Decommissioning Assessment

Burrundulla Mini Sustainable Energy Park

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DESIGN | FINANCE | BUILD

DOCUMENT CONTROL

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ABOUT ITP DEVELOPMENT

ITP Development Pty Ltd (ITPD) is a developer of town-scale solar farms in regional Australia designed to match current and future electricity demand. We undertake solar farm landholder engagement, system design, planning approvals, financing, electrical connection approvals and commissioning. ITPD maintains relationships with multiple stakeholders to ensure projects are successfully delivered in accordance with their expectations.

We are part of the international ITPEnergised Group, one of the world's largest, most experienced and respected specialist engineering consultancies focussing on renewable energy, energy efficiency, and carbon markets. The Group has undertaken over 2,000 contracts in energy projects encompassing over 150 countries since it was formed in 1981.

ABBREVIATIONS

ha	hectare
ITPD	ITP Development
MW	Megawatt, unit of power (1 million Watts)
MWp	Megawatt-peak, unit of power at standard test conditions used to indicate PV system capacity
NSW	New South Wales
PV	Photovoltaic

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1 INTRODUCTION

The proposed Burrundulla Mini Sustainable Energy Park (referred to as the Project) is located on Castlereagh Highway to the southeast of the Mudgee township, within the Mid-Western Regional Council area, NSW (Figure *1*). ITP Development (ITPD) is proposing to construct a 10 MW AC solar facility (13.2 MW DC) within the 67.4 ha site.

Table 1 - Site information

Parameter	Description
Solar farm name	Burrundulla Mini Sustainable Energy Park
Site reference	Mudgee 1C and 3C
Lot/DP(s)	6 / 1069441
Street address	3B Sydney Road, Burrundulla NSW 2850
Council	Mid-Western Regional Council
AC capacity	10 MW (2 x 5 MW)
Site area	67.4 ha
Project area	26 ha (A: 14.7 ha, B: 11.3 ha)
Current land use	Grazing

Figure 1 - Proposed Burrundulla Mini Sustainable Energy Park site and surrounding farm area

2 PROJECT DESCRIPTION

ITPD is proposing to construct a solar farm with an AC output of 10 MW on an approximately 67.4 ha site that is currently used minimally for grazing.

There will be approximately 25,000 solar modules installed in rows (each row being approximately 100 m long and 2 m wide) running north to south. Each row of solar photovoltaic (PV) modules will rotate to track the sun across the sky from east to west each day. There is approximately 6 m spacing between each row. The maximum height of each module is approximately 2.6 m.

The solar farm will also consist of two inverter stations. The inverter station incorporates the high/medium voltage switchgear, transformers and 2 x 3 MW inverters. The inverter stations are ground mounted and incorporated on 6 m skids.

The mounting system is constructed on piles that are driven into the ground. During construction there is expected to be 50 personnel on site working from 7 am – 4 pm Monday to Friday. The construction is expected to take approximately 6 months. Once operational the site will be unmanned. Maintenance is expected to be carried out quarterly by a crew of 2 – 3 people.

Solar panels and related infrastructure will be decommissioned and removed upon cessation of operations. This is likely to occur within two years of the end of the project. The site will be returned to the pre-development land use of agriculture.

3 DECOMMISSIONING

The Burrundulla Mini Sustainable Energy Park is intended to be operational for 35 years, at which point the solar farm will be decommissioned and the site returned to the original state. In the unlikely event that the Project is required to be decommissioned prior to the completion of the 35-year lifespan, the decommissioning process will be the same as that outlined in Section 3.1 below.

3.1 Decommissioning Plan

The decommissioning process for the Burrundulla Mini Sustainable Energy Park will be undertaken all at once and will involve the following stages of decommissioning:

1. Notification of stakeholders of proposed de-energisation
2. De-energisation of the solar farm and disconnection of assets
3. Removal of PV modules and associated infrastructure
4. Removal of electrical wiring
5. Rehabilitation of land

Relevant equipment will be brought to site to facilitate decommissioning, including amenities for site crew for the duration of the works. This equipment may include mobile cranes, excavators, skid steers, loaders, rollers/compactors, pile drivers, telehandlers, skip bins, water carts, temporary shipping containers for storage, site office and site ablution blocks.

3.1.1 Notification of stakeholders of proposed de-energisation

ITPD will contact Essential Energy, the state-owned enterprise responsible for operating the distribution network, 12 months prior to the commencement of decommissioning.

Mid-Western Regional Council will be notified and any necessary permits or approvals required for decommissioning will be sought from the Council or issuing authority. Any measures stipulated in these approvals will be implemented prior to works commencing on site.

ITPD does not foresee any issues arising from stakeholder notification of decommissioning.

3.1.2 De-energisation of the solar farm and disconnection of assets

Essential Energy crew or subcontractors will be brought to site to disconnect the service mains from the point of connection and ensure full isolation of the site from the grid.

All aspects of the solar system will be turned off for safety prior to commencement of work on the site in accordance with the shut down procedure stipulated in the system operation manuals. All generation assets will be disconnected and isolated.

The inverter and transformer will be removed from the site via a crane onto a semi-trailer or e-waste dismantling, recycling, scrapping and safe disposal at the waste disposal facility identified in Section 5 of the Waste Assessment submitted as part of this DA. If possible, the transformer can be reconditioned and refurbished for additional service life at another site.

The concrete foundations of the inverter and transformer will be excavated and the concrete recycled.

3.1.3 Removal of PV modules and associated infrastructure

At the end of their life, the PV modules will be removed from site and transported on semi-trailers to a dedicated solar panel recycling facility. Lotus Energy have opened Australia's first PV recycling facility operating in South Australia, with the ability to recycle 100% of end-of-life solar modules, batteries and associated materials, including the inverter, cables and mounting structures.[1] A number of other PV recycling plants are under development in Australia and are expected to be operational by the time of commissioning. The panel recycling technology will be monitored over the lifespan of the project and the specific plant used for recycling the panels for this project will be determined prior to decommissioning works commencing.

In the unlikely case there are no dedicated solar panel recycling facilities operating in 35 years, the panels can be broken down by removing the aluminium frame for recycling and the glass casing can be broken down to granular form for reuse.

The PV module tracker structure will be disassembled. The steel piles will be excavated from the ground and recycled at a scrap metal facility. Other site infrastructure, including the security fence surrounding the solar farm and concrete on site will be removed and re-used or taken to a waste facility to be recycled where possible.

3.1.4 Removal of electrical wiring

Underground cabling and earthing networks will be excavated and recycled. Other cable materials, including cable covers, will be put into skip bins and taken to landfill. Any trenches excavated during this process will be refilled and levelled.

3.1.5 Rehabilitation of land

Any disruptions to the site created during the decommissioning process will be filled and/or levelled as required, such as the locations where piles were removed.

Gravel surfaces and accessways that were established as part of the development will be removed and the ground remediated unless a request is made by the landholder for them to remain for future use.

[1] RenewEconomy 2021, available here

The site will be revegetated for grazing, as per the original use of the site in consultation with the landholder. It is intended that established landscaping, including trees planted during the construction, will remain on-site. After 35 years, the trees planted during construction will likely be large, hence if the removal of trees is requested by the landholder, a permit may be required.

The construction and decommissioning works do not result in significant damage to the land or grading. The measure of success for rehabilitation work will be whether the land is returned to the pre-works state to be used for grazing and rehabilitation is to the landholder's satisfaction.

4 SUMMARY

The project will predominantly generate waste during the construction and decommissioning phases, rather than during operation. To comply with the NSW legislation and policies, waste will be recycled or re-used where possible and only disposed of if no alternative is available.

Cardboard, scrap metal and wood from the construction phase can be recycled. Plastics and general waste will require disposal at the local waste facilities. Technology for recycling of PV panels is advancing rapidly worldwide and while recycling options currently exist, they are likely to be more advanced and readily available at the time of decommissioning. Options for recycling of PV panels should be reviewed as the project progresses.

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