

## DEMAND MANAGEMENT SCREENING TEST

### Wyong feeder 19

#### Current Supply Arrangements

The system under consideration is 11kV feeder 19 at Wyong zone as it will be configured in summer 2009/10. At this stage some load that is currently supplied by feeder 12 will have been transferred to feeder 19. The load area is in the Central Coast and includes parts of Wyong, Mardi and Watanobbi.

The load covers a large area and many of the feeder runs are quite long. Parts of this feeder also have a small cross-sectional area resulting in limiting capacity and there are also concerns about excessive voltage drop at the end of the feeders.

This area has previously had sections classified as non-urban, however due to recent developments the area has now changed to an urban classification. As a result of the change the system is to be designed so that if any one feeder experiences an outage, the loads on that feeder can be picked up by one or more of the interconnected feeders. This should be achieved with a maximum of 3 – 5 switching operations, which aligns with the licence requirement that 11kV customer interruptions should be less than 4 hours. In addition, the licence criteria require us to maintain a voltage drop of 6% or lower across the feeders under normal conditions.

#### Supply Capacity and Demand Forecast

Under normal conditions, the feeder can supply 7.5MVA of load while maintaining satisfactory voltage conditions. The demand on the feeder is forecast to reach 8.3MVA in summer 2009/10 and continue to grow at an underlying rate of 0.97% p.a.

Following the worst case single failure, the load can be transferred onto other feeders. However the pick up path for part of the feeder load is via some small cross-section cables with a capacity of 2.2MVA. The demand on this critical section is forecast to reach 2.9MVA in summer 2009/10 and continue to grow at an underlying rate of 0.97% p.a.

The load under consideration has a summer peak from 10am to 2pm.

#### Supply Strategy Option

The preferred supply system option is to construct a new feeder from Wyong Zone along with some rearrangement of existing network assets in order to remove some of the load from feeder 19.

The cost of the project is estimated at \$3.4M. The completion date for the proposed solution is expected to be 1<sup>st</sup> December 2009, and a decision date for this investment is required as soon as possible.

### Required Demand Management Characteristics

A demand management solution would need to resolve both the voltage condition issue and the worst case failure pick up requirements.

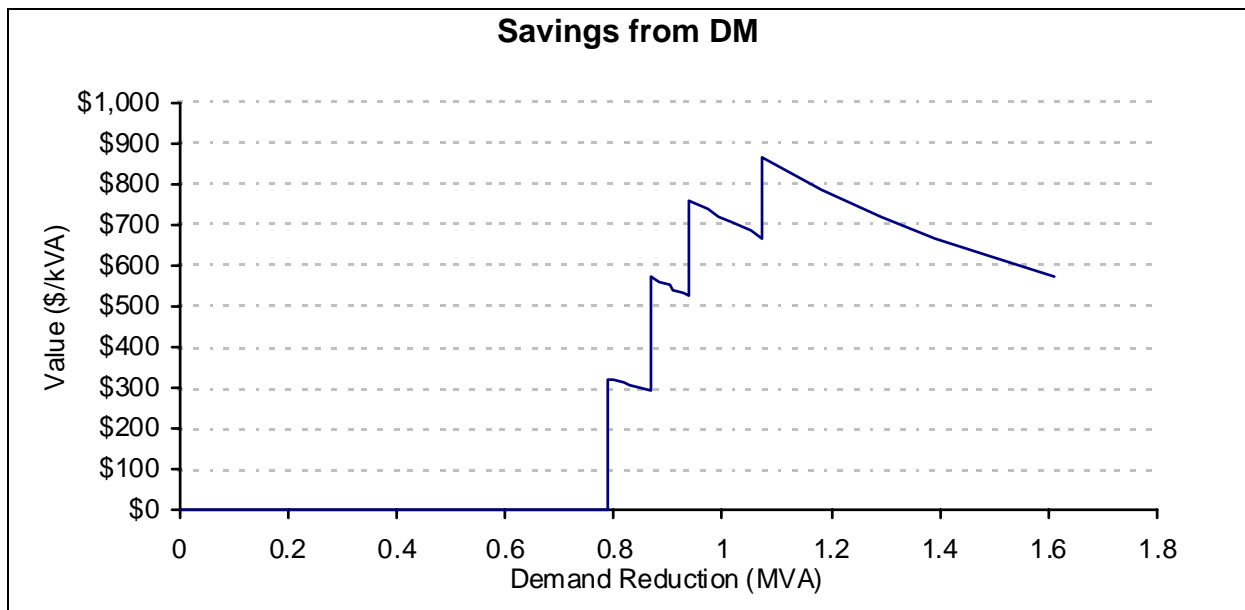
To defer the investment by one year a demand reduction of 0.8MVA (9.5%) would need to be achieved by summer 2009/10 including a load reduction of 0.7MVA (24%) from the critical section comprising the substations listed in the table below. The saving from this deferral would be \$260,000 or \$323/kVA, which is moderate.

A two year deferral would require a demand reduction of 0.9MVA by summer 2010/11 including a load reduction of 0.7MVA from the critical section. The saving from this deferral would be \$490,000 or \$570/kVA, which is high.

**Critical Load Substations**

PT13088	Rankens Church	PT11489	White River Johnson
S13886	Church Pacific	PT14078	Bluegum McPherson
PT12906	Ranken River	S12860	Pacific Johnson
PT12043	River Pacific	S14972	Pacific Service Centre
PT13185	McPherson Pacific	S18709	Pacific Johnson 0.5
PT11354	BBC Timber Pacific	S18177	Mildon Pacific

As demand growth is forecast to continue on the feeders, longer deferrals would require further demand reductions and lead to greater savings.



A review of the customers connected to the critical section of the feeder revealed that the largest customer has a peak demand of about 0.5MVA during summer, and the next largest six customers have individual loads of less than 0.1MVA. It is highly unlikely that a reduction of 0.7MVA could be achieved from these customers.

The size of the required demand reduction from the overall load is moderate (0.8MVA, or 9.5% of the existing load), but high in relative terms for the critical section (24% of existing load). There are no large customer loads that might lend themselves to sizeable reductions. The savings that would be generated from

deferring the project are moderate to high. The time available to develop demand management options is limited.

### **Recommendation**

Based on this analysis it is not considered reasonable to expect that it would be cost-effective to postpone the proposed supply-side solution by implementing demand management strategies.