PHOTON ENERGY

WUMBULGAL SOLAR FARM

DIRECTOR GENERAL REQUIREMENTS FOR

STATE SIGNIFICANT DEVELOPMENT

PEA-15-115-2 **DATE: 18TH NOVEMBER 2015**

Suite 204, 55 Grafton Street
Bondi Junction NSW 2022. Australia
www.photonenergy.com.au
T: +61 2 8021 3383

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1. EXECUTIVE SUMMARY

Photon Energy is proposing the development of a large scale solar farm using photovoltaic technology, located adjacent to the Western Riverina Intermodal Freight Terminal (WRIFT) in Wumbulgal. The proposed solar farm will have a capacity of 100MW and will supply the energy back into the Transgrid network and the adjacent WRIFT site.

This document provides supporting documentation to the online application including information on the site location and the project description.

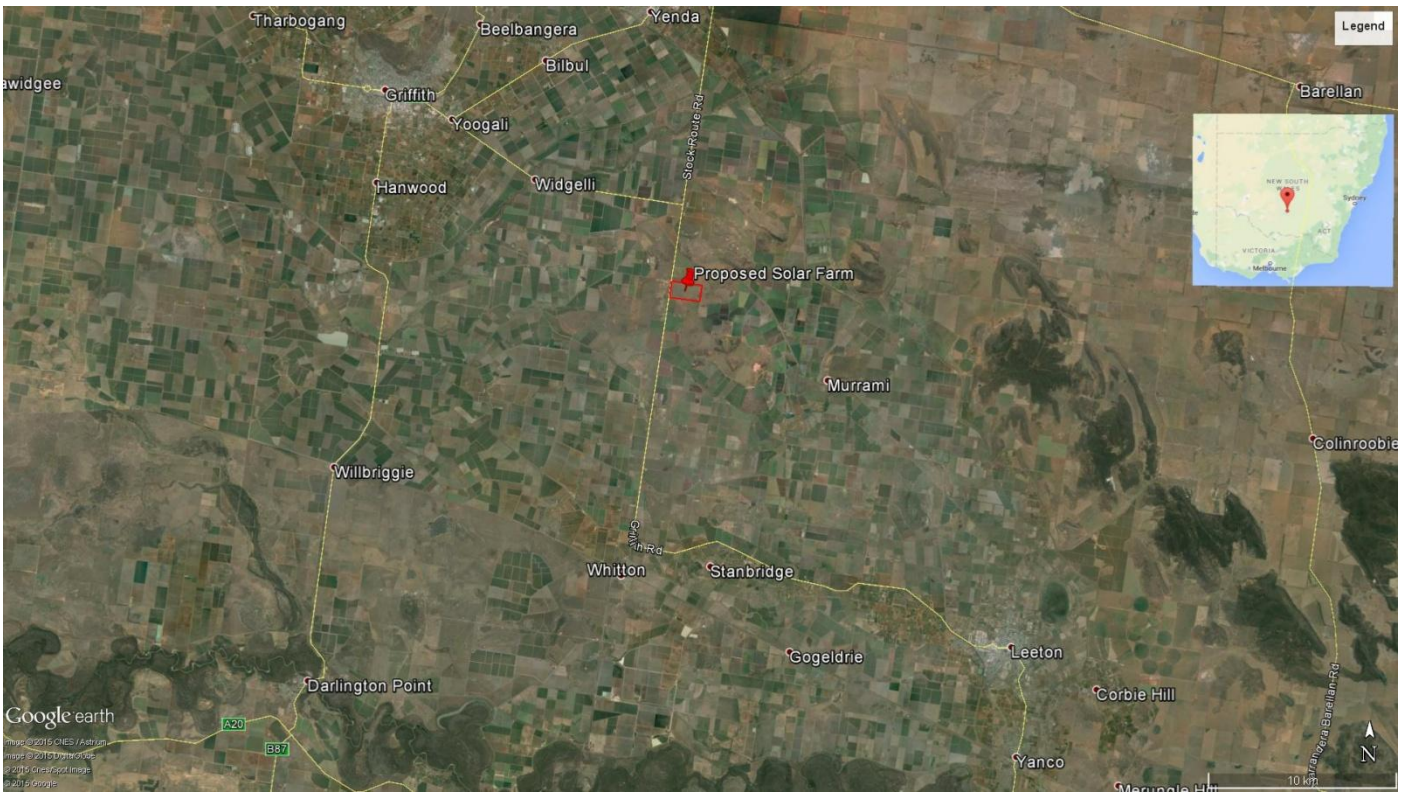
2. SITE LOCATION

LOCATION

The proposed solar farm site is located across two lots (Lot 80 & 81 DP 751679) Griffith Road, Wumbulgal and is directly adjacent to the Western Riverina Intermodal Freight Terminal (WRIFT) and is utilising currently unused marginal agricultural land. The site is under the Leeton Shire Council region and is approximately 36kms from the Leeton town centre and 22kms from the Griffith town centre.

This site is ideal as it does not have any irrigation or waterways, and therefore does not occupy any potential crop sites. It is also directly adjacent to a TransGrid power transmission line on Griffith Road. A TransGrid connection point will be installed to allow for the connection of the solar power plant and the WRIFT site.

Image 2.1 Site Location



3. SITE DESCRIPTION

The Wumbulgal site is ideally located in close proximity to the TransGrid network and the WRIFT site, providing both connection and distribution capabilities from the solar farm. The site is approximately 140 ha and has no irrigation channels within the site. The land is relatively flat with trees sparsely located throughout and is marginal for farming and agriculture hence is fit for the proposed solar farm. Photon Energy is currently working with the local Riverina Local Land Services to assess the clearing of the vegetation and ensuring that it conforms to the Native Vegetation Act.

The site is accessible via Griffith Road and is not located near any residential properties. Adjacent to the site is the WRIFT site to the north, which will benefit from the solar farm through lower grid connection and energy costs.

The land on the southern, western and eastern side of the proposed site consists of sparsely farmed low grade marginal agricultural land classed as RU1, similar to the selected site. The land is relatively flat and outside of the irrigation zone.

A TransGrid connection point will be installed on the site to allow for connection of the solar farm as well as power connection to the WRIFT site.

The proposed solar farm will cover the entire 140ha of land available.

Image 3.1 Site Layout & Site Utilisation

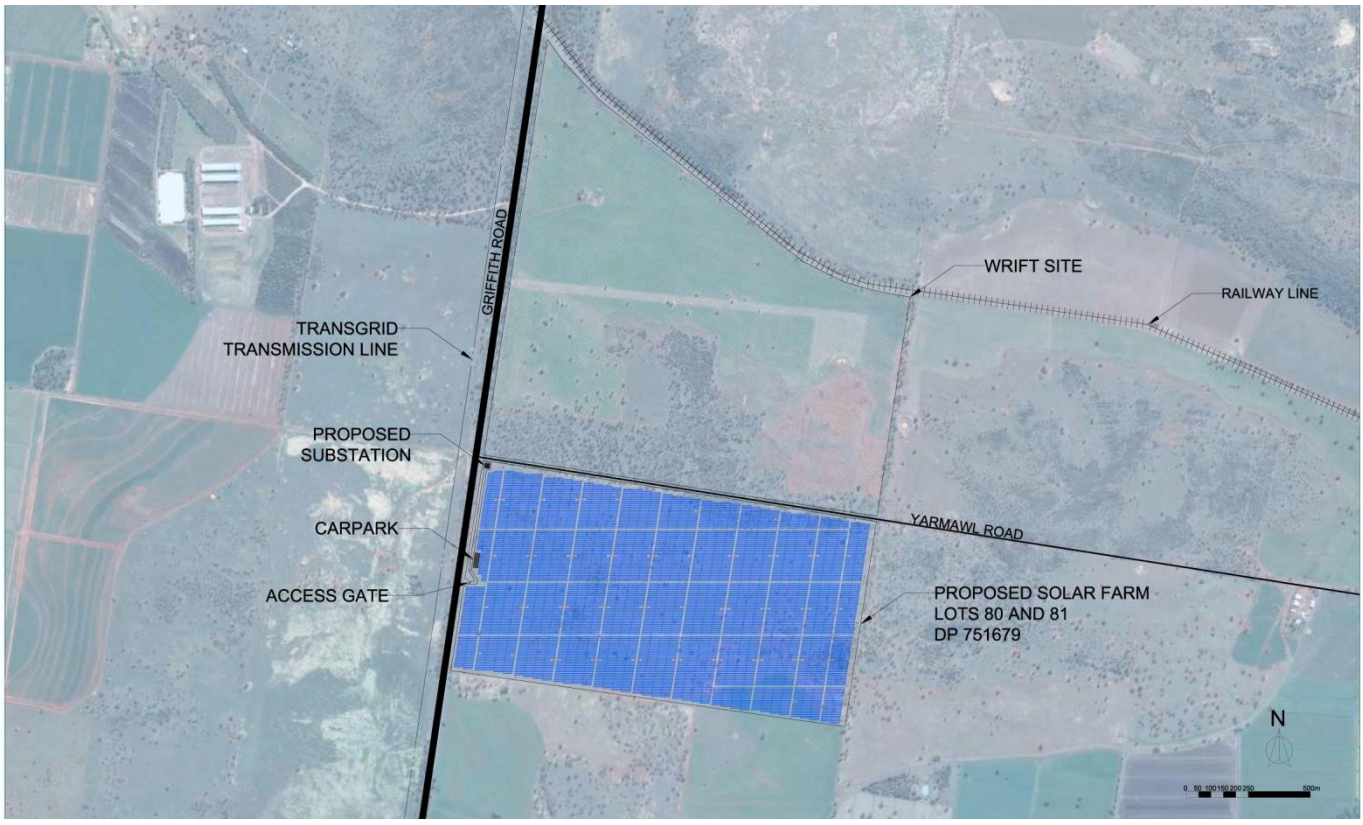


Image 3.2 Surrounding Properties Classification

Electrical Infrastructure

A TransGrid substation will be installed on the site with a footprint of approximately 20m^2. The connection is to the Transgrid 132kV 99k transmission line located directly across the road on the western side of the proposed solar farm. This line runs between Darling Point and Griffith sub-stations. This location will allow connection of the solar farm to the Transgrid network and will also be used for the connection of the WRIFT site to the Transgrid substation and the solar farm.

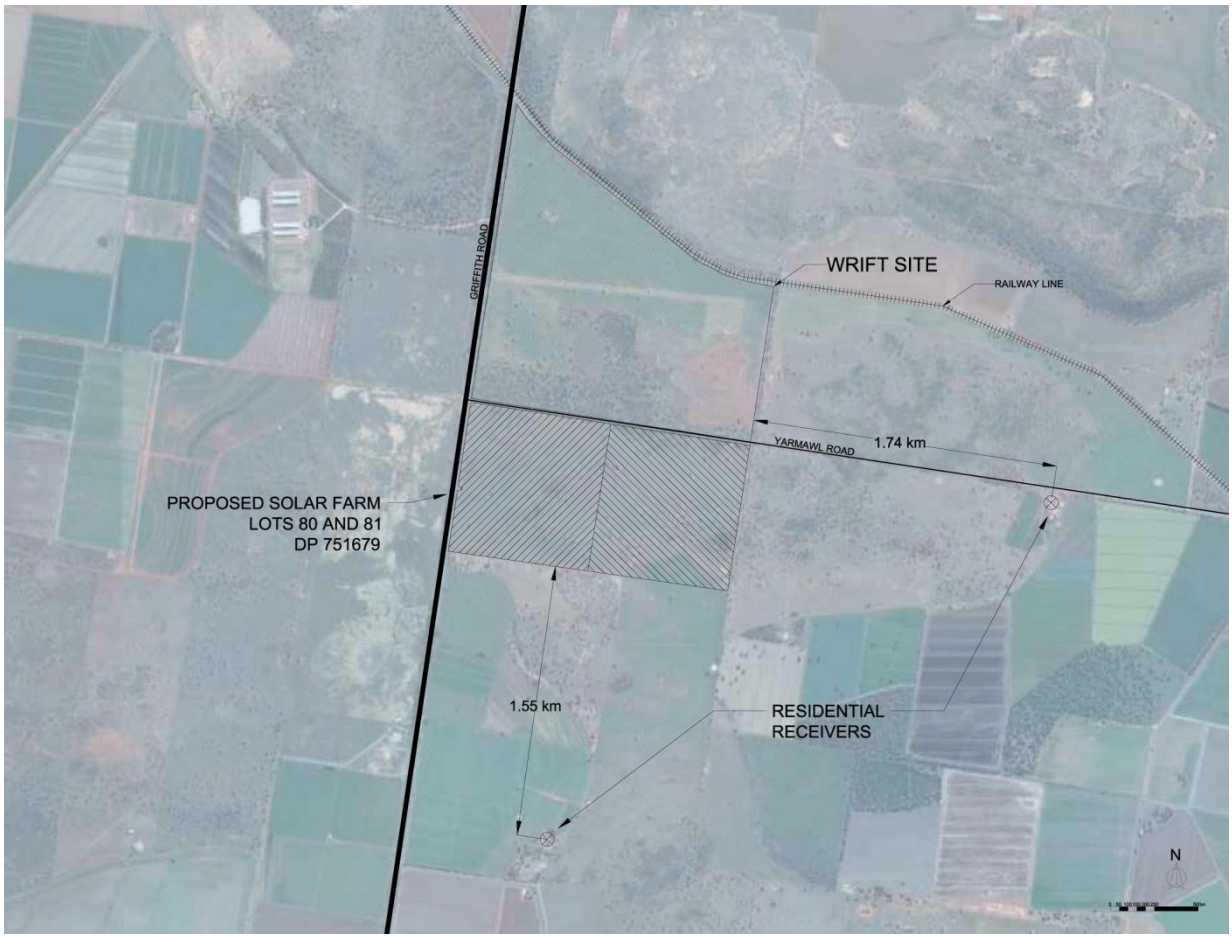
The connection from the TransGrid network to the substation can be via an underground cable. The connection from the substation to the WRIFT site is also proposed as an underground connection.

Site Proximity to Residential

The nearest residential property is located 1.55km to the southern side of the proposed solar farm which will be facing the back of the solar panels, as the solar panels will be facing north and therefore not impact local properties. Another residential property is located 1.74km to the east on Yarmawi Road. Due to the combination of factors such as the low lying nature of the development, relatively flat landscape and installation of solar PV modules and the planned inclusion of landscaping will result in little visual impact of the development on the surrounding sensitive receivers.

The image below shows the proposed solar farm in relation to the nearest residential properties.

Image 3.3 Proximity of Residential Properties to Proposed Solar Farm



4. DEVELOPMENT DESCRIPTION

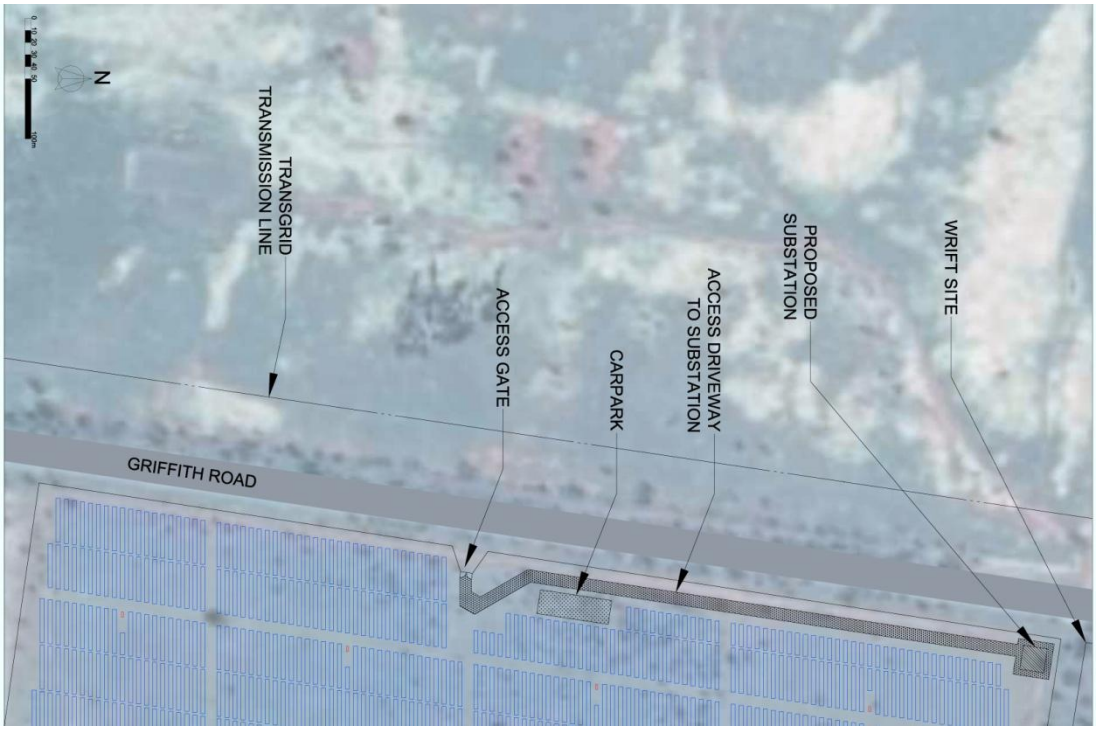
The development proposed is a 100MW solar PV power generation plant connected to the TransGrid system. The technology proposed is well developed and installed on solar farms globally. The solar PV mounting system utilises ground screw or pole ramming technology that does not require concrete for installation.

1. Installation of solar PV modules on ground screw or similar mounting structures. The modules will be monocrystalline, polycrystalline and could incorporate single or dual access tracking.
2. Central inverters located within the site
3. All cabling in underground enclosures and installed to comply with Australian regulations for installation of DC and AC cabling
4. A transformer kiosk with the connection to the Transgrid infrastructure
5. A Transgrid substation with transformer location within the site
6. A maintenance building
7. Security fencing with 24/7 monitoring and surveillance cameras

The capital cost of the project for 100MW is $90 000 000 (exclusive of GST and subject to currency exchange rates)

Access to the site will be via a driveway access large enough to allow access for semi-trailers from Griffith Road. This will enable safe entry and exit for construction vehicles and maintenance crews.

Image 3.4 Site Access and Carpark Location



It is expected that construction will take 12 months from initial works.

The solar farm has a life of 30 years and would have the option of either updating the infrastructure or removing the plant. Should the decision be made to remove the plant, then the site will be returned to its natural state to as close as practical.

Below is a project completed by Photon Energy which is similar in scope to the proposed Wumbulgal site. The Wumbulgal site will have similar visual effect as the site below

IMAGE 4.1 CZECH REPUBLIC – BRNO AIRPORT, 21.2 MW

5. CONSULTATION

Preliminary consultation with the Leeton Shire Council has been carried out along with discussions with the community.

Photon Energy held a workshop at the Leeton Shire Council in August 2015 which included local businesses to provide a summary of the proposed large scale solar farm in the Leeton Shire region and was held to gauge a response from the community on the solar farm.

The feedback from the initial consultation was positive and based on this Photon Energy decided to proceed with the development of the WRIFT site.

A pre-development application meeting was held at Leeton Shire Council on Thursday 10th September to discuss the requirements necessary to proceed to a development application process. This meeting was attended by Director of Environmental and Community Services, Director of Engineering and Technical Services, Manager Planning and Environment, Manager Economic Development, Tourism and Events.

Leeton Shire Council is committed to attracting renewable projects which will provide long-lasting benefits to the community, business and allow local industries to remain globally competitive.

A community consultation plan will be prepared to inform the community and local businesses of the proposed solar farm in more detail and allow for feedback from the community on the proposal and provide contact details to all so any future concerns can be addressed.

6. PERMISSIBILITY AND STRATEGIC PLANNING

As the proposed site is the located in the Leeton Shire Council a preliminary consultation with Leeton Shire Council was held and identified the following

As electricity generating station capable of supplying more than 30MW of electrical power from other energy sources is captured by designated development provisions under Schedule 3 of the Environmental Planning and Assessment Act.

The proposed site location is situated within the Leeton LGA and is subject to the Leeton Local Environmental Plan 2014. This LEP sets the provisions for land-use planning and development permissibility.
The site is located on land zoned for RU1 – Primary production.

Within Zone RU1, Electricity generating works is prohibited by this LEP as it is not specified within Items 2 or 3 – "Permitted with consent".

However, State Environmental Planning Policy (Infrastructure) 2007 – Reg 34 states:

34 Development permitted with consent

(1) Development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone.

(7) Solar energy systems

Except as provided by subclause (8), development for the purpose of a solar energy system may be carried out by any person with consent on any land.

(8) Development for the purpose of a photovoltaic electricity generating system may be carried out by a person with consent on land in a prescribed residential zone only if the system has the capacity to generate no more than 100kW.

Therefore this development is permissible with consent

As some minor indirect and direct impact on the vegetation is proposed the site will need to consider the Framework for Biodiversity offset.

The following will be followed and the project will meet the recommendations of:-

1. Environmental Planning and Assessment ACT 1979
2. Leeton Local Environmental Plan 2014
3. State Environmental Planning Policy (Infrastructure) 2007
4. State Environmental Planning Policy (State and Regional Development) 2011.

The following acts are to be considered for the development of the project.

Native Vegetation Act 2003 No 103

The objects of this Act are:
(a) to provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State, and
(b) to prevent broad scale clearing unless it improves or maintains environmental outcomes, and
(c) to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation, and
(d) to improve the condition of existing native vegetation, particularly where it has high conservation value, and
(e) to encourage the revegetation of land, and the rehabilitation of land, with appropriate native vegetation,
in accordance with the principles of ecologically sustainable development.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

is the Australian Government's key piece of environmental legislation which commenced 16 July 2000.
Environment Protection and Biodiversity Conservation Act 1999 (link is external)
Environment Protection and Biodiversity Conservation Regulations 2000 (link is external)
The EPBC Act enables the Australian Government to join with the states and territories in providing a truly national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.
Heads of agreement on Commonwealth and State roles and responsibilities for the environment
The Australian Government Department of the Environment (the Department) administers the EPBC Act.
Objectives of the EPBC Act
The objectives of the EPBC Act are to:
- provide for the protection of the environment, especially matters of national environmental significance
- conserve Australian biodiversity
- provide a streamlined national environmental assessment and approvals process
- enhance the protection and management of important natural and cultural places
- control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife
- promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources
- recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity
- promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

Roads Act 1993 No 33

The objects of this Act are:
(a) to set out the rights of members of the public to pass along public roads, and
(b) to set out the rights of persons who own land adjoining a public road to have access to the public road, and
(c) to establish the procedures for the opening and closing of a public road, and
(d) to provide for the classification of roads, and
(e) to provide for the declaration of RMS and other public authorities as roads authorities for both classified and unclassified roads, and
(f) to confer certain functions (in particular, the function of carrying out road work) on RMS and on other roads authorities, and
(g) to provide for the distribution of the functions conferred by this Act between RMS and other roads authorities, and
(h) to regulate the carrying out of various activities on public roads.

Threatened Species Conservation Act 1995 No 101

The objects of this Act are as follows:

(a) to conserve biological diversity and promote ecologically sustainable development, and

(b) to prevent the extinction and promote the recovery of threatened species, populations and ecological communities, and

(c) to protect the critical habitat of those threatened species, populations and ecological communities that are endangered, and

(d) to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities, and

(e) to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed, and

(f) to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.

Native Title Act 1993

Main objects

The main objects of this Act are:

(a) to provide for the recognition and protection of native title; and

(b) to establish ways in which future dealings affecting native title may proceed and to set standards for those dealings; and

(c) to establish a mechanism for determining claims to native title; and

(d) to provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.

Rural Fires Act 1997 - sect 3

The objects of this Act are to provide:

(a) for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and

(b) for the co-ordination of bush fire fighting and bush fire prevention throughout the State, and

(c) for the protection of persons from injury or death, and property from damage, arising from fires, and

(c1) for the protection of infrastructure and environmental, economic, cultural, agricultural and community assets from damage arising from fires, and

(d) for the protection of the environment by requiring certain activities referred to in paragraphs

(a)-(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the Protection of the Environment Administration Act 1991 .

AHIMS search was completed on 21st October and found no Aboriginal sites on or near the site

7. PRELIMINARY ENVIRONMENTAL ASSESSMENT

A preliminary environmental assessment was completed to identify any key environmental issues that will require addressing within the Environmental Impact Study. Further mitigation measures for the key issues will be required to address key issues mentioned below and to ensure compliance with the EPBC Act.

The proposed solar farm is not located near any residual properties and situated to the south of the Western Riverina Intermodal Freight Terminal.

An EPBC Act Protected Matters report was created on 21st November 2015. This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area on and surrounding the proposed site. This report found the following matters of Environmental Significance

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	5
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	13
Listed Migratory Species:	7

A site-specific search was also conducted using the NSW BioNet website for flora and fauna sightings information. The search of the Atlas of NSW Wildlife identified one endangered fauna species and seven endangered ecological communities. No endangered flora species were identified.

AHIMS search was completed on 21st October and found no Aboriginal sites on or near the site

8. IDENTIFIED EXPECTED ENVIRONMENTAL IMPACTS

8.1 Reduction in Carbon Emissions

The production of solar energy reduces the carbon footprint of the area by reducing the requirements of coal generated energy for the region. The installation of a solar farm has a positive impact on the area in regards to carbon emissions. The solar farm does not emit any air contaminants.

8.2 Noise

During the construction period there is minimal noise generated by the installation of the solar farm. Small diesel powered equipment is required for the installation of ground mount equipment which are similar in noise emissions to farming equipment.

Once completion of the installation process, the solar farm does not generate any noise and minimal traffic will be required to access the site for preventative maintenance.

8.3 Biodiversity

It is estimated a small number of foliage may require removal for the installation of the solar module mounting equipment. The project will minimise the removal of vegetation and will aim to offset any vegetation removal and will develop a sustainable approach to the removal of any foliage.

The small amount of trees on site is regrowth with a small number of Kurrajong trees and white Cyprus pines on site. It is proposed that an ecological assessment to be undertaken

The site will be repatriated to as much as feasibly possible at the end of the projects life.

8.4 Visual Impact

The solar farm will be not higher than 2.5metres and will be facing north therefore not visible from the property located on the east of the site. The rear of the panels are visible from the property on the south of the site. Inclusion of landscaping can be included in the development if required to mitigate the visual impact of the development for surrounding properties.

Reflectivity of the solar panels is low and less than some common surfaces. Below is a table outlining the reflectance of common surfaces and solar panels.

Material	Reflectance
Snow	80%
White Concrete	78%
Aluminium Roof	74%
Water	5%
Black Asphalt	3%
Solar PV Modules	2.6%

Screening can be installed between the road and the solar farm if required and the site will be fully enclosed with security fencing. It is proposed to undertake a visual assessment of the development.

8.5 Aviation

The solar farm is located 20km from Griffith airport. Solar modules installed will not result in glare issues. The EIS will address glare issues and the impact in relation to aviation.

8.6 Fire

The solar farm will comply with the Rural Fires Act 1997 in regards to clearances and fire mitigation requirements.

8.7 Geotechnical

A soil analysis will be carried out to ensure the suitability of the soil structure to support the solar mounting infrastructure. The solar farm will require minimal excavation and soil disruption as the solar system follows the natural contour of the land.

8.8 Waste Management

A waste management plan will be developed as part of the Work Health Safety plan for the project which includes recycling and reduction of waste and use of registered recycling and waste disposal facilities.

8.8 Road & Traffic

The proposed solar farm requires little intervention after construction and commissioning and therefore does not require any manning on completion.

During the construction process traffic to the site will include semi trailers delivering hardware and construction staff. A temporary site shed will be installed along with a goods acceptance area and car park to accommodate 12 cars/mini buses. It is estimated that 2 trucks a day on average will visit the site during the construction period for the delivery of hardware.

A traffic study will be undertaken to identify the traffic during the construction period.

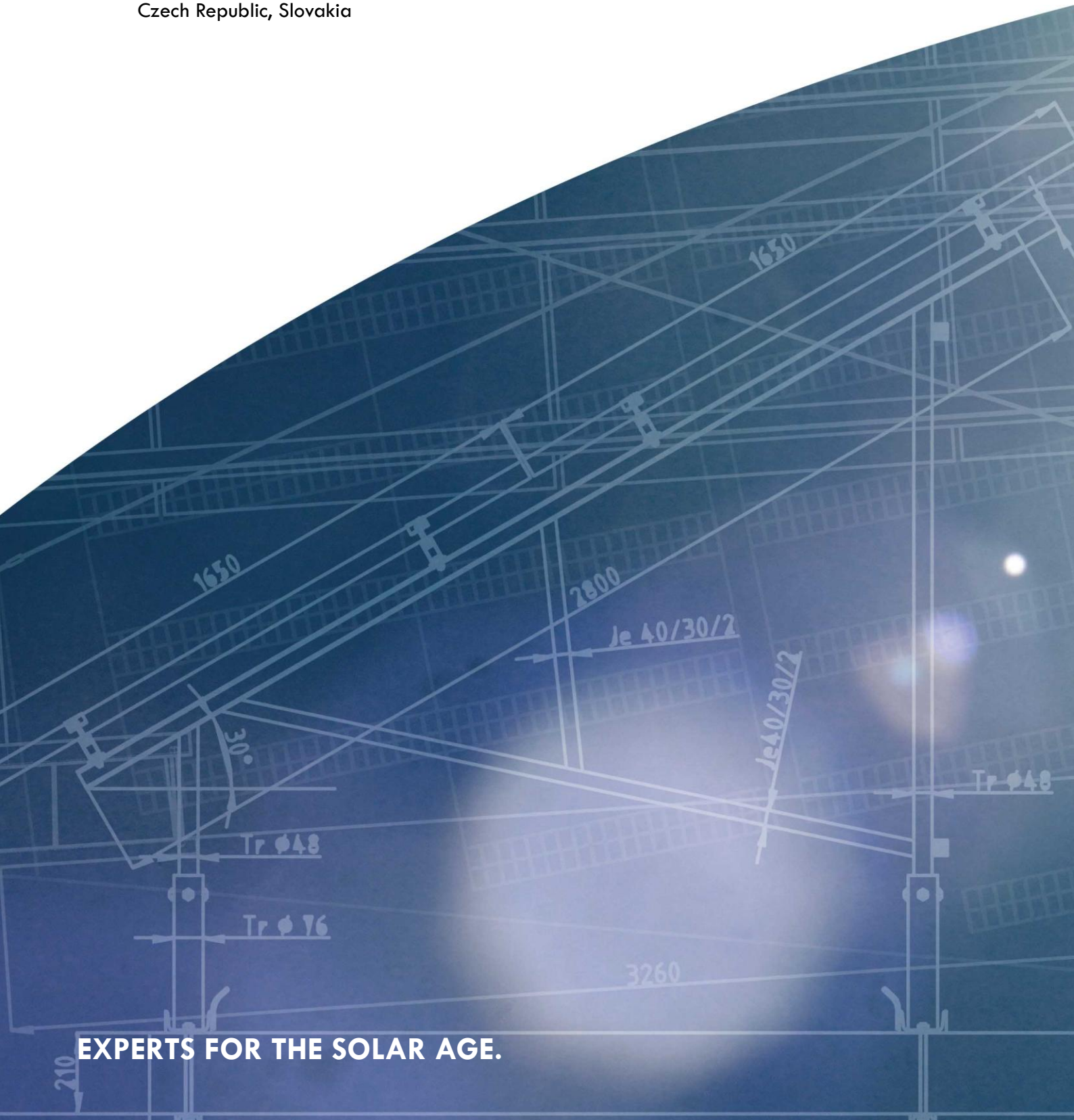
8.9 Aboriginal Heritage

A preliminary search of the Aboriginal Heritage Information Management System found not Aboriginals site son or near the site. There will be an undertaking to further investigate and confirm there is not an Aboriginal site in the proposed location.

PHOTON ENERGY

Photon Energy Australia
www.photonenergy.com.au
info.aus@photonenergy.com

Offices in: The Netherlands,
Australia, Germany, Italy,
Czech Republic, Slovakia



EXPERTS FOR THE SOLAR AGE.