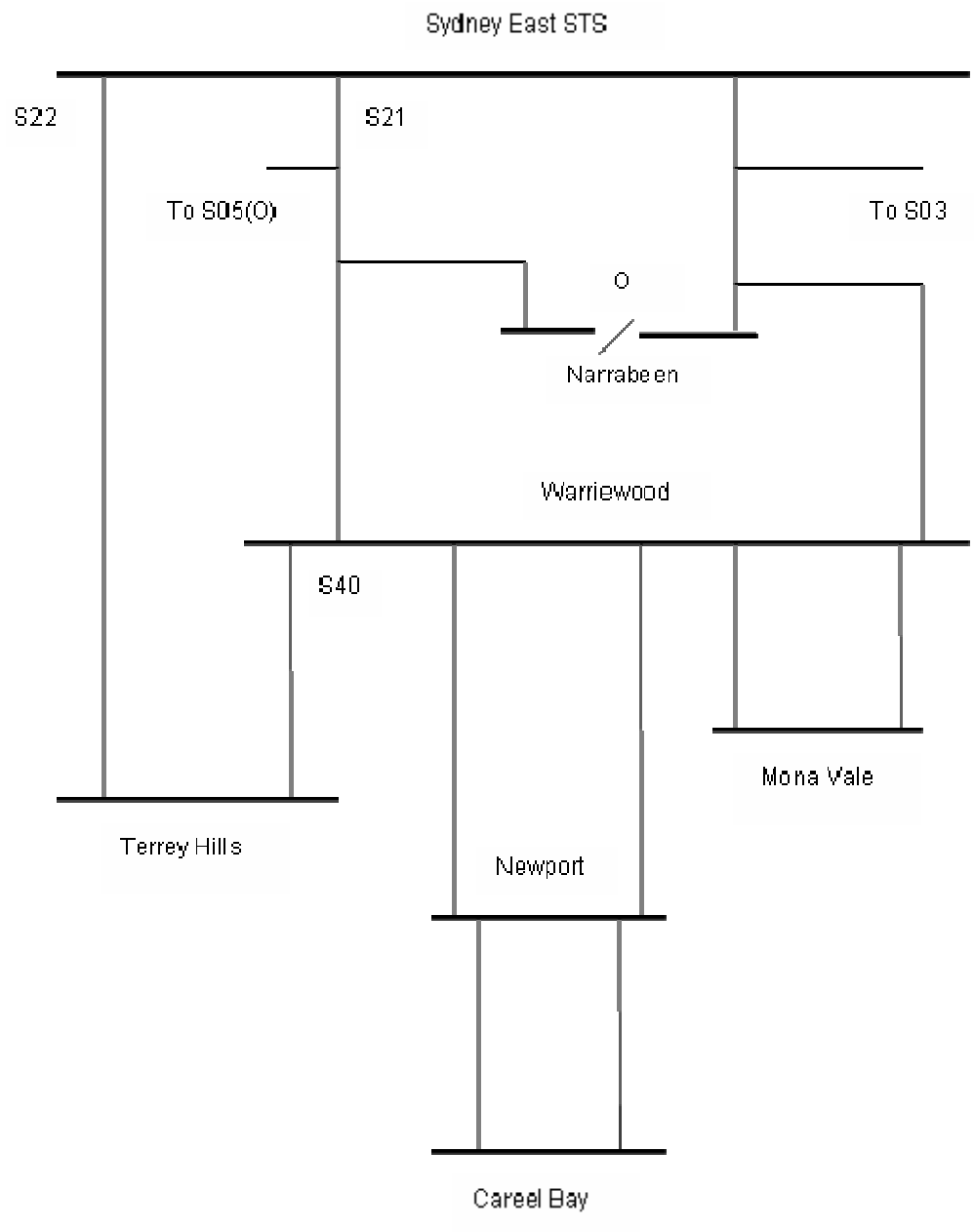
DEMAND MANAGEMENT SCREENING TEST

33kV feeders from Sydney East STS

Current Supply Arrangements

Sydney East subtransmission substation (STS) supplies a number of zone substations in the Pittwater municipality including Terrey Hills, Narrabeen, Mona Vale, Newport and Careel Bay.

The 33kV system supplying the zone substations listed above is shown schematically below.



Summer is the critical season for this system. Under the applicable design planning criteria, capacity is limited by the thermal rating of the 33kV feeders. We estimate that demand would exceed relevant capacity limits on feeders S21 and S22 in summer 2008/09 under certain conditions.

This system supplies a large area bounded by Terrey Hills in the west, Narrabeen in the south, Palm Beach in the north and the Pacific Ocean in the east.

Supply Capacity and Demand Forecast

The load on this 33kV system is a mix of residential and commercial. Some zone substations experience summer daytime peaks, and others have highest peaks in winter evening. However the system overall has highest peaks in summer afternoon.

Numerous outage scenarios have been considered to determine the capacity of this 33kV system to supply future demand growth. We have determined that the worst case scenario occurs during an outage of 33kV feeder S21. In this event, we forecast that demand would exceed the 50.6MVA limit of feeder S22 by 2.9MVA in summer 2008/09, rising to 10MVA by 2011/12. Capacity is sufficient to meet demand in winter for the foreseeable future.

Supply Strategy Option

The preferred supply side option is to build a new 33kV feeder from Sydney East STS to Terrey Hills zone substation. The proposed commissioning date is prior to summer 2008/09. The estimated cost is $8m.

The meet this delivery date a decision on this investment must be made by February 2008.

Required Demand Management Characteristics

If demand reduction could be implemented across Terrey Hills, Narrabeen, Mona Vale, Careel Bay & Newport zone substations prior to November 2008 such that the load on feeder S22 is reduced by 2.9MVA (with S21 is out of service), then the investment in the new 33kV feeder could be deferred by one year.

Loadflow modelling has shown that the total amount of demand management at zone substation level to achieve this feeder reduction varies depending on where on the network it occurs. We have focussed on two scenarios as follows:

i) The demand management is distributed evenly across all zones in proportion to their load share on the network

ii) All the demand management occurs at Terrey Hills zone, which is the only zone directly connected to feeder S22

For the first case, a total demand reduction of 4.8MVA is required on the zone substations as shown below. This is around 5% of the total demand on these substations.

Zone	S2007/08	S2008/09	S2009/10	S2010/11	S2011/12
Terrey Hills	0.0	1.8	3.0	4.7	6.5
Narrabeen	0.0	0.5	0.8	1.3	1.8
Mona Vale/Careel Bay/Newport	0.0	2.5	3.8	6.0	8.3
Total	**0.0**	**4.8**	**7.7**	**12.0**	**16.7**

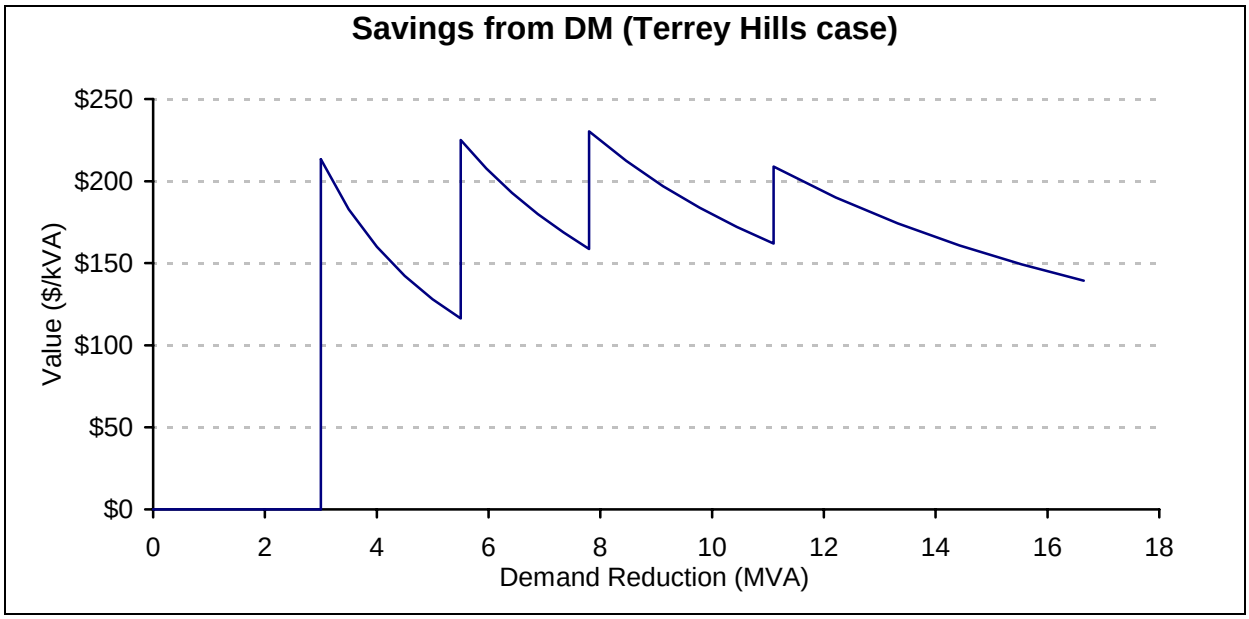
The saving from this deferral would be $640,000 or $133/kVA, which is moderate. The demand reduction would need to target the summer afternoon peak period.

If 7.7MVA of demand reduction on these zones could be achieved prior to summer 2009/10, then the project could be deferred by two years. The saving from this deferral would be $1.24m or $161/kVA, which is moderate.

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

For the second case, a total demand reduction of 3.0MVA is required at Terrey Hills zone substation to achieve a deferral. This is around 16% of the total demand on this substation.

The value of this deferral is still $640,000, but because less demand reduction would be required, the relative value is $213/kVA, which is higher. A two year deferral would require a reduction of 5.5MVA at Terrey Hills zone.



It is possible scenarios other than these two cases could result in sufficient demand reduction on feeder S22 to enable a deferral.

The required demand reduction is moderate in absolute terms, and as a proportion of the total demand in the local area. The relative value is moderate, but there is only two months before an investment decision must be made, and this period includes Christmas. It is possible that cost effective demand management options might be found by an investigation.

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, initially focussing on currently available information to enable a decision to be made in the necessary timeframe.