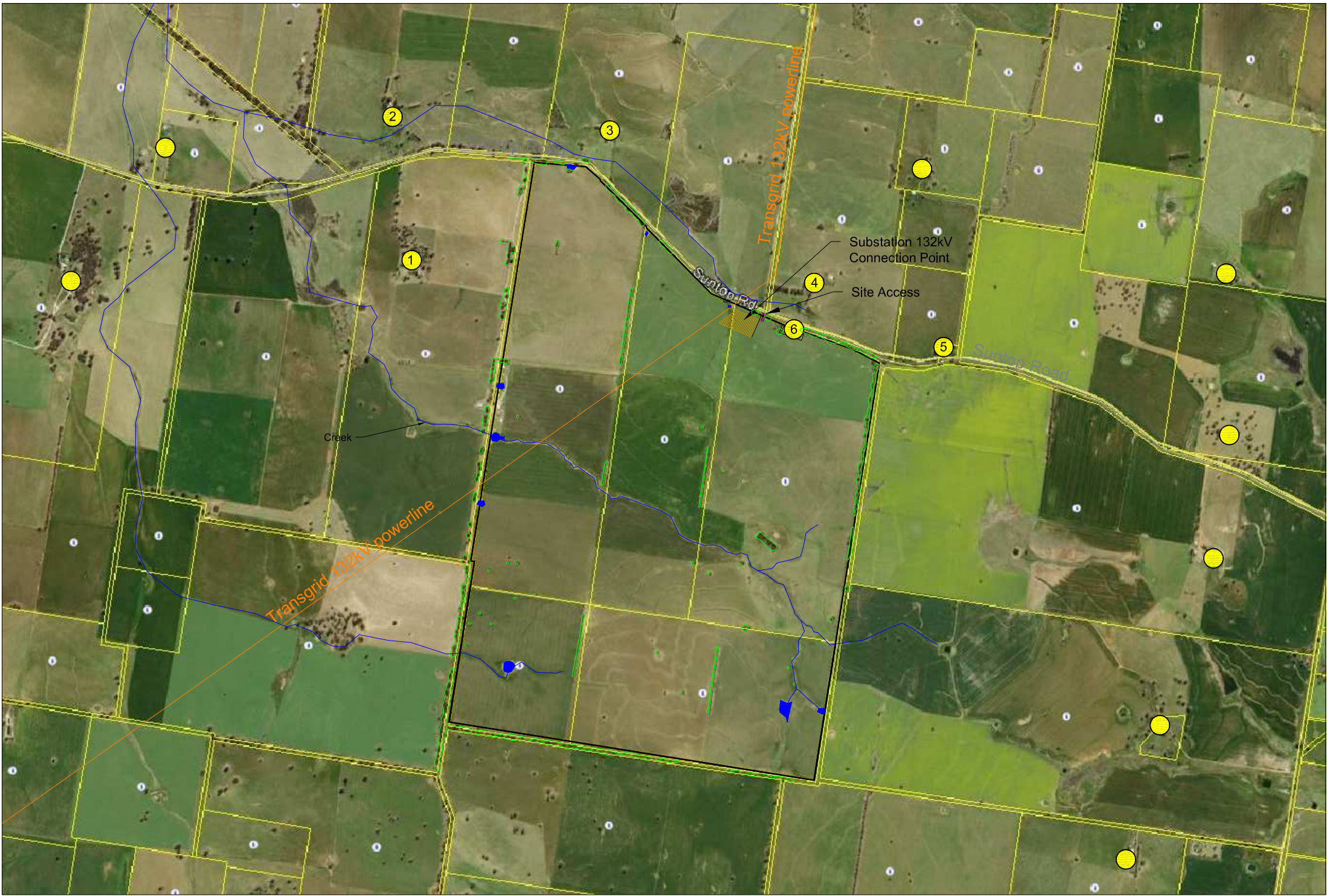
9. References

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Appendix A

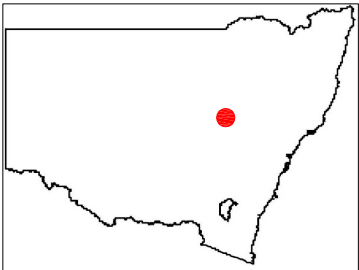
Proposal layout

SUNTOP - PHOTOVOLTAIC SYSTEM



- Area assessed under the PEA
- Road
- Proposed access
- Vegetation
- Dams and creeks
- Transmission powerline
- Proposed Substation

(X) Sensitive receiver within 1km of the solar farm footprint.
Note: Additional receivers within 2km of the solar farm footprint have been identified in section 2.3 of the PEA.



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Project
SUNTOP
PHOTOVOLTAIC
SYSTEM

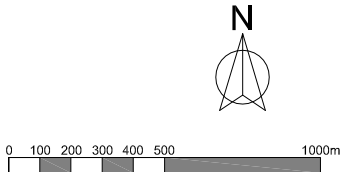
Part
System Layout

Drawing Title
Constraints Map

Drawing No.
PEA-17-192-420

Rev
A2

Preliminary plan only. Not for production.
Confidential Photon Energy use only.



Appendix B

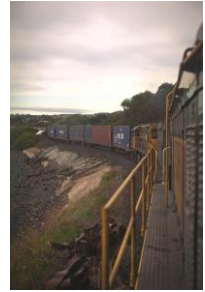
Location of Proposed Site



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