Decommissioning Assessment

Narrabri 3A Solar Farm

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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

TABLES

FIGURES

TABLE OF CONTENTS

1 INTRODUCTION

The proposed Narrabri 3A Solar Farm (referred to as the Project) is located at 11498 Newell Highway to the southwest of the town of Narrabri, within the Narrabri Shire Council area, NSW (Figure 1). ITP Development (ITPD) is proposing to construct a 6.4 MW DC solar facility within the 62 ha site.

Table 1 - Site information

Parameter	Description
Solar farm name	Narrabri 3A Solar Farm
Site reference	Narrabri 3A
Lot/DP(s)	Lot 102 DP579423
Street address	11498 Newell Highway, Narrabri, NSW 2390
Council	Narrabri Shire Council
AC capacity	5 MW
DC capacity	6.4 MW
Site area	Approx. 62 ha
Project area	Approx. 11.32 ha
Current land use	Grazing, recently destocked

Figure 1 - *Proposed 62 ha solar farm site and surrounding farm area (note the project will comprise 11.32 ha within this area)*

2 PROJECT DESCRIPTION

ITPD is proposing to construct a solar farm with a DC capacity of 6.4 MWp and AC output of 5 MW on an approximately 11.32 ha site that is currently used for grazing.

There are to be approximately 12,100 solar modules installed in 140 rows (each row being approximately 103 m long and 2 m wide) running east to west. 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 6.25 m spacing between each row. The maximum hub height of each module is 2.75 m.

The solar farm will also consist of an inverter station. The inverter station incorporates the high/medium voltage switchgear and transformers and two 3 MW inverters. The inverter station is ground mounted and incorporated on a 12.19 m skid.

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 3 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 Narrabri 3A solar farm 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.

3.1 Decommissioning Plan

The decommissioning process for the Narrabri 3A solar farm will involve:

- Notification of stakeholders of proposed de-energisation
- De-energisation of the solar farm and disconnection of assets
- Removal of PV modules and associated infrastructure
- Removal of electrical wiring
- 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.

Narrabri Shire 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, 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 associated waste assessment. If possible, the transformer can be reconditioned and refurbished for additional service life at another site.

The concrete foundations of the inverter, 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 recycled appropriately. Reclaim PV are in the late stages of opening an end-of-life panel and battery recycling facility located in South Australia. A number of additional PV recycling plants are expected to be operational around Australia by the time of decommissioning. 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 other 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 it to remain for future use.

The site will be revegetated for cropping or 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. If the removal of trees is requested by the landholder, a permit may be required.

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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