

DEMAND MANAGEMENT SCREENING TEST

Tomago Zone Substation

Current Supply Arrangements

Raymond Terrace zone substation currently has two parts, the permanent substation, two 25MVA transformers commissioned in 1982, and the temporary substation with a 15MVA transformer. Condition analysis has determined that the equipment at Raymond Terrace permanent zone substation should be replaced within the next five years

Raymond Terrace Zone has been approved for redevelopment to address condition and capacity issues. This work is planned to be completed in November 2010. The rating at the zone will increase from 27.5MVA in summer and winter to 45.5MVA in summer and winter. The load on Raymond Terrace zone is forecast to exceed the redeveloped capacity in summer 2008/09, prior to the completion of the redevelopment.

Raymond Terrace Zone has eleven 11kV feeders, seven of which supply general network load, and four feeders dedicated to supplying one large industrial customer.

The feeders 14290, 14291, 2005 and 2001 supply the eastern and western Raymond Terrace township and the Seaham and Brandy Hills area. Work has been authorised to construct three new feeders from Raymond Terrace Zone to Raymond Terrace township. The new feeders will provide supply for the significant new spot loads expected in this area.

Feeders 2000, 2006 and 21094 supply the Tomago industrial area.

Supply Capacity and Demand Forecast

The load on Raymond Terrace zone substation is a mix of residential, rural and urban, and industrial. The peak demand occurs during summer between 12pm and 6pm.

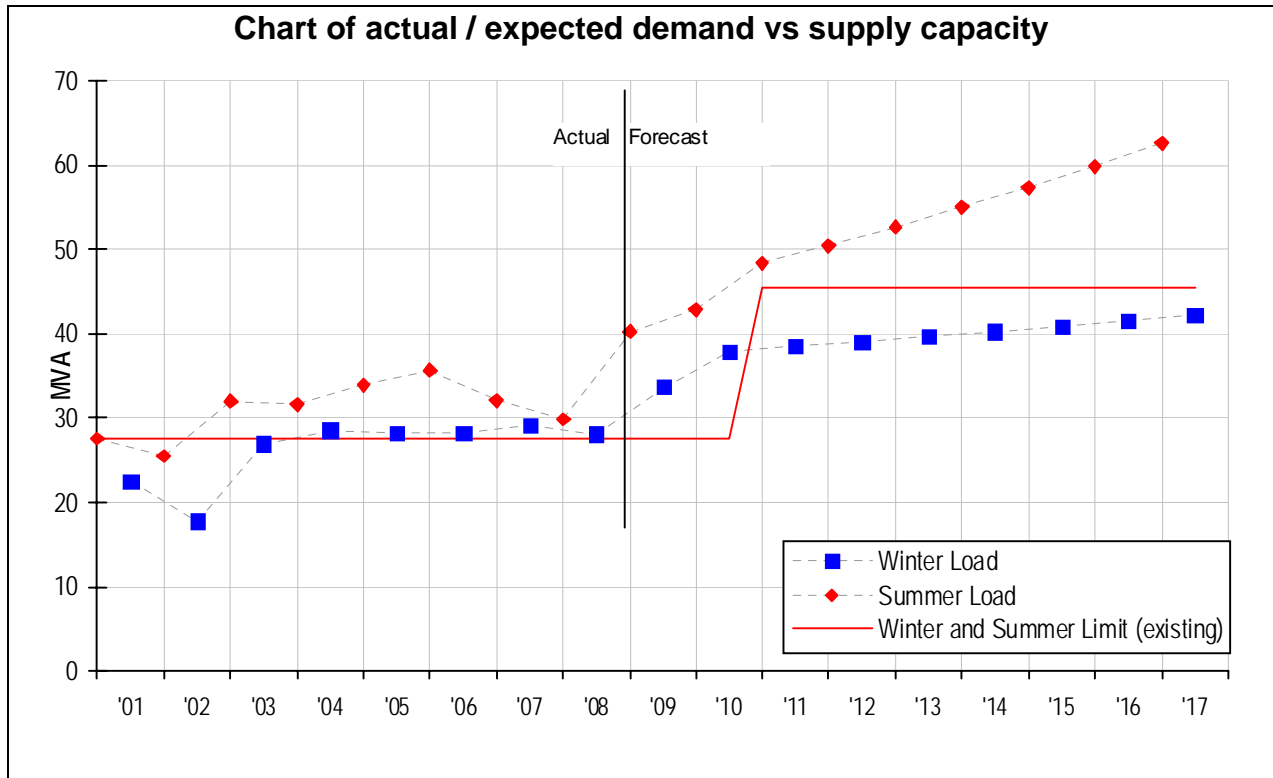
There are significant new loads expected on feeders 2000, 2006 and 21094, which supply the Tomago industrial area.

The load on feeders 2000, 2006 and 21094 is forecast to exceed the design criteria by an aggregate of 11.6MVA in summer 2009/10, as shown below.

Area	Load exceeding design criteria (MVA)	Network location of load reduction
Tomago Industrial Area	1.14	Feeder 2000
	10.46	Feeder 21094 and feeder 2000
Total	11.6	

As can be seen in the chart below, the summer demand for Raymond Terrace zone substation is expected to increase at a significantly faster rate than the winter demand, with the summer demand always greater than the winter demand.

The forecast peak demand for Raymond Terrace is shown on the chart below. In summer 2010/11 the peak load is forecast to be approximately 2.9MVA above the design planning limit.



Supply Strategy Option

The preferred supply side option is to build a new zone substation at Tomago.

The cost of the project is estimated at \$19.3m. To meet the required completion date of November 2010, a decision must be made by March 2009.

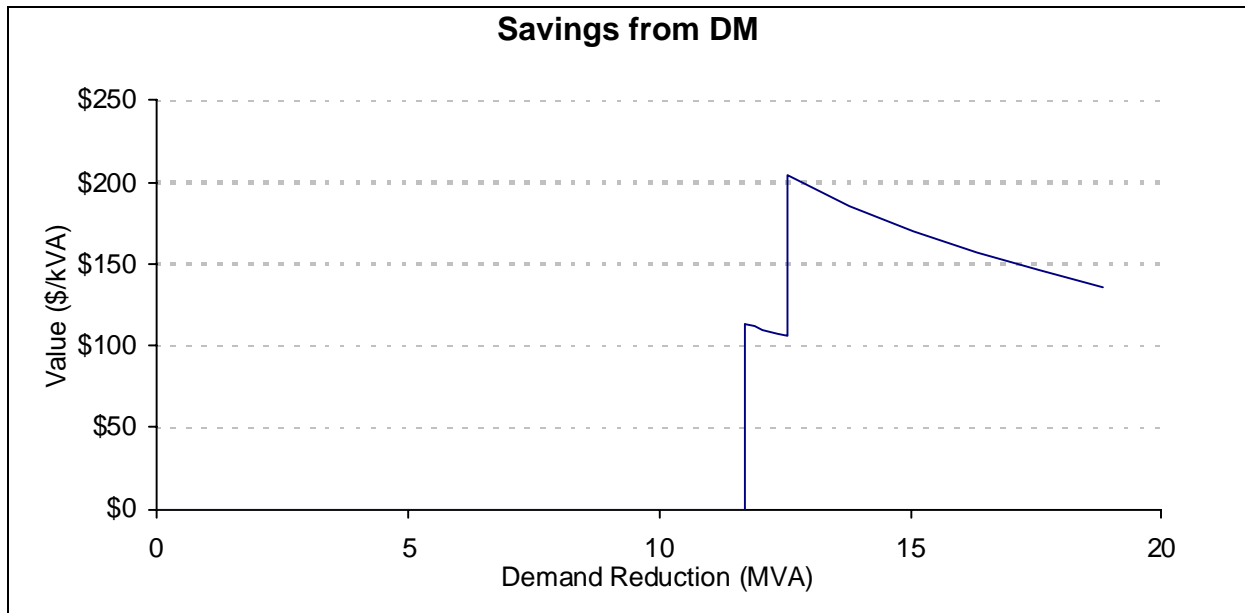
Required Demand Management Characteristics

The demand reduction would need to occur in summer, during the day time peak, targeting industrial loads.

A minimum of 1.14MVA load reduction is required from feeder 2000, while a total of 11.6 MVA is required from feeder 2000 and feeder 21094.

To achieve a one year deferral of the proposed investment, we would need to identify and implement 11.6MVA of demand management by November 2010. 11.6MVA represents 62% of the total load on feeders 2000 and 21094, which is very high. The saving from a one year deferral would be \$1.3m, or \$114/kVA, which is low.

To achieve a two year deferral we would need to identify and implement 12.43MVA of demand management by November 2011, 12.43MVA represents 64% of the load on feeders 2000 and 21094, which is very high. The saving from a two year deferral would be \$2.56m or \$206/kVA which is moderate.



The size of the reduction required is very large, both in absolute terms and in relation to the loads on the specific feeders involved and would need to be drawn from very specific locations. This would be difficult to achieve at any cost. Partly as a consequence of the large reduction required, the savings (in per kVA terms) are low.

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.