Proposed Solar Power Station Moree, NSW

Under Commonwealth Solar Flagships Program

Part 3A Project, Critical Infrastructure
NSW Environmental Planning and Assessment Act, 1979

Preliminary Environmental Assessment

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Contents

Preliminary Environmental Assessment Report Prepared by BP Solar with assistance from Walsh Consulting. See below for contact details.

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1. Introduction

1.1 Purpose

This preliminary environmental assessment provides:

- An outline description of the proposal
- Background information on the proposal's association with the Commonwealth Government's Solar Flagships initiative
- Commentary on the statutory setting
- An outline of the expected environmental issues and the proposed approach to attending to them in the forthcoming environmental assessment.

It is anticipated that this material will assist the Director General of Planning in the issuing of requirements for environmental assessment of this major project.

1.2 Project Outline

This project is concerned with the delivery of non-polluting, renewable solar energy to the Australian electricity grid. Our application seeks approval for the construction and operation of a 150 MW photovoltaic (PV) electricity generation facility in northern NSW. The proposal would be located on a site of some 850ha in the vicinity of Moree. The facility will use crystalline silicon technology optimised on trackers to maximise solar energy capture capacity. The Project is expected to cost in excess of $600m.

The solar facility will connect into the national electricity grid at the Moree 132kV substation (owned by Transgrid). The project includes the construction of electricity transmission lines to this substation (approximately 1km from the site), and other ancillary works.

1.3 Solar Flagships Initiative

The Australian Government has committed $1.5 billion to support the construction of up to four large scale, grid-connected solar power stations in Australia, using solar thermal and photovoltaic technologies. The program is part of the Government's $5.1 billion Clean Energy Initiative (CEI).

The primary objective of the Solar Flagships program is to provide the foundation for large scale, grid-connected, solar power to play a significant role in Australia's electricity supply and to operate within a competitive electricity market. The Government's aim is to establish up to 1,000 megawatts of solar power generation capacity.

BP Solar is one of four shortlisted companies (photovoltaic solar) invited to participate in the second stage of assessment for Round 1 of the Program.

1.4 Proponent Details

BP Solar, the main supplier of solar solutions in Australia for over 25 years, is leading a consortium of experienced and established corporations to develop, construct, own and operate the facility.

BP Solar is part of BP, one of the largest energy companies in Australia and globally. BP Solar designs, manufactures and installs complex, utility-scale energy solutions and

currently has major PV plants operating in the United States, Europe and Asia. For Solar Flagships, BP Solar together with Fotowatio Renewable Ventures, will act as investor, developer, EPC (engineering, procurement, construction) contractor and operations and maintenance service provider. The proposed arrangement would bring together high level global utility plant knowledge coupled with significant Australian experience and presence. BP Solar will be working closely with the NSW Government and its research partner to develop this landmark project.

1.5 Site Introduction

The Project is proposed to be situated some 5km from the town centre of Moree in north-western New South Wales (Site). See Figure 1.

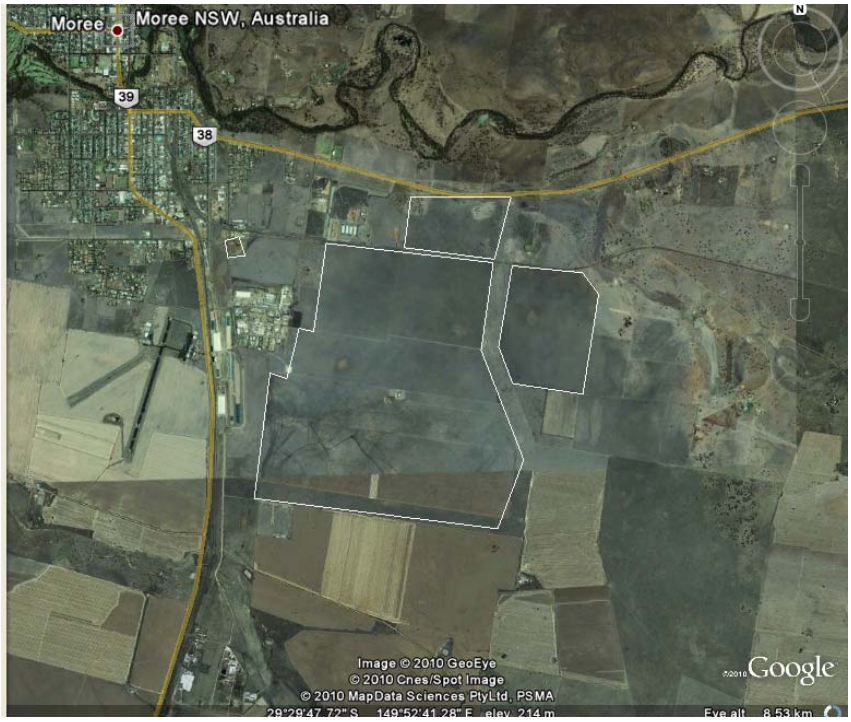

Figure 1 – Site (Source Google Earth)

The Site has an approximate area of 850Ha, and is owned by Yarraman Pty Ltd. The site is currently used for agricultural purposes.

The title details for that part of the Site where the photovoltaic (PV) facility is to be located is as follows:

1. Lot 102 DP 880457;
2. Lot 74 DP 751780;
3. Lot 5 DP 240344;
4. Lot 13 DP 733851;
5. Lot 135 DP 751780;
6. Lot 131 DP 751780;
7. Pt 14 DP 733851;
8. Lot 3 DP 828393;
9. Lot 11 DP 828393, and
10. Lot 10 DP 733851

The Site has an approximate area of 850Ha.
The Site is owned by Yarraman Pty Ltd and is currently used for agricultural purposes.
The title details for that part of the Site where the transmission lines and grid will be located are as follows:

1. Lot 104 DP1068280;
2. Auto Consol 14305-3 (comprising Lots 82, 144 and 155 in DP751780);

3. Lot 2 DP635190; and
4. Lot 1 DP999486.

At this point, BP Solar proposes to locate the whole of the Project on the identified site. However, subject to negotiations with the landowner, connectivity to the closest substation and the final design of the facility, site boundaries may extend and/or part of the proposed solar facility may be located on a nearby site.

1.6 Statutory Overview

Part 3A of the EPA Act
Section 75B of the EPA Act provides the Minister with the power to declare development as being subject to the Part 3A regime. Specifically, the Minister has the power to make such a declaration where it is of a type identified under a State Environmental Planning Policy, currently the Major Development SEPP. Accordingly, where the Minister forms the opinion that the development falls within the categories provided under that policy, it is open to the Minister to make such a declaration.

Set out below is an overview of the relevant Part 3A requirements necessary for the Minister to make a Part 3A Critical Infrastructure Project declaration and their applicability to the Project.

Major Development SEPP
Clause 6(1) of the Major Development SEPP provides for a number of categories of development that may be declared as a project to which Part 3A applies:

- Schedule 1 (classes of development) or 2 (specified sites);
- Schedule 3 (being declared State Significant Sites); or
- Schedule 5 (critical infrastructure).
- Clause 24, Group 8 of Schedule 1 'Generation of electricity or heat or co-generation' of the Major Development SEPP states:
- Development for the purpose of a facility for the generation of electricity or heat or their co-generation (using any energy source, including gas, coal, bio-fuel, distillate and waste and hydro, wave, solar or wind power), being development that:
    (a) has a capital investment value of more than $30 million, or
    (b) has a capital investment value of more than $5 million and is located in an environmentally sensitive area of State significance.

The Project meets the above criteria in that it is:

- Development for the purpose of a facility for the generation of electricity via solar energy sources; and
- Has a capital investment value of more than $30 million.

Critical Infrastructure Project
Section 75C(1) of the EPA Act states that any project that is declared to be a project to which Part 3A applies, may also be declared to be a critical infrastructure project if, in the opinion of the Minister, it is a project that is essential to the State for economic, environmental and social reasons.

The Critical Infrastructure Gazettal in 2009 identified that the following category of development was declared to be a critical infrastructure project for the purposes of Section 75C of the EPA Act:

- Development for the purpose of a facility for the generation of electricity derived from renewable energy sources (that is wind energy solar energy, geothermal energy, hydro energy, wave energy and bio energy) being development that:

- Is the subject of an application lodged pursuant to section 75E or section 75M of the Environmental Planning and Assessment Act 1979 lodged after the date of this declaration; and
- Is the subject of an application that proposes a development with a capacity to generate at least 30 megawatts.

The Project meets the above criteria in that it is:

- Development for the purposes of a facility for the generation of electricity derived from solar energy, being a renewable energy source;
- A project application is sought to be lodged for the Project after the date of the Critical Infrastructure Gazettal, being 27 November 2009; and
- The Project proposes a development with a solar energy generation facility that will generate at least 30 megawatts.

It appears that the project would be permissible under the relevant provisions of Moree Local Environmental Plan 2005. In any event, in instances where the Minister confirms that a Project is a critical infrastructure project, section 75J(3) of the EPA Act will apply so that prohibitions on use under an environmental planning instrument (if any) will not preclude approval of the Project by the Minister.

2. Project Description

2.1 General

This project will provide for the construction and operation of a large scale commercial solar photovoltaic power plant, characterised as an array of individual photovoltaic modules, themselves positioned into sets of sub-arrays, aligned to optimise solar energy capture.

To maximise the energy captured, the solar modules are attached to trackers, a photo of which can be found below.

The strings of PV modules would be wired together in series and cabled to inverters which convert the direct current (DC) generated from individual modules to alternating current (AC). Small low level structures will house the inverters which will need to be spaced regularly around the site. A smaller number of transformers would then step up the AC current to the required voltage. The output of the transformers would then be linked to an on-site substation and a length of new 132kV cabling (expected to be about 800m) which would in turn connect the generated energy into the Moree (Transgrid) substation.

Further particulars of the project planning and layout will be included in the final report.

Other key project elements include:

- Fencing – a security fence would be constructed around the perimeter of the facility
- Amenities building
- Access arrangements.

2.2 Grid Connection

The Moree site is considered entirely suitable for power plant infrastructure because of its proximity to high demand and the high tension electricity transmission grid operated by the regional network service provider (NSP) Transgrid. Initial grid connection enquiries with the NSP have been very positive. There is ongoing network analysis and modelling underway.

2.3 Site Works and Access

BP Solar intend to build the facility incrementally over a four year horizon, from 2012 to 2015 in 30 to 45MW stages.

While full physical works planning has not been undertaken as yet, it is pointed out that during the design and construction phase, BP Solar, acting as the lead developer and

EPC contractor of the consortium, would be held fully responsible for the delivery of the plant.

As an overview, the site physical works can be characterised as follows:

- Delivery of PV modules, trackers, electrical conduits and balance of equipment
- Sequential piles for structural support of the individual trackers (to depths indicated from geotechnical advice – it seems unlikely that any major cut and fill works will be required due to the topography)
- Fixing of modules and trackers
- Positioning of junction boxes, inverters, transformers
- Connecting of required cabling
- Construction of substation
- Construction of transmission line
- Grid connection and commissioning stages as required
- Restoration works.

The Environmental Assessment Report will provide further details on construction planning and works phasing, including arrangements for the transport of infrastructure, any temporary roadworks or the like and any physical support works required on-site and on the site approach.

2.4 Other Services and Maintenance

The facility will require connection to the normal range of services and utilities relevant to its ongoing operations including: water, sewerage, telecommunications and power. Relevant details of utility arrangements will be addressed in the final environmental assessment report.

Operation and maintenance of the system would involve replacement of modules, repair of inverters, and other supporting equipment, which would be expected to occur on a limited basis at certain points during the system's life cycle. Requirements for cleaning of modules would be around twice per year, but will depend on demand. Routine maintenance may include periodic mowing of the ground cover to discourage invasive species but further advice on site management will be taken from specialist environmental advisers.

2.5 Economic and Employment Considerations

This project is expected to provide significant industry development benefits as reflected by the direct and indirect employment impacts. Importantly, the majority of the industry development is likely to take place across a range of regional-based small-medium sized enterprises (SMEs) in a number of specialist areas, not just in the perceived 'high tech' area of solar PV technology. Particular opportunities would arise in BOS (balance of system) service providers, project developers, metal fabricators and electrical contractors as well as construction companies and others, including in fields such as tourism and R&D institutes.

BP Solar's research indicates that this large scale project across the total value chain of this project, an estimated 1250 full time equivalents (FTEs) would be employed for the design, manufacturing, supply through to monitoring of the 150MWac plant.
Further research will be undertaken on employment for Australian employees. At this point it is estimated that some 810 of the 1250 FTEs (ie. 65%) would be Australian-employed. The main employment for the 800+ Australian employed FTEs are in the following specific areas of the value chain:

- BOS supply - the sourcing, manufacturing of BOS specifically mounting structures, solar trackers, cabling, junction boxes etc.

- Project development phase – in-house resources and consultants necessary for the specification and pre-feasibility stage, site identification and design phases
- Construction phase – civil, mechanical and electrical manpower

In terms of Australian employment opportunities, it is estimated that around 60% (up to around 500 employees) of these jobs can be sourced from regional Australia in particular NSW.

2.6 Consideration of Alternatives

Fundamentally, the project is concerned with the provision of clean energy to assist in servicing the ever increasing demand for electricity in Australia. There are alternatives which also bring the capacity to add to the regional and national power grid both using renewable and non-renewable resources. However the focus of this project, under the Commonwealth Solar Flagships Program, is the solar energy alternative.

The "no action" alternative would retain the site and surrounds in the current configuration. However by not undertaking the project the local and regional communities would forego the economic and community benefits outlined above. Most importantly of course, the proposed clean renewable energy source would not be provided with the "no action" alternative.

The site was selected after an extensive screening process of over 50 sites across different states in Australia seeking the optimal location for solar PV applications. BP Solar has found that the subject site offered distinctive advantageous characteristics including the following:

- One of the highest irradiation profile in the state
- Temperatures that are not too high so as to adversely impact system efficiency (as is the case in areas further north in Australia)
- Proximity to the National Electricity Market (NEM) grid
- Sufficient grid capacity to support the predicted load
- Positive marginal loss factors (MLF) nodes
- Proximity to high electricity demand
- Proximity to regional centres for development and infrastructure support network.

3. Environmental Setting

3.1 Overview

Moree is situated in the Gwydir River Valley of NSW. The site is characteristic of this country with an almost level gradient and deep black alluvial soils.

The site is almost entirely cleared of native vegetation. In the recent past it has been used for both cropping (cotton and wheat among other crops) and grazing purposes.

There is little vegetation in the site environs , including the road reservations and travelling stock routes adjacent to the site.

4. Environmental Issues

4.1 Overview - Low Impact Clean Energy Generation

Solar energy plants of the form proposed with this Project release no CO_2, SO_2, or NO_2 gases and don't contribute to global warming. Photovoltaic technologies are now well proven and are inherently safe and cause effectively no pollution in operation, with the source freely available.

4.2 Construction Stage - Potential Issues

The Table below itemises expected Construction Stage issues for the Project and provides initial commentary on proposed response strategy.

Issue	Commentary	Proposed Response
Potential degradation of land, biodiversity or cultural heritage resources	There are two key factors in regard to this issue: – The Site in its entirety is characterised as a cultivated field. It appears devoid of native vegetation with even paddock trees barely in evidence. – The Project brings little requirements for earthworks in general, or cut and fill, in particular, and considerable flexibility to avoid risk areas. It appears unlikely that there will be significant issues with biodiversity or threatened species conservation. There will be a requirement for site restoration works at the completion of construction, including revegetation of disturbed ground, weed management and control of any erosion and sedimentation.	Commissioning of specialist report from ecology/biodiversity expert (native vegetation, flora, fauna). Advice on revegetation on site including Landcare and weed management considerations. Aboriginal cultural heritage specialist?
Potential disturbance to hydrology	The construction elements of the project will include piering for individual support structures. Further details on-site works to be provided. Consideration will need to be given to the provision of drainage infrastructure. However the drainage capacity of the alluvial soils is noted.	Specialist geotechnical and hydrological report.
Transport of materials to site	Construction plan will be prepared to indicate expectations on heavy vehicle visitation levels during construction period	Analysis a component of traffic report.
Construction noise	Construction plan will indicate expectations on type and frequency of	Specialist advice.

Issue	Commentary	Proposed Response
	construction equipment use.	
Workforce availability and accommodation	Construction workforce planning particulars will be documented and plans developed in regard to accommodation and service requirements. Particulars of incentives to encourage local employment provision will be documented in liaison with local and regional authorities.	Liaison with local accommodation and other service providers.
General site services	Arrangements for the range of services required for the site will be documented, with a view to minimisation of site disturbance, waste and GHG emissions.	Document relevantly in project application

4.3 Operations Stage - Potential Issues

Operational stage issues associated with the project are addressed below.

Issue	Commentary	Proposed Response
Employment / synergistic economic and cultural opportunity	Operational stage direct and indirect employment opportunities will be documented. Consideration will be given to synergistic opportunities for local and regional service, tourism and educational/research opportunities. Possible considerations include construction of on site interpretive centre and a program of regular facility tours to link with other tourism offers in the locality and region.	Liaison with local and regional contact points (eg local tourism and industry associations, universities and TAFE).
Loss of viable agricultural land	A proportionate analysis of the loss of this land to agricultural would be required, including analysis of significance. Opportunities for concurrent use of the site for suitable agricultural purposes will be examined.	Commentary from relevant specialists on opportunities.
Edge management (esp weed management)	Liaison required between biodiversity and agricultural management specialists to attend to edge treatment particulars, including weed management and potential for pest harbourage.	Specialist input
Facility maintenance and security	Security improvements will be documented including fencing and monitoring arrangements.	To be addressed in final assessment report.
Visual impact	Particulars of the proposal will be detailed and analysed including PV structures, reticulation arrangements including electricity transmission line to substation. It is our preliminary advice that the black surface of the solar collectors does not bring	Landscape/visual assessment specialist advice. Evidence on potential problems with glare to be gathered

Issue	Commentary	Proposed Response
	reflection or glare problems to aircraft, however further technical analysis will be undertaken.	
Noise impact	The proposal has low noise levels associated with the panel tracking system. However no noise during night time or hours of low sun elevation.	Address with noise impact overview
Traffic management	The project workforce will require a small parking area and access arrangements. Any proposed tourism interpretation centre may need designated parking including bus parking.	Include assessment in specialist traffic report.
General site services	Arrangements for the range of services required for the site will be documented, with a view to minimisation of waste and GHG emissions.	Document relevantly in project application
Management of hazards	Bushfire, flood risk, EMR	Specialist advice as necessary.
Maintenance, waste management and recycling	PV cells will need regular cleaning to optimise performance. This technology does not bring the potential leachate problem associated with some PV technology. Waste would generally be limited to employee produced waste However a waste management plan will be documented in study.	Maintenance and waste management plan to be prepared, including water balance equation.

4.4 Other Issues

Operational stage issues associated with the project are addressed below.

Issue	Commentary	Proposed Response
Agency/NGO consultation	Key agencies will include: DoP, State & Reg D'ment, DECCW (EPA, NPWS), Dept Ag, Landcare, RTA, DWE	Continuing dialogue with agencies.
Public/community consultation	Local and regional groups from a wide range of interests will be contacted for input, with a view to maximising the local and regional benefits of the project. Moree has a large indigenous community which will be on the groups consulted. BP Solar team has already had meetings with various local groups to gain initial local feedback.	A community engagement plan is under preparation and will be enacted when complete.