

RBL	Rating Background Level
RE Act	<i>Renewable Energy (Electricity) Act 2000</i>
REC	Renewable Energy Certificates
REP	Regional Environmental Plan
RET	Renewable Energy Target
RFS	Rural Fire Service
RL	Reduced Level
RNE	Register of the National Estate
RTA	Roads and Traffic Authority
SCADA	Supervisory control and data acquisition
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SoC	Statement of Commitments
SPVFP	Solar Photovoltaic Farm Project
TSC Act	<i>Threatened Species Conservation Act 1995 (NSW)</i>
VAC	Voltage Alternating Current
VIA	Visual Impact Assessment
WHO	World Health Organisation
WMP	Waste Management Plan

EXECUTIVE SUMMARY

THE PROPONENT

The proponent for the Nyngan Solar Farm proposal is Infigen Suntech Australia Pty Ltd (Infigen Suntech). Infigen Suntech is a joint venture formed between Infigen Energy Limited (Infigen Energy) and Suntech Power Australia Pty Ltd (Suntech) to deliver utility scale photovoltaic (PV) projects in Australia. Infigen Energy is a specialist renewable energy business that develops, owns and operates renewable energy generation facilities across Australia, the United States and Germany. Suntech is the world's largest producer of silicon solar modules, with offices in 13 countries.

THE PROPOSAL

Infigen Suntech proposes to construct a 100 megawatt (MW) capacity solar farm on cleared farmland off East Nyngan Road, Nyngan (the proposal site). The solar panel array would occupy approximately 200 hectares on a site 450 hectares in size. The solar farm would have an expected operating life of up to 50 years. The decommissioning phase would remove all above ground infrastructure from the site.

The key infrastructure elements for the project would include:

- A PV array incorporating rows of panels and a series of central inverters and kiosk transformers
- Cabling between the PV array and central inverters (underground or frame secured)
- Cable connection to the existing 132kV Nyngan substation (underground)
- Internal access tracks and upgrades to existing roads
- Site office, operations and maintenance buildings incorporating a control room and switching equipment
- Temporary construction facilities such as a site compound and equipment laydown area

Photovoltaic array

The PV array being considered consists of Suntech poly-crystalline solar panels mounted on a fixed steel support frame. The maximum height of the array would be 3.5 metres.



Suntech poly-crystalline solar panel

The proposed Suntech panels are efficient modules suitable for utility scale solar power generation. Each panel would be approximately 2 metres long x 1 metre wide. The PV panels would be arranged in rows, with sufficient spacing between rows to allow maintenance activities such as weed control or panel washing as required.

The PV panel mounting structures would be supported by steel posts driven into the ground.



Example of a PV panel mounting structure (source: www.hpvm.com)

Three types of solar farms were considered for the site:

- A fixed PV array
- A tracking PV array
- Solar thermal

It was considered that the fixed PV array would have the least visual impact, lesser environmental impacts as well as lower operational and maintenance requirements. This proposal is therefore limited to a fixed PV array solar farm.

Connection to the existing Nyngan substation

The cable connection between the solar farm and existing substation would be via an underground transmission line.

Access tracks

On site access tracks required for construction and operation would be gravel formations up to 8 metres in width and may be reduced to 5 metres after the construction phase. Tracks would be maintained for the lifetime of the solar farm.

Buildings

Temporary construction buildings would be installed within a fenced facilities area. Additionally, the following permanent buildings may be constructed at the site: a site office, an operations and maintenance building incorporating a control room with monitoring and workshop facilities.

Project timing and staging

The construction timeline for the project would be dependent on the timing of approval, funding arrangements and the supply of key components. However, it is likely that the 10 month construction period would commence in September 2012. Construction works would be confined to standard construction hours (Monday-Friday 7am-6pm, Saturday 8am-1pm).

Operational management

A site manager would be employed to manage the facility. Security staff or services would also be engaged. The PV array and other equipment would be inspected and maintained on an 'as needs' basis. A supervisory control and data acquisition (SCADA) system would monitor the operational solar farm and identify any electrical faults.

Periodic weed control would be undertaken as required. Groundcover vegetation around the panel rows would be either slashed or grazed by sheep. Regular washing of the solar panels is not expected to be required. If required, water would be sourced from the Bogan Shire Council or commercial water suppliers to remove dust or bird excrement. Detergent would not be used.

Decommissioning

The life span of the PV infrastructure is 30 to 50 years. At the end of the project all above-ground infrastructure would be removed.

THE PROPOSAL SITE

Site context

The proposal site is located in Nyngan which is a rural centre of the Darling Riverine Plains Bioregion in Central Western New South Wales (NSW). The area is dominated by large rural properties that support cropping and grazing with a generally low population density.

The proposed solar farm site is located within the Bogan Local Government Area (LGA) and is zoned 1(a) General Rural under the Local Environmental Plan (LEP).

Proposal site

The proposal site covers approximately 450 hectares of flat terrain characteristic of the alluvial floodplains of the Nyngan locality. The site is located 2 kilometres south from the township of Nyngan, between the junction of Tottenham Road and the Mitchell Highway. The proposed infrastructure would be sited on rural land across two landholdings. Grazing and cropping are currently carried out on site.

PROJECT BENEFITS

Solar resource modelling based on satellite imagery correlated with onsite data collection has confirmed that there is an ample solar resource at the proposal site. The solar farm has been sited specifically to utilise existing grid connection infrastructure, maximising the economic efficiencies of the proposal.

The Nyngan Solar Farm would be clean, renewable and sustainable and would emit zero greenhouse gases. Based on a proposed operating capacity of 100 MW, the solar farm would generate enough renewable energy to power up to 20,000 homes and would be the equivalent of removing approximately 30,000 cars from Australian roads each year.

The solar farm would contribute to Australia's Renewable Energy Target (RET) of sourcing 20% of electricity from renewable sources by 2020.

The Nyngan Solar Farm would:

- Provide reliable energy in a market where demand will soon exceed supply
- Reduce green house gas emissions that contribute to climate change
- Assist in meeting Federal and State energy supply and carbon emission policy objectives to enhance the contribution made by renewable energy sources to meeting demand
- Contribute to the development of the utility scale renewable energy industry in NSW
- Assist in the experience and learning required in local industry to further develop utility scale solar in Australia
- Provide a local and regional economic stimulus through jobs and training

Building a solar farm of this scale at Nyngan would be a major boost to the Australian solar energy industry. It would provide local employment opportunities both throughout the construction and operational phases, and will also help to develop local and regional capabilities in solar photovoltaic plant construction.

ASSESSMENT PROCESS

The Nyngan Solar Farm would have a capital investment of \$300 million and is considered to be a Major Project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal would have a peak generating capacity of 100 megawatts and would therefore also be considered 'critical infrastructure' in accordance with Clause 75C of the EP&A Act.

The key steps in the Part 3A assessment process for this proposal are:

- The development is declared to be a Major Project by the Minister for Planning; this occurred on 5 July 2010
- The Project Application is submitted with a Preliminary Environmental Assessment to the Department of Planning (DoP). This occurred on 28 July 2010
- The Director-General's Requirements (DGRs) for the Environmental Assessment (EA) are received from the DoP. The DGRs were received on 1 September 2010
- Preparation of the EA (this report) in consultation with stakeholders
- The EA is exhibited for public comment for a minimum of 30 days
- Public submissions are provided to the proponent. The proponent may be required to respond or modify the proposal and/or the Statement of Commitments (SoCs) accompanying it. A Preferred Project Report and/or Submissions Report are prepared
- The Director-General provides a report to the Planning Minister. If the Director-General recommends the proposal be approved, draft Conditions of Approval are attached
- The Minister either approves the proposal and Conditions of Approval or rejects the proposal