

DEMAND MANAGEMENT SCREENING TEST

Sefton & Greenacre Park Zone Substations Load Area

Current Supply Arrangements

Sefton 132/11kV zone substation consists of three 37.5MVA transformers and is supplied from Bankstown subtransmission substation (STS) via 132kV feeders 240 & 241. It is designed for an ultimate four transformer configuration. Summer is the critical season for Sefton zone substation, however winter demand is also a potentially significant issue. This substation can be loaded to a maximum of 70.7MVA in summer while meeting the applicable design planning criteria during a single major component outage. Further, this limit also applies when all elements are in service.

Sefton zone supplies parts of Auburn, Bass Hill, Berala, Birrong, Chester Hill, Leightonfield, Lidcombe, Regents Park, Sefton & Yagoona.

The adjacent Greenacre Park zone substation consists of two 36MVA transformers and two 37.5MVA transformers. It is also supplied from Bankstown STS via the same 132kV feeders supplying Sefton - 240 & 241. Summer is the critical season for Greenacre Park zone substation. This substation can be loaded to a maximum of 80.0MVA in summer while meeting the applicable design planning criteria during a single major component outage. When all elements are in service, the substation can be loaded to a maximum of 100MVA while meeting the applicable design planning criteria.

Sefton and Greenacre Park zones are strongly interconnected at 11kV.

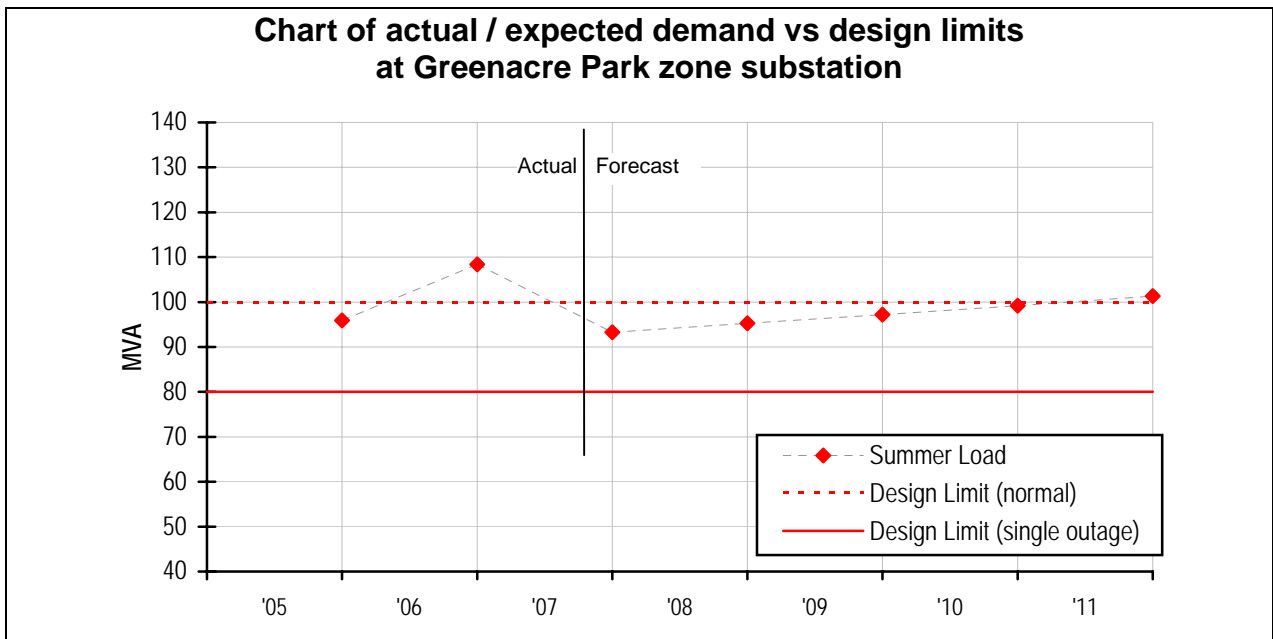
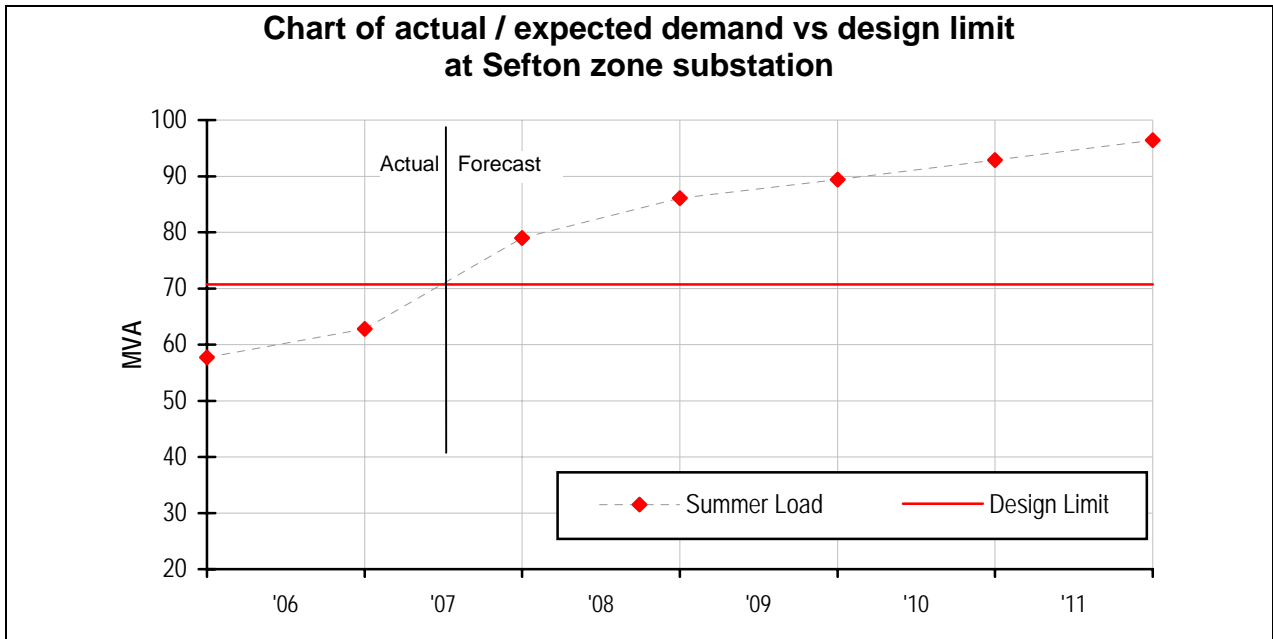
Greenacre Park zone supplies parts of Auburn, Bankstown, Bass Hill, Berala, Chullora, Greenacre, Lidcombe, Mt Lewis, Punchbowl, Rockwood and Yagoona.

Supply Capacity and Demand Forecast

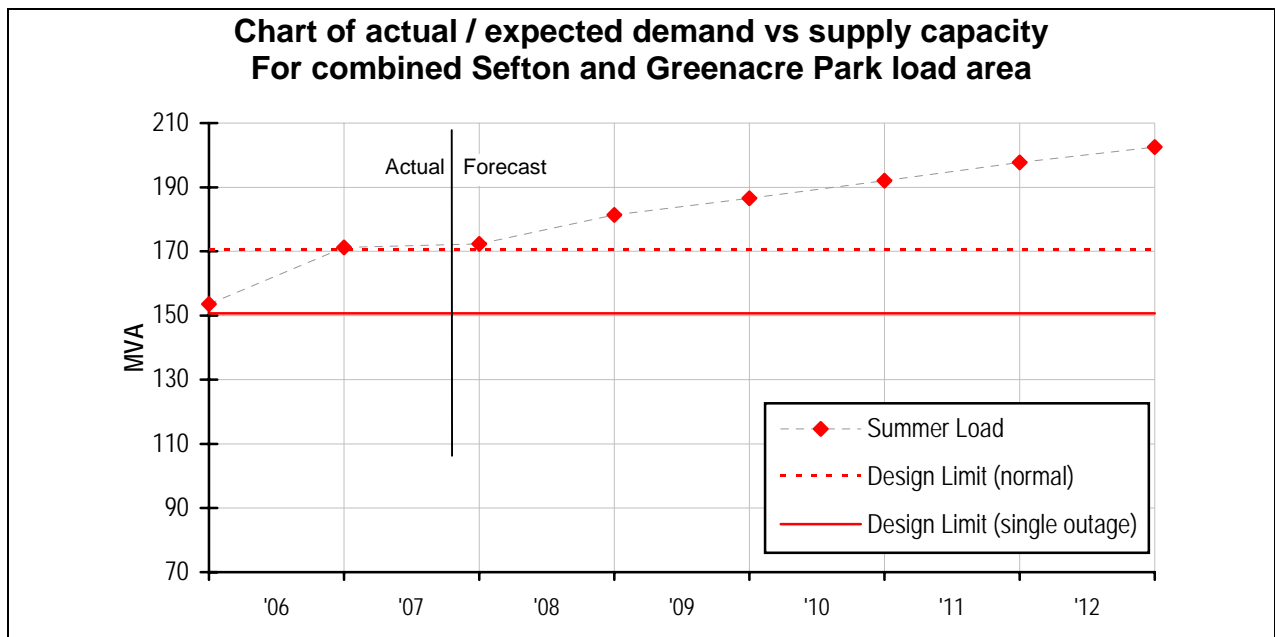
The load on these substations is a mix of residential and commercial/industrial customers, with summer afternoon peaks. The new Regents Park Industrial site is expected to lead to demand growth in the future. Summer is the critical season.

Summer peak demand at Sefton was 57.7MVA in 2005/06. We propose to transfer approximately 14MVA of load from the adjacent Greenacre Park zone substation before summer 2007/08. Once this transfer has occurred, we forecast that demand would exceed the 70.7MVA design limit in summer 2007/08 by 8.3MVA.

Summer peak demand at Greenacre Park was 95.9MVA in 2005/06. When we include the proposed transfer of approximately 14MVA of load to the adjacent Sefton zone substation before summer 2007/08, we forecast that demand would exceed design limit in summer 2007/08 by 13.3MVA.



The limits under the design planning criteria and forecast demand for combined Sefton and Greenacre Park load area are shown in the following graph. It shows that demand would exceed the design limit by a total of 21.6MVA in summer 2007/08, rising to 41.4MVA in summer 2010/11. Even with all elements in service, the combined design limit will be reached in 2007/08 and would be exceeded in 2008/09.



Supply Strategy Option

The preferred supply side option is to build a new Potts Hill zone substation. The proposed commissioning date is prior to summer 2010/11. The estimated cost is \$35m.

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

To deal with the gap between forecast demand and system normal design limit in the period prior to summer 2010/11. It is proposed to installing a 4th transformer at Sefton zone substation. The estimated cost of this option is \$3.0m, and is proposed for commissioning before November 2008. A decision on this investment must be made as soon as possible.

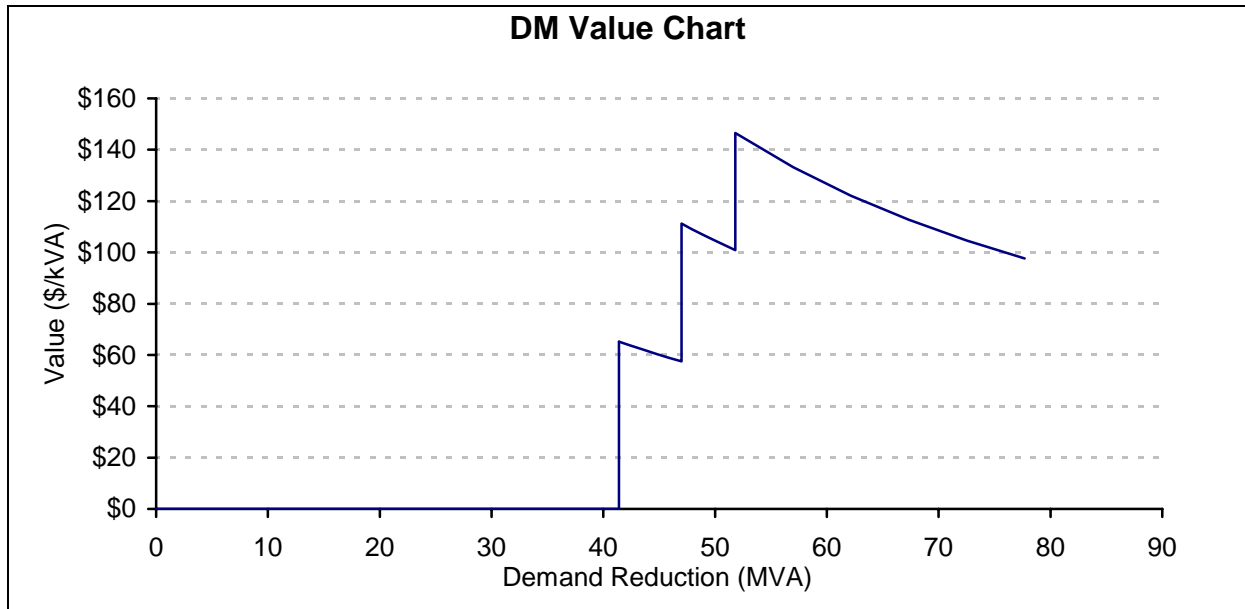
Required Demand Management Characteristics

If 41.4MVA of demand reduction could be implemented in the area supplied by Sefton zone and the adjacent Greenacre Park zone prior to November 2010, then the need for the investment in the new zone substation could be deferred by one year. This is over 20% of the total demand on these substations. The value of this deferral is \$2.7m or \$65/kVA, which is low. The demand reduction would need to target both the residential and commercial sectors and occur in the summer afternoon peak period.

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

The required demand reduction is very high in absolute terms, and also as a proportion of the total demand in the local area. The relative value is low, and there is only a short time before an investment decision must be made. It is therefore not

considered reasonable to expect that this project could be deferred with demand management.



Issues prior to commissioning of Potts Hill zone

In the three years prior to the earliest date for commissioning of Potts Hill zone, we forecast that demand in the combined area will be greater than the applicable design limits with all elements in service. This leads to an unacceptable probability that customers would face a loss of supply during peak demand conditions.

While installing a 4th transformer at Sefton zone substation will not lead to a greater load carrying capacity under emergency conditions, it would substantially increase capacity with all elements in service. The estimated cost of this option is \$3.0m, and is proposed for commissioning before November 2008.

This project would allow Sefton to supply a greater proportion of demand during normal supply conditions, reducing demand on Greenacre Park zone substation. This would substantially reduce the likelihood of loss of supply to customers in the event of a major component failure at either substation.

This probability can be measured in terms of the amount of “energy at risk”. Our analysis shows that the energy at risk is reduced by 76% over the period 2008/09 to 2009/10 through this project.

We have used IPART’s published methodology for assessing demand management projects which reduce energy at risk to assess the cost effectiveness of this project.

The implied saving in distribution costs through implementing the Potts Hill zone investment two years later than would be necessary to meet the design planning conditions is \$5.5m. Under the methodology, a project that reduces the energy at risk by 76% would be considered cost effective if its cost was less than 76% of this amount (\$4.2m).

As the cost of the proposed project (\$3m) is less than this amount, we consider the project to install the 4th transformer at Sefton to be a cost effective means of achieving this outcome.

Achieving the same impact through demand management strategies would require a reduction in demand of approximately 30MVA, which would need to be delivered before summer 2008/09. It would not be reasonable to expect this amount to be achievable in the timeframe, or that it would be more cost effective than the proposed project.

However, it may be that some additional opportunities may exist to reduce the energy at risk even further through the implementation of demand management in the Sefton and Greenacre Park areas in the years prior to the commissioning of the new zone substation.

Recommendation

Based on this analysis it is not considered reasonable to expect that it would be cost-effective to postpone the need for the proposed Potts Hill zone substation by implementing demand management strategies.

The proposed installation of a 4th transformer at Sefton zone is considered a cost effective means of reducing energy at risk in the period prior to the completion of the Potts Hill zone substation. It is not considered reasonable to expect that demand management strategies would provide a cost effective alternative to this project.

However, demand reductions on this system may be cost effective as a means to further reduce the likelihood of loss of supply in the event of a major outage prior to the commissioning of this project. A separate report will be prepared regarding this opportunity.