ElectraNet SA
electricity transmission network

Request for Information

Emerging Transmission Network Limitations

South Eastern South Australia Region

ElectraNet SA
December 2002

1.0 Introduction

This document seeks information on potential solutions to emerging network limitations on the 132 kV transmission network that services the lower south-east region of South Australia. Corrective action is required if reliable supply is to be maintained during credible contingencies. The paper is an integral part of ElectraNet SA's approach to meeting National Electricity Code requirements that ensure adoption of the most cost-effective solution to future network limitations.

1.1 Purpose of the Discussion Paper

The purpose of this discussion paper is to:

- Provide information about the existing transmission network in the relevant area;
- Provide information about emerging network limitations and the expected time at which action must be taken to maintain system reliability during contingencies;
- Seek information on solutions to the emerging limitations which may be able to be provided by solution providers other than ElectraNet SA;
- Explain the process to be used to evaluate alternative solutions.

1.2 Discussion Paper Context

ElectraNet SA has a responsibility to ensure its network is operated with sufficient capacity to provide network services to customers. If technical limits of its transmission system will be exceeded, ElectraNet SA is required to notify Code Participants within the time required for corrective action. Prior to construction of any major network augmentation, ElectraNet SA must also meet the following regulatory requirements[1]:

- Consult with Code Participants and interested parties regarding alternative solutions, including those which may be provided by solution providers other than ElectraNet SA such as local generation and demand side initiatives;
- Demonstrate proper consideration of various market development scenarios, including variations in electricity demand growth rates, and the ability of new or proposed demand-side responses and/or new or proposed generation capacity to satisfy emerging network limitations;
- Ensure that the recommended solution meets reliability requirements at the lowest total net present value cost when compared with other feasible solutions.

This discussion paper is a critical step in fulfilling these regulatory obligations in relation to supply to the lower south east region of South Australia.

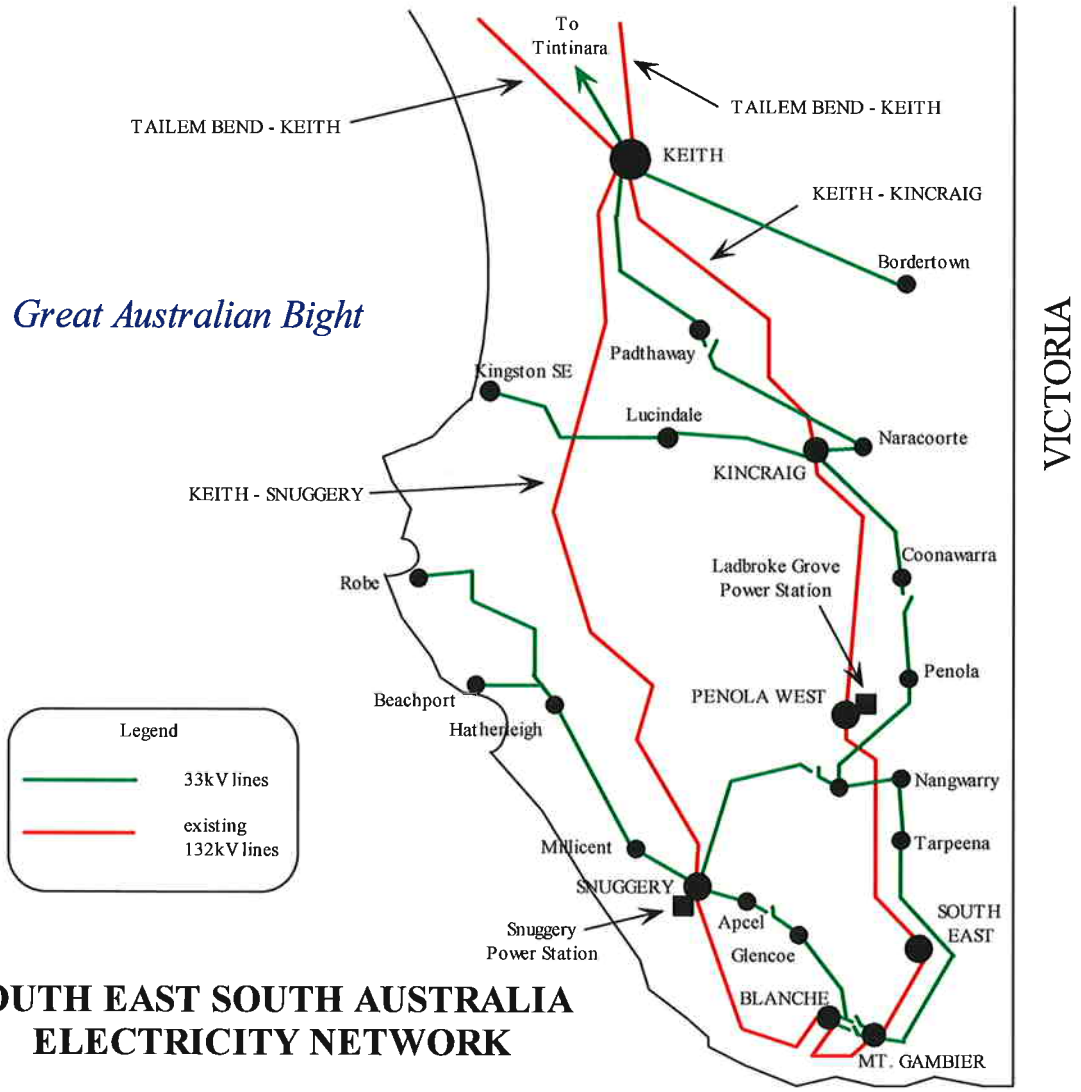
[1] As set by the ACCC and contained in Chapter 5 of the National Electricity Code.

2.0 Existing Supply System to the Lower South East Region of South Australia

2.1 Geographic Region

The main area of concern is the area around Mount Gambier, in the south east of South Australia. The transmission network that supplies this region comprises a 132 kV circuit from Keith, approximately 200 kilometres to the north of Mount Gambier, through Kincraig, Penola West, and South East substations. The line then heads south-west to Mount Gambier substation, west to Blanche, then north again through Snuggery and back to Keith. This 132 kV system is supplied jointly by the 132 kV network to the north of Keith, gas-fired base-load generation at Penola West (Ladbroke Grove Power Station), and a 275/132 kV injection point at South East Substation. (Additional distillate-fired generation is connected at Snuggery, but this source is only brought into service on an ad-hoc basis.)

Land usage in this region is dedicated predominantly to farming and commercial forestry plantations, but increasingly land is being re-planted with vineyards. Padthaway and the Coonawarra region are good examples of the suitability of this region for wine-making.



SOUTH EAST SOUTH AUSTRALIA ELECTRICITY NETWORK

2.2 Existing Transmission System

The 132 kV transmission network that supplies the area is shown in Appendix 1. Primary supply to the region is provided from South East Substation via the double circuit 275 kV transmission line between Tailem Bend, in South Australia (about 90 kilometres south-east of Adelaide), and Heywood Substation in Victoria. (These two transmission lines are commonly referred to as the South Australia-Victoria Interconnector.) During normal conditions, and assuming that the generators at Penola West are generating at their full capacity, the 275 kV system supplies about 43% of the electricity used in this region, and the generators about 38%. If the Penola West generators are not generating, the 275 kV system supplies about 70% of the region's load. The remainder of the load for all generation scenarios is supplied by the 132 kV network via Keith. (The dispatch from Penola West is essentially market-driven, and therefore somewhat unpredictable.)

2.2.1 Technical Information

Substations/generators	Basic composition
South East 275/132 kV	2x160 MV.A 275/132 kV transformers
Ladbroke Grove Power Station	2x46 MV.A gas turbine generators
Snuggery Power Station	3x32 MV.A gas turbine generators

Transmission Circuits	Asset age (years)	Length (km)	Summer rating (MV.A)	Winter rating (MV.A)
Keith-Kincraig 132kV	30	104.6	182	213
Kincraig-Penola West 132kV	29	76.4	182	213
Penola West-Mt.Gambier 132kV	29	14.0	182	213
Mt.Gambier-Blanche 132kV	39	16.7	89	110
Blanche-Snuggery 132kV	41	43.3	89	110
Snuggery-Keith 132kV	41	184.0	70	97

2.2.2 Committed Transmission Augmentations

At the time of writing this report, ElectraNet SA has no committed transmission augmentations that will impact on the 132 kV transmission network that services the lower south-east region of South Australia.

2.3 Existing Distribution System

Five 132/33 kV connection points are supplied via the south-east 132 kV transmission network – Keith, Kincraig, Mount Gambier, Blanche, and Snuggery. An underlying 33 kV distribution system connects the five connection points (refer diagram, section 2.1), but due to the large distances between all but the Mount Gambier and Blanche connection points, and the levels that the local loads have now grown to at the connection points, contingency support via the 33 kV network in the event of a 132 kV line outage is severely restricted, or in some cases, simply not possible. Inadequate voltage levels are generally the cause of the restrictions.

2.4 Existing and Committed Generation

Two 48 MW gas turbines are located at Penola West (Ladbroke Grove Power Station), and three 18.5 MW gas turbines are located at Snuggery. All of these generators connect into the 132 kV transmission network. The generators are privately owned, and whether the generators are actually generating into the transmission network is entirely a matter between the owners of the generators and NEMMCo. From past experience, the generators at Penola West are being operated as base-load generators, while the generators at Snuggery are "bid on" on an opportunity basis.

Several wind-farm proposals have been submitted for the area, and should they eventuate, would generally be located along the coastal regions, and as such, would either connect into the 132 kV network, or if this proves technically unsuitable, may connect to a dedicated line that would have to be built along the coast to provide transmission network access for the wind-farms.

3.0 Load Characteristics

3.1 Strategic Significance

The load in the Snuggery, Blanche and Mount Gambier area is predominantly due to a single large manufacturing customer that requires high supply-quality and low interruptions due to the continuous nature of its paper and tissue manufacturing processes that have very large start-up and shut-down costs (Kimberley Clark Australia – KCA). This commercial load, which is located at Millicent, about 10 kilometres north of Snuggery substation, relies on the local timber industry that has a large portion of the land in the area under forestry plantation. The remainder of the region is devoted mainly to farming, and progressively, to the establishment of vineyards, as the local soil and weather conditions are increasingly recognised for their suitability for this purpose. The Coonawarra area is one example of the success of wine production in this region.

3.2 Load Growth Overview

Electricity demand in the south east of South Australia as a whole is currently growing at approximately 3.9% per annum. However, as mentioned, the load in the Snuggery area is predominantly due to a single individual load, which is a relatively constant load, and accounts for over 20% of the total south east load. By excluding this relatively fixed load from the calculation, it can be shown that the underlying load growth in the region is about 5.0% per annum. Demand forecasts issued by ETSA Utilities for the connection points supplied by the south east 132 kV network suggest that load growth will settle to a rate of just over 2.5% per annum in the medium term.

Table 1: Forecast total electricity demand at summer peak load levels for the connection points supplied from the 132 kV network in the south east region of South Australia

Forecast electricity demand in the south east region of South Australia at summer peak load levels (MW)	
Summer 2001/02 (actual)	153
Summer 2002/03	160
Summer 2003/04	163
Summer 2004/05	167
Summer 2005/06	170
Summer 2006/07	174

ElectraNet SA obtains electricity demand forecasts over a ten-year horizon from ETSA Utilities, South Australia's electricity distributor. ETSA Utilities confirms that these forecasts take account of demand management programmes in-place or proposed, and also the presence of embedded generation that may reduce the forecast of demand that needs to be supplied via each transmission connection point.

When incorporated in ElectraNet SA's transmission system modelling, it is evident that *both* of ElectraNet SA's substations that supply the south east 132 kV network show steadily increasing load growth, as indicated in Table 2.

Table 2: Forecast demand on the two 275/132 kV substations that supply the 132 kV transmission network in the south east region of South Australia

Substation	Projected substation load at peak load time for the south east region of South Australia (MW)				
	Summer 2002/03	Summer 2003/04	Summer 2004/05	Summer 2005/06	Summer 2006/07
Tailem Bend 1x 160 MV.A 275/132 kV transformer	90.1	90.7	91.3	93.8	94.4
South East 2 x 160 MV.A 275/132 kV transformers	61.4	63.4	65.4	76.4*	78.6

* substantial load increase for single large customer scheduled for 2005/06

3.3 Forecast Network Flows

As mentioned, electricity reticulation in the South East of South Australia is provided by a looped 132 kV network. (An underlying 33 kV network also provides load transfer capabililty between various of the connection points, but electrical loads in the region have grown to levels where supply to neighbouring connection point loads can no longer be provided via the 33 kV during an outage. Because of this, the 33 kV network is now operated with open points between neighbouring connection points, as shown on the geographic map provided in section 2.1.)

The most onerous contingency for this network is an outage on the South East-Mount Gambier 132 kV line. Once this line is out of service, supply to Mount Gambier and Blanche substations must be provided solely by the Keith-Snuggery 132 kV line. Should the South East-Mount Gambier line be out of service during periods of high demand, the loading on the Keith-Snuggery 132 kV line will exceed the line's emergency rating, and voltage levels on the 132 kV buses at Blanche and Mount Gambier fall to unsustainable levels, ultimately leading to voltage collapse. This is presently managed by under-voltage load-shedding schemes located at Snuggery and Mount Gambier substations.

The following forecasts show predicted peak loading on the 132 kV circuits supplying the south east region of South Australia with all elements of the transmission system in service.

Table 3: Forecast maximum flows on various 132 kV transmission lines in the south east region of South Australia with all lines and transformers in sevice[2]

132 kV transmission line	Summer ratings (MV.A)	Projected loading during periods of peak demand, system-normal configuration[3] (MV.A)				
		Summer 2002/03	Summer 2003/04	Summer 2004/05	Summer 2005/06	Summer 2006/07
Keith-Snuggery	70	18	18	18	20	21
Snuggery-Blanche	107	40	40	40	43	43
Blanche-Mount Gambier	118	61	62	63	72	73

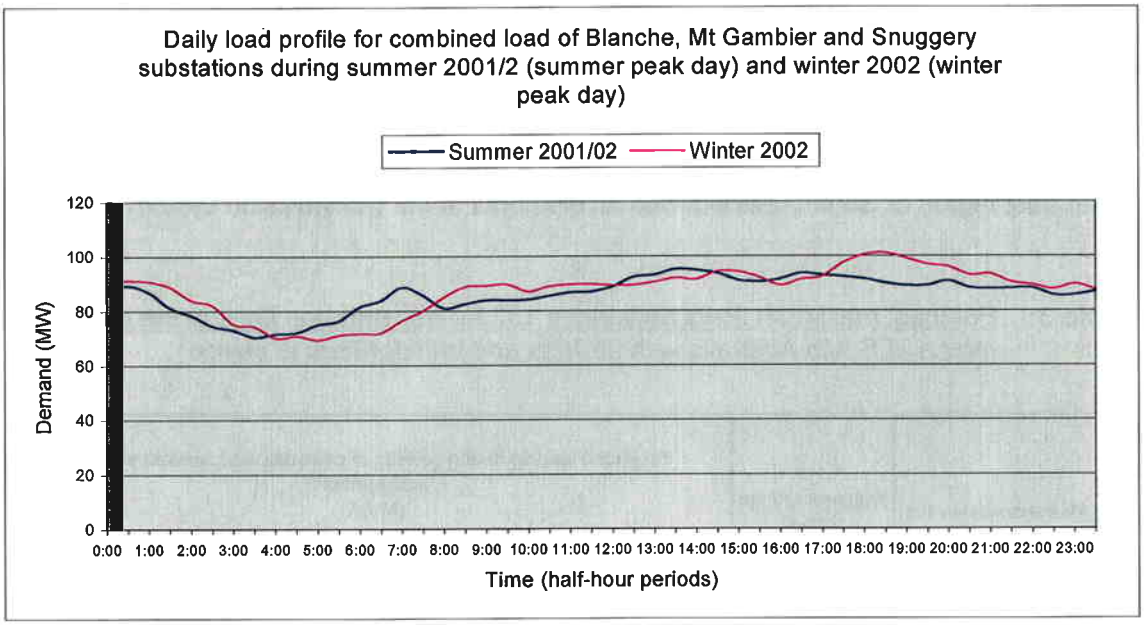
[2] Load flow forecasts are based on a peak load condition and a typical generation pattern with all transmission plant in service, and should be considered an indication of possible network flows only. Much greater load flows than those shown can occur during critical contingencies.

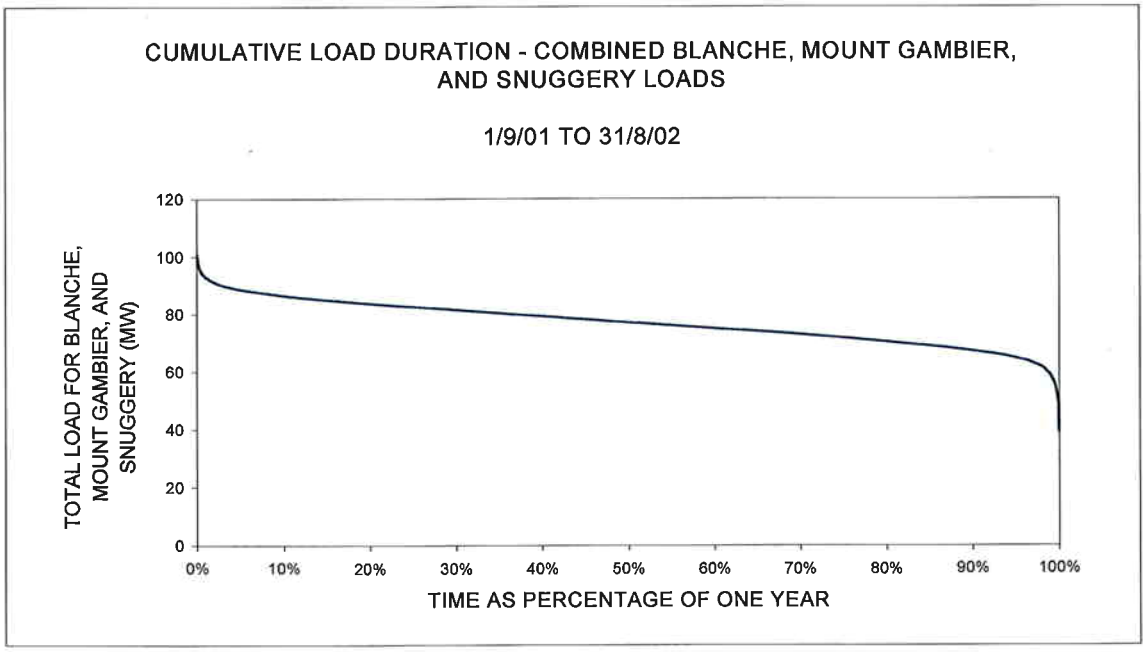
[3] Projected loadings are an indication only and based on the assumption that Snuggery power station is providing reactive power support only via its synchronous condensers, and that Snuggery is not generating real power.

3.4 Pattern of Use

Peak electricity demand in the south east of South Australia occurs during the winter months from about June to August. However, the average variation in loads from summer to winter is only about 10 MW.

While the combined peak electricity demand for Blanche, Mount Gambier, and Snuggery substations in winter is about 10 MW higher than that of the summer peak, it is reached for only a short period. When considered in conjunction with the fact that the lower temperatures in winter allow for higher circuit ratings (as noted in section 2.2.1), it remains that summer is the critical period relevant to maintaining a reliable supply to the south-east region of South Australia.





4.0 Transmission Planning Criteria

As a transmission network service provider (TNSP), ElectraNet SA must comply with technical standards in the National Electricity Code. In particular, requirements relating to reliability and system security contained in Schedule 5.1 of the Code are relevant to planning for future electricity needs. This schedule includes details of credible contingencies to be considered in planning and operating the transmission network.

The National Electricity Code allows varying levels of reliability to be specified in connection agreements between ElectraNet SA and connected Code Participants. Examples of differing levels of reliability include:

- *'N-1'* : able to meet peak load with the worst **single** credible fault or contingency;
- *'N-2'*: able to supply all peak load during a **double** contingency, and;
- *'System Normal'*: the level of reliability required under the NEC. Defined as the ability to supply all load with all elements of the electricity system intact (i.e. supply cannot be maintained during a single fault or contingency without loss of load).

Under the present arrangements, ElectraNet SA plans its system in the south east region of South Australia to withstand a single contingency (i.e. an 'N-1' criterion), and will, in the case of a an unplanned line outage, use its best endeavours to restore contracted line capacity within 2 days of an interruption, and in the event of transformer failure at a connection point, to repair the installed transformer or install a replacement transformer within 4 days of the failure.

The assessment of emerging network limitations in section 5.0 therefore covers the capability of the existing network to have supply restored within the prescribed times mentioned above following the loss of any single element. For the 132 kV transmission network in the south east of South Australia, the most critical element is the South East-Mount Gambier 132 kV circuit.

Some information is provided in section 5.0 on the supply capability during double contingencies. However, at present ElectraNet SA does not plan its south east 132 kV transmission network to satisfy N-2 criteria (i.e. to withstand low-probability double contingencies on the transmission grid), or any criterion higher than N-1.

5.0 Emerging Network Limitations

Analysis by ElectraNet SA has determined that, without corrective action, the capability of its 132 kV transmission network supplying the south east region of South Australia will be exceeded during N-1 contingencies from the summer of 2003/04 onwards.

Electricity demand has grown to the point where the existing network is no longer able to supply all peak customer load during a single contingency on the South East-Mount Gambier 132 kV transmission line.

Therefore, corrective action is urgently required to be in place, ideally prior to the summer of 2003/04, to ensure that the network can withstand this single contingency failure.

5.1 Capability During Single Contingencies

There is a range of technical factors that influence network capability, including line and equipment thermal ratings, protection requirements, transient stability, reactive support and voltage stability. Appropriate allowance must also be made for sufficient capability in the system to allow equipment to be maintained in accordance with ElectraNet SA's asset maintenance strategies.

The primary limiting factor on network capability to meet peak summer load in the south east region of South Australia is the thermal line rating of the 132 kV circuits in the area (refer Table 4). This thermal rating refers to the safe maximum current carrying capacity of the equipment.

Table 4: Forecast maximum flows on various 132 kV transmission lines in the south east region of South Australia under system single contingencies

132 kV transmission line	Summer ratings (MV.A)	Projected loading during periods of peak demand, contingency configuration (South East-Mount Gambier 132 kV line out of service) (MV.A)				
		Summer 2002/03	Summer 2003/04	Summer 2004/05	Summer 2005/06	Summer 2006/07
Keith-Snuggery	70	113	115	117	119	121
Snuggery-Blanche	107	63	65	67	69	70
Blanche-Mount Gambier	118	32	33	33	34	35

During the loss of items of transmission plant due to a fault or other contingency, the remaining elements of the transmission system must carry the total load. For supply to the south east region of the State, the single most critical contingency is the loss of the 132 kV circuit from South East to Mount Gambier substations. An outage of this circuit during a high-load period will cause the Keith-Snuggery line to trip on overload. This will then require the dispatch of Snuggery generation to supply part of the regional load, effectively reducing the load on the Keith-Snuggery line and thus avoiding a repeat trip when the line is reinstated.
A significant voltage drop occurs on the 132 kV system at Blanche and Mount Gambier during the period between the line overload and the tripping of the Keith-Snuggery 132 kV line despite the reactive support provided by the synchronous condensers at Snuggery. Even with

all three Snuggery synchronous condensers operating it is only possible to supply about 60% of the present combined Snuggery-Blanche-Mount Gambier peak load via the Keith-Snuggery line when the South East-Mount Gambier 132 kV line is out of service, if voltages are to remain within prescribed limits. In order to meet the combined Agreed Maximum Demand (AMD) of the three substations under this contingency it would be necessary to have all three Snuggery generators on line and generating power at their maximum output. Presently, ElectraNet SA has transmission support contracts in place to provide this service.

In order to comply with NEC requirements, following a critical contingency, undervoltage load shedding controls located at Snuggery and Mount Gambier substations will operate to restore voltage levels in the Lower South East and prevent overloading of the Keith-Snuggery 132 kV line.

Based on revised forecast loads supplied by ETSA Utilities, Code-compliant 132 kV voltage levels and transmission line loading limits will not be achievable during the summer of 2003/04, indicating that some form of additional reinforcement of the system is urgently required.

5.2 Factors Impacting Timing of Required Corrective Action

5.2.1 Assumed Electricity Demand

Section 5.1 identified that, without corrective action, the existing system may be unable to maintain supply during single contingencies by the summer of 2003/04.

The primary driver of this emerging network limitation is the forecast growth in electricity demand in the area. The 2003/04 timing conclusion was based on a load growth forecast that assumed normal summer temperatures and medium economic growth. Changes to this assumption would vary the required timing for corrective action as follows:

Very Hot/Cold Conditions: As was mentioned previously, electricity demand in the south east of South Australia peaks during the colder winter months, but winter peaks are increasingly only slightly greater than the summer peak demands that are being experienced. Therefore, both hotter and colder temperatures would result in increased demand in the region. With the current load and weather assumptions, it is anticipated that about 40% of the combined Blanche-Mount Gambier-Snuggery load would have to be shed following an outage of the South East-Mount Gambier line at a time of high demand, and power would only be restored once all three Snuggery generators are brought on-line. This may take up to one hour, and of course, depends on the availability of the machines at that time.

Using demand corresponding to extreme winter temperatures, it is anticipated that the total load in the region would increase by just under 10 MW. The conclusion is that if a South East to Mount Gambier 132 kV line contingency coincides with extreme high temperatures during the summer of 2003/04, or similarly, extreme low temperatures during the winter of 2004, system capability would be exceeded and load-shedding of almost 50% of the combined south east load, or about 50 MW, would need to be implemented. However, such extremes in weather conditions will not alter the required date of the reinforcement since the stated need-by date of 2003/04 is effectively stating that reinforcement is required to commence immediately.

Mild Conditions: The summer of 2001/02 has been regarded as a very mild summer. Even so, a significant amount of load shedding (estimated to be about 30% of the combined south east load) would have still been required to avoid line overloads and voltage collapse following a line contingency on the South East-Mount Gambier 132 kV line.

Economic Growth: The underlying load projections provided by ETSA Utilities assume medium economic growth, and include a substantial increase in load at Snuggery by the summer of 2004/05. The load in the Snuggery area is dominated by a single large industrial customer and it is assumed that this jump in load of more than 10 MW is due to a planned increase in production by that customer. Although that customer's production strategy would be closely linked to trends in the wider economic market, the decision to increase production by the size suggested would be expected to be based on extensive market analysis and accompanied by long-term financial and infrastructure commitments by the customer, and as such, the timing of the load increase would not be expected to vary significantly from 2004. Furthermore, the size of the single load increase would far outweigh the affect of plausible variations in the anticipated economic growth in the region and consequently would remain relatively immune to this influence.

5.2.2 Assumed Generation Pattern

ElectraNet SA has carried out analyses examining the power flows and voltage levels on the 132 kV lines in the south east transmission system with a variety of assumptions about plausible generation patterns. It has been found that during the most critical contingency for the area (loss of the South East-Mount Gambier line at a high load period), when line ratings will be exceeded and voltage collapse commences, that the outcome is not sensitive to the level of generation from existing and committed sources. Specifically, while increased generation at Snuggery does reduce loading on the 132 kV network upstream of Snuggery, the impedance and rating of the 132 kV Snuggery-Blanche and Blanche-Mount Gambier lines, and lack of reactive support at Blanche and/or Mount Gambier, makes the identified system shortcomings insensitive to the level of generation at Snuggery. (Generation at Ladbroke Grove does not impact on Mount Gambier and Blanche during this contingency since the South East-Mount Gambier tie is out of service.)

5.2.3 Other Factors

There are no other factors, given the existing electricity supply system and absence of committed augmentations, which have been identified to influence the timing of emerging network limitations in the south east region of South Australia.

Augmentations to the distribution network may influence the flows on the 132 kV and 33 kV systems in the relevant area. However, ElectraNet SA has held discussions with ETSA Utilities and has been informed that ETSA Utilities has no plans to undertake distribution augmentations in the near future that would impact on the required timing for action to address the emerging transmission network limitations.

5.2.4 Conclusion

Any timing recommendation requires a balance of the risks associated with variations in electricity demand, temperature, and other assumptions. It is ElectraNet SA's conclusion that, on balance, the capability of the transmission network must be addressed by the summer of 2003/04, if supply reliability is to be maintained during a single contingency.

6.0 Market and Other Network Impacts

As noted in the previous section, the emerging network limitations on the 132 kV network in the south east of South Australia are not particularly sensitive to generation scenarios and market operations. The need for action is driven primarily by growth in the electricity demand in the region.

However, solutions essential to maintaining a reliable electricity supply for the 132 kV network in the south east of South Australia may have broader impacts on the interconnected power system. Market participants may wish to consider the following when developing alternative solutions:

- A new local generation option will be required to operate at certain times under contract with ElectraNet SA. This will be essential for reliability purposes, and such operation will be required regardless of the pool price at the time. (The National Electricity Code prevents a generator that is providing grid support from setting the market price.)

- A demand side management initiative (eg programme to reduce electricity usage during the relevant peak period) must provide positive proof that it is capable of reducing flows on the relevant network elements to below emergency ratings during single network contingencies within the required time. If this reduction is not achieved, the consequence is likely to be forced customer load-shedding of prolonged duration during single contingencies and this is not an acceptable outcome.

- As noted earlier, during the most critical contingency for the area (loss of the South East-Mount Gambier line at a high load period), when emergency line ratings will be exceeded and voltage collapse commences, the outcome is not sensitive to the level of generation from existing sources because of the impedance and rating of the 132 kV Snuggery-Blanche and Blanche-Mount Gambier lines, and lack of reactive support at Blanche and/or Mount Gambier. Accordingly, any new generation proposal or a new injection point into the region would ideally be located at Blanche or Mount Gambier if an augmentation of the existing transmission network is to be avoided or delayed for a significant period.

7.0 Assessment of Alternative Solutions

7.1 Identifying Solutions

This discussion paper, and subsequent consultation, provides an opportunity for alternative solution providers to submit details of their proposals for consideration. The information provided in this document on emerging network limitations in the south east region of South Australia is intended to enable interested parties to formulate and propose feasible and definitive local generation and demand side management solutions.

7.2 Criteria for Solutions

As outlined in section 5.1, it is essential that action be taken as soon as possible to maintain a reliable electricity supply to the south east region of South Australia. However, with due consideration for delivery times for major items of plant, and the potential for delays caused by bad weather, ElectraNet SA will allow that any proposal received must be able to be implemented and commissioned prior to the summer of 2004/05, although implementation by 2003/04 is preferable. This action may involve augmentation of the transmission and/or distribution system, or the implementation of local generation and DSM options that reduce, defer, or eliminate the need for new network investment.

To assist solution providers in understanding the technical and other requirements, ElectraNet SA has identified the following criteria that must be satisfied if solutions are to meet the underlying need for augmentation of supply to the south east region of South Australia:

Size: Feasible options must be large enough, individually or collectively, to meet the annual increase in demand at Snuggery, Blanche and Mount Gambier substations. Options must be able to supply at least 52MW to eliminate the load shedding risk in 2004/05. A further 2.5MW of capacity would be required in each subsequent year to meet average annual load growth.

Time of year: Options must, at a minimum, be capable of meeting this demand growth during the peak summer months of September through to March. The existing system is most in need of reinforcement during this summer peak, so options that do not reliably relieve this pressure do not represent viable options. However, since the winter peak is only about 10MW greater than the summer peak (but with the advantage that circuit ratings are generally about 20MV.A higher than the summer ratings due to the cooler ambient temperatures – refer section 2.2.1), viable options must support single contingency supply capability at times of both summer and winter peak loading.

Location: To be a viable 'stand-alone' non-transmission solution, an option must reduce the electricity demand that has to be supplied via the Keith-Snuggery 132 kV transmission line during loss of the 132 kV circuit from South East to Mount Gambier substations. This implies that any stand-alone local generation option must be located so as to reduce the load at the 33 kV connection points supplied by either Blanche or Mount Gambier 132/33 kV substations. Transmission augmentation combined with generation outside the relevant area may be a viable solution and generation proponents interested in this approach are requested to provide a preliminary proposal to ElectraNet SA.

Timeframe: All options must be operational before the summer of 2004/05 at the latest.

Reliability: Options must be capable of reliably delivering electricity under a range of conditions and, if a generator, must meet all relevant Code requirements related to Grid connection.

Certainty: Options must be committed using proven technology and have funding and project management to deliver within the required timeframe. Corrective action is critical to the reliability of electricity supply to the south east region of South Australia – it is not considered appropriate to rely on uncommitted developments that may or may not proceed.

Longevity: Options must be capable of providing solutions to the emerging limitations in the south east region of South Australia for a period of at least ten years.

Liability: ElectraNet SA has performance obligations under the SA Transmission Code that relate to the levels of service it must provide at the connection points supplied via the south east 132 kV transmission network. There can be penalties for not meeting these service standards. In addition, in the context of the National Electricity Market, there may be liabilities to market participants and other third parties for failing to meet its service obligations.

Whilst ElectraNet is permitted to meet its service obligations by means of transmission network augmentation, or by reliance on non-transmission options from market network service providers, the distribution service provider, generators, or retailers and customers (load shedding or demand side management), ElectraNet may still be responsible for meeting the service standards and any liabilities associated with not doing this.

If ElectraNet decides to enter into contractual arrangement for the provision of network services, ElectraNet may require the contracting party to indemnify ElectraNet against any and all liabilities, including claims, losses, actions or proceedings it or a third party may suffer should the contracting party fail to deliver the support services in accordance with ElectraNet's requirements and any applicable laws, including those governing the timeliness and the standard of services. This indemnity will also apply for any claims or losses that would apply during an interim period; for example, when customers have lost supply when a generator is running up prior to supplying load, or when switching is being undertaken on the distribution network.

7.3 Assessment of Solutions

The ACCC's Regulatory Test and Chapter 5 of the Code require ElectraNet SA to consider local generation, DSM, and transmission options on an equal footing.

As the south east region of South Australia augmentation is required to meet Code reliability standards, ElectraNet SA is required to carry out economic cost-effectiveness analysis:

"In the event an augmentation is proposed to meet an objectively measurable service standard linked to the technical requirements of Schedule 5.1 of the Code, the augmentation satisfies the Regulatory Test if it ***minimises the net present value of the cost*** *of meeting those standards having regard to a number of alternative projects, timings and market development scenarios."*

The Regulatory Test requires a public process, with disclosure of project costs. As the outcome of the economic analysis could be a recommendation to proceed with a regulated solution, it is important that all feasible options are considered in the process. If a non-network option satisfies technical requirements, is committed, and can be implemented for a

lower cost than a transmission augmentation, it may be necessary for ElectraNet SA to enter into a grid support contract with the proponents of the alternative project to ensure supply reliability can be maintained. If regulated funding is required from ElectraNet SA, it is necessary that support arrangements satisfy the Regulatory Test in terms of both economics and disclosure of relevant costs to the market.

8.0 Request for Information

ElectraNet SA invites submissions and comments in response to this discussion paper from National Electricity Market participants, solution providers, and any other interested parties.

Submissions should be presented in a written form and should clearly identify the proponent of the submission including contact details for subsequent follow-up if required. If parties prefer, they may request to meet with ElectraNet SA ahead of providing a written response.

8.1 Submissions from Solution Providers

This is not a tender process – submissions are requested so that ElectraNet SA can fulfil its regulatory obligations to compare the net present value cost of alternatives to the option of augmenting the transmission supply system to maintain supply reliability.

If your submission proposes a solution, it should contain the following information:

- Details of the party making the submission (or proposing the solution).
- Technical details of the project (capacity, proposed connection point if relevant, etc.) to allow ElectraNet SA to assess the likely impacts on supply capability.
- Sufficient information to allow the costs of the solution to be incorporated in a cost-effectiveness comparison in accordance with ACCC Regulatory Test guidelines.
- An assessment of the ability of the proposed solution to meet the technical requirements of the National Electricity Code.
- Timing of the availability of the option, and whether it is a committed project.
- Other material that would be relevant in the assessment of the proposed solution.

As the submissions may be made public, any commercially sensitive material, or material that the party making the submission does not want to be made public, should be clearly identified. It should be noted that ElectraNet SA is required to publish the outcomes of the Regulatory Test analysis. If solution providers elect not to provide specific project cost data for commercial-in-confidence reasons, ElectraNet SA may rely on cost estimates from independent specialist sources.

8.2 Timetable for Submissions

Please provide information by Friday 31st January 2003 to:

Hugh Westphalen,
Network Customer Manager,
ElectraNet SA,
PO Box 7096,
Hutt Street Post Office,
Adelaide, South Australia, 5000
Westphalen.Hugh@electranet.com.au
Tel: (08) 8404 7221
Fax: (08) 8404 7447

8.3 Assessment and Decision Process

ElectraNet SA intends to carry out the following process to assess what action, if any, should be taken to address the identified network limitations:

Part 1	Initial Information Request (this paper) Submissions (response to this paper)	Issued December 2002 Due by 31 January 2003
Part 2	Review and analysis. Likely to involve further consultation with Code participants and interested parties. Additional data may be requested to allow ElectraNet SA to carry out the economic assessment process as required by the National Electricity Code and the ACCC Regulatory Test.	February 2003-April 2003
Part 3	Presentation of draft report and recommendation of solution that satisfies the Regulatory Test. Submissions on draft report. Presentation of final report and recommendation.	May 2003
ElectraNet SA reserves the right to amend the timetable at any time. Amendments to the timetable will be made available on the ElectraNet SA website *(http://www.electranet.com.au/)*		

The consultation timetable is driven by the need to make a decision as soon as possible if any option involving significant construction is to be in place by the summer of 2004/05. At the conclusion of the process, ElectraNet SA intends to take immediate steps to implement the recommended solution to ensure that the reliability of the system can be maintained. For example, if the preferred solution is a network augmentation, it is anticipated that construction will begin by June 2003.

Appendix 1 - Transmission System as at Summer 2002/03