

DEMAND MANAGEMENT SCREENING TEST

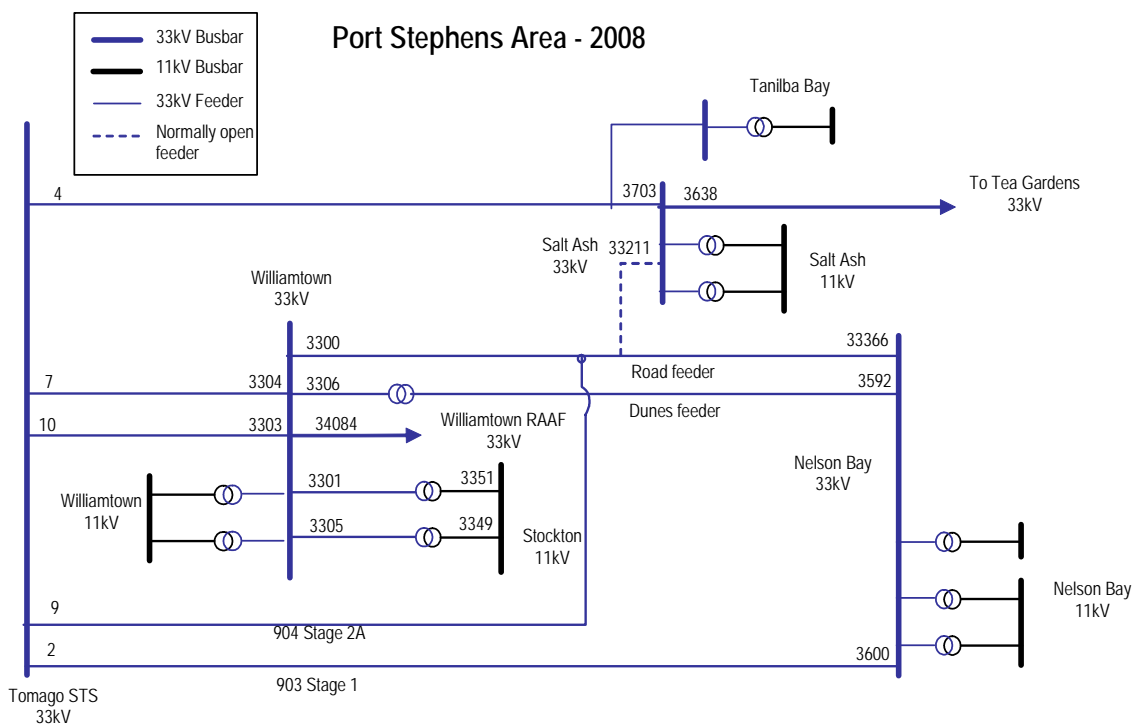
Williamtown 33kV Network

Current Supply Arrangements

The system under consideration includes two 33kV feeders (No. 7 & 10) supplying Williamtown 33kV busbar from Tomago Subtransmission Substation (STS), which in turn supplies Williamtown zone, the RAAF base, and Stockton and Nelson Bay zones.

A third feeder (No. 903) connects directly to Nelson Bay from Tomago STS, and a fourth (No. 904) is under construction. The first stage of 904 connects Tomago STS to Williamtown (completed), and the second stage will ultimately connect it to Nelson Bay zone substation.

A schematic diagram of this system is shown below.

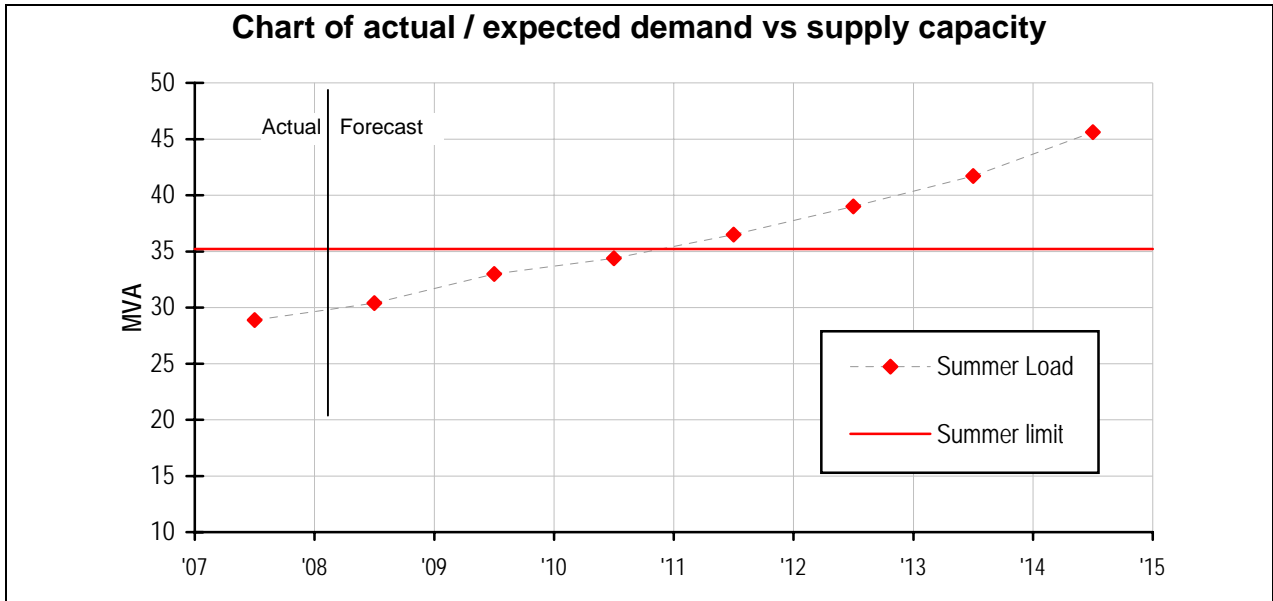


Supply Capacity and Demand Forecast

Summer is the critical season for this system. The customers in this area consist of a mixture of semi-rural and suburban residential, commercial and light industrial. The area also includes Newcastle Airport, a growing regional airport.

The worst case scenario for the system supplying Williamtown 33kV busbar is the loading on feeder 10 with an outage of feeder 7. The forecast of peak demand and

the design limit for feeder 10 in the worse case scenario is shown on the chart below. Summer 2011/2012 sees the forecast load 1.3MVA above the design planning limit, rising to 10.4MVA above the limit in 2014/15.



Supply Strategy Option

The preferred supply side option is to construct a new 33kV feeder between Tomago STS and Williamtown zone substation. The estimated cost is \$5.0m, with commissioning proposed in 2011.

A decision on this investment must be made by March 2009.

Required Demand Management Characteristics

For the worst case scenario considered in this analysis (ie an outage of feeder 7), feeders 10 carries approximately 50% of the total load supplied on this 33kV system. Therefore, any load reductions at the relevant zone substations (Williamtown, Stockton, Nelson Bay and the RAAF) will need to be approximately double the reduction required on 33kV feeder 10.

The DM requirement according to location is therefore summarised in the table below:

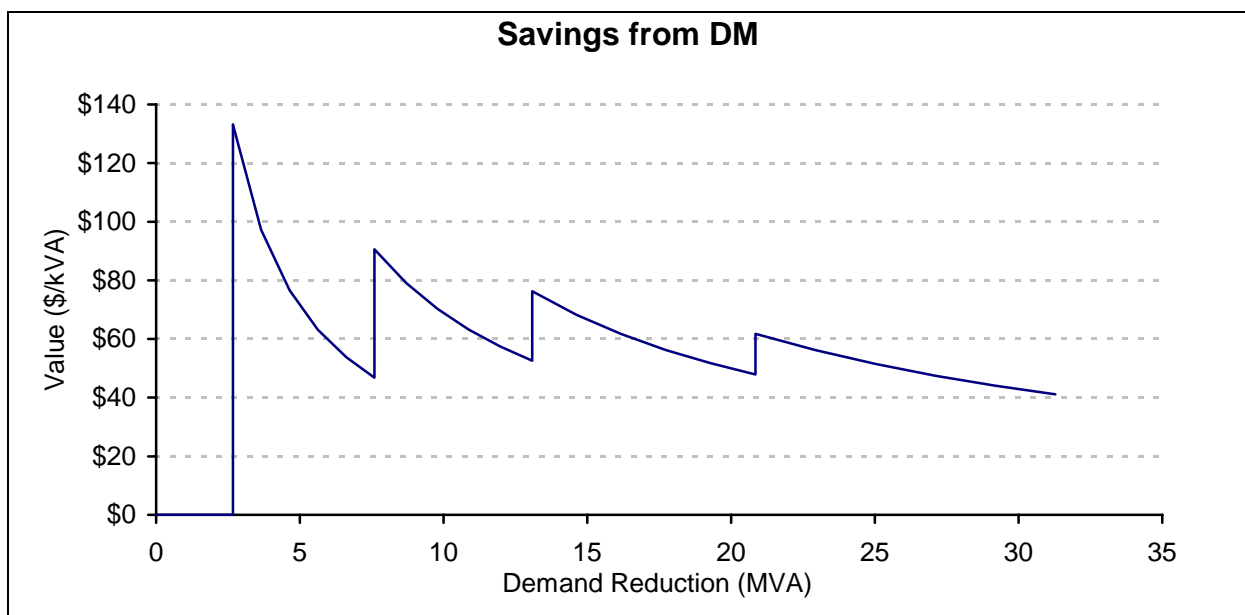
Location	2011/12	2012/13	2013/14	2014/15
33kV feeder 10	1.3	3.8	6.5	10.4
Zone substations	2.7	7.6	13.1	20.9

If 2.7MVA of demand reduction could be achieved by summer 2011/12, then the proposed supply side investment could be deferred by one year. This represents 3% of total demand on the relevant zone substations.

The savings from this deferral is \$360,000, or \$133/kVA, which is moderate.

If 7.6MVA of demand reduction could be achieved, then the proposed supply side investment could be deferred by two years. The savings from this deferral is \$690,000, or \$91/kVA, which is low.

As underlying demand is forecast to continue to grow, longer deferrals would require additional reductions.



Infrastructure is in place for up to 7MVA of relocatable diesel generators at Nelson Bay zone substation in summer 2010/11.

Based on previous projects and current information we have estimated the cost of continuing to use relocatable generators at Nelson Bay. To reinstall 3MVA of relocatable diesel generators at Nelson Bay zone substation for summer 2011/12 would cost approximately \$500,000, which is of the same order of magnitude as the savings from the first year deferral.

To reinstall 7.6 MVA of relocatable diesel generators at Nelson Bay zone substation for summer 2012/13 would cost approximately \$1.1M. So in order to achieve a two year deferral using relocatable generators the total cost would be \$1.6M, which is significantly higher than the savings from the two year deferral

The size of the demand management requirement is moderate in absolute terms, however it is small when compared with the total demand on this 33kV network. The relative value is low to moderate. The amount of time available for investigation is adequate.

On balance it is considered reasonable that this project might be deferred with demand management.

Recommendation

Based on this analysis it is considered reasonable to expect that it may be cost-effective to postpone the proposed supply-side solution by implementing demand management strategies. A demand management investigation will be undertaken.