

## DEMAND MANAGEMENT SCREENING TEST

### Lake Munmorah Zone 11kV Feeders 1 and 4

#### Current Supply Arrangements

Feeders 1 and 4 of Lake Munmorah Zone supply an area of the Central Coast lying on a peninsula consisting of the suburbs of Gwandalan and Summerland Point. These are the peninsula's sole feeders and there is presently no other feeder available for alternate supply during emergency conditions.

New planning design criteria require us to design systems of this type 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, as stipulated in the licence requirement that 11kV customer interruptions in urban areas with a population greater than 5,000 people should be less than 4 hours.

#### Supply Capacity and Demand Forecast

The area supplied by feeders 1 and 4 from Lake Munmorah Zone is predominantly residential with some commercial and industrial customers.

Forecasts for the winter of 2008 indicate that both feeders 1 and 4 would not meet their design requirements, exceeding the design limit by 6.3MVA and 6.1MVA respectively under worst case fault conditions. The forecast worst-case fault scenarios for the period of winter 2008 are shown below:

Feeder	Scenario	Capacity of limiting section	Emergency loading
1	Failure of feeder at or near Zone	5.2MVA	11.5MVA
4	Failure of feeder at or near Zone	5.4MVA	11.5MVA

**Table 1: Winter 2008 Worse Case Fault Scenarios**

Additionally, the summer of 2008/2009 feeders 1 and 4 are also forecasted to exceed capacity, by 5.MVA and 4.9MVA respectively, under worst case fault scenarios. These scenarios are shown below.

Feeder	Scenario	Capacity of limiting section	Emergency loading
1	Failure of feeder at or near Zone	4.6MVA	9.6MVA
4	Failure of feeder at or near Zone	4.7MVA	9.6MVA

**Table 2: Summer 2008/2009 Worse Case Fault Scenarios**

## Supply Strategy Option

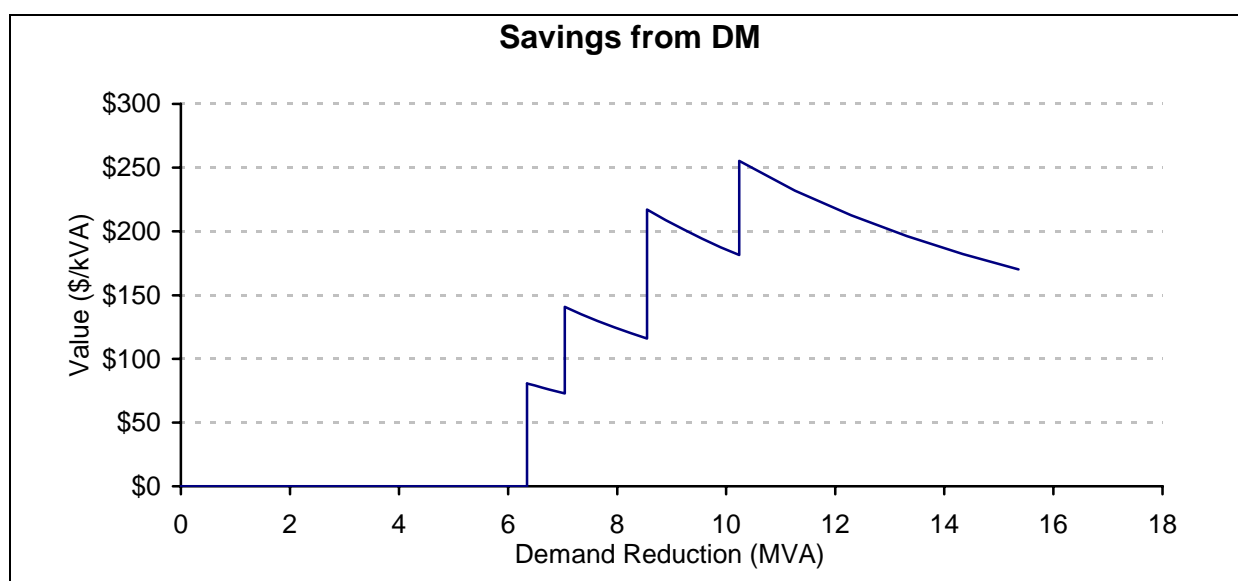
The proposed supply system option is:

- Install one new feeder to Summerland Point;
- Install one new feeder along Chain Valley Bay Rd to Mulloway Rd;
- Reconductor existing overhead feeder sections and install reclosers in the Gwandalan area to provide remote operation;

The estimated cost is \$6 million and commissioning is proposed for December 2007. To meet the required completion date a decision is required as soon as possible.

## Required Demand Management Characteristics

To achieve a one year deferral of the proposed investment, we would need to identify and implement a minimum of 6.3MVA of demand reduction prior to winter 2008. An additional 0.85MVA demand reduction would be required each consecutive year as a result of the forecasted demand growth in the area. This is for the winter peak periods in an area where residential load dominates. Load reductions during the summer periods would also be required. A reduction of 5MVA would be required for summer 2008/2009 and a further 0.8MVA per year for further deferral.



The demand reduction required on the feeders represent more than a fifty percent demand reduction on both feeders during both winter and summer. In financial terms, the savings from a one year deferral would be \$512,000, or \$80/kVA which is low.

Given the size of demand reductions required for a single year deferral, at greater than half of the present load during both winter 2008 and summer 2008/2009, it is highly improbable that sufficient options could be found.

## 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.