Powering Sydney's Future
Project Specification Consultation Report Summary

Introduction

A reliable electricity supply to the Inner Sydney area (which includes the Sydney CBD and a number of inner suburbs) is of crucial importance, both to customers and businesses located in these areas, as well as more broadly to New South Wales, due to the importance of this area in contributing to the wider economy.

The Inner Sydney network is operationally centred on two transmission supply corridors operating as a meshed system of 330 kV (TransGrid owned) and 132 kV (Ausgrid owned) circuits.

Key elements of the current electricity transmission networks supplying the Inner Sydney area are deteriorating. In particular, there are a number of oil-filled cables that have been in operation since the 1960s and 1970s and have recently identified issues with their backfill and bedding material, which is compromising their operating performance. As a consequence, TransGrid and Ausgrid have both had to downgrade the capacity that these cables can provide.

These aging oil-filled cables are at a stage in their technical life where there is an increasing likelihood of failure. When a failure occurs, the cable is required to be out of service for lengthy periods to enable repairs, generally up to 3 months but can be longer for difficult locations.

In addition, peak demand in the Inner Sydney area is forecast to rebound on the back of renewed economic activity, as confirmed by committed new customer connections, as well as a large increase in future demand from anticipated customer connections. This increases the amount of energy that may be disrupted as a consequence of increasing capacity constraints.

TransGrid and Ausgrid have undertaken analysis that shows a significant forecast increase in unserved energy to the Inner Sydney area.

TransGrid and Ausgrid are exploring a range of solutions to address this emerging need and are required to apply the Regulatory Investment Test – Transmission (RIT-T) to this investment, as none of the exemptions listed in National Electricity Rules (NER) clause 5.16.3(a) apply. TransGrid and Ausgrid have classified this project as a reliability corrective action because the existing network will not be able to provide the required level of reliability under the NER to meet the expected transmission reliability standards that will apply in New South Wales from 1 July 2018.

TransGrid and Ausgrid have jointly prepared this Project Specification Consultation Report (PSCR) for the first stage of the consultation process of the RIT-T.

This PSCR sets out the technical characteristics that a non-network option would be required to deliver in order to address the identified need, the credible network options and also discusses specific categories of market benefit which in the case of this specific RIT-T assessment are unlikely to be material.

TransGrid and Ausgrid note that, while the consideration of investment in this RIT-T is driven partly by replacement of deteriorating infrastructure, the credible options outlined in this PSCR will also augment supply to the Inner Sydney area. TransGrid and Ausgrid consider that the application of the RIT-T is relevant in this context since none of the exemption clauses listed in 5.16.3 and 5.16.4 of the NER apply. TransGrid and Ausgrid note that the Replacement Expenditure Planning Arrangements rule change is currently being considered by the Australian Energy Market Commission and may result in the RIT-T process also being explicitly applied to replacement expenditure in the future.

Identified need

The identified need for this Regulatory Investment Test for Transmission (RIT-T) is TransGrid and Ausgrid's assessment that the future value of unserved energy able to be avoided by undertaking investment exceeds the investment cost of doing so. That is the existing network will not be able to provide the required level of reliability under the NER to meet the expected transmission reliability standards that will apply in New South Wales from 1 July 2018 and in the absence of undertaking such investment, the following are expected to increase the amount of unserved energy in the future:

1. The deteriorating condition of aging oil-filled cables in the existing network and the derating of the 330 kV Cable 41 by TransGrid (in 2011 and 2016) and the derating of a number of 132 kV cables by Ausgrid (beginning in 2012).
2. Ausgrid's planned retirement of three oil-filled cables in Inner Sydney in the next two years.
3. The age-related deteriorating condition of a further eight oil-filled Ausgrid cables in the Inner Sydney area.
4. Forecast increases in peak demand due to renewed economic activity within Inner Sydney.

In addition to lowering unserved energy, TransGrid and Ausgrid consider that resolving the forecast capacity constraint may also deliver benefits in terms of avoided operating and maintenance costs associated with continued use of oil-filled cables, as well as lower costs associated with meeting environmental obligations.

Potential options to address the identified need

In addition to seeking expressions of interest from proponents of non-network solutions, TransGrid and Ausgrid have identified six credible network options which would meet new reliability standards for the Inner Sydney area. These options include:

- **Option 1:** install two 330 kV cables in stages, retire Cable 41 and decommission Ausgrid cables in two stages
- **Option 2:** operate Cable 41 at 132 kV, install two 330 kV cables in stages and decommission Ausgrid cables in two stages
- **Option 3:** install two 330 kV cables at once, retire Cable 41 and decommission Ausgrid cables in one stage
- **Option 4:** remediate Cable 41 backfill to 575 MVA, install two 330 kV cables in stages and decommission Ausgrid cables in one stage
- **Option 5:** remediate Cable 41 backfill to 575 MVA, install two 330 kV cables at once (initially operating at 132 kV) and decommission Ausgrid cables in two stage
- **Option 6:** remediate Cable 41 backfill to 575 MVA, install two 330 kV cables at once and decommission Ausgrid cables in one stage

TransGrid and Ausgrid has considered in this PSCR, but not progressed with the following options that are deemed not credible options:

- Two 132 kV submarine cables from Lane Cove to Pyrmont and two 330 kV cables from Rockwood Road to Beaconsfield operating initially at 132 kV;

- Four 132 kV cable circuits from Chullora to Beaconsfield and two 132 kV submarine cables from Lane Cove to Pyrmont;
- Remediation of TransGrid's 330 kV cable 41 backfill and bedding materials to 663 MVA; and
- Replacing existing 132 kV oil-filled cables on a like-for-like basis.

Next steps

TransGrid and Ausgrid welcome written submissions on the Powering Sydney's Future PSCR, which can be downloaded from the TransGrid website www.transgrid.com.au and Ausgrid website www.ausgrid.com.au.

If TransGrid and Ausgrid consider that submissions received during the consultation period identify additional credible options, full consideration will be given to all additional credible options in the Project Assessment Draft Report (PADR).