

on behalf of **MURRAYLINK Transmission Partnership**

15 September 2003

Sebastian Roberts  
General Manager, Regulatory Affairs – Electricity  
Australian Competition & Consumer Commission  
GPO Box 520J  
Melbourne VIC 3001

Dear Mr Roberts

### **Application for Conversion to a Prescribed Service and Maximum Allowable Revenue**

On behalf of Murraylink Transmission Partnership, Murraylink Transmission Company (“MTC”) appreciates the opportunity to respond to ElectraNet SA’s letter of 9 September 2003 in relation to the inclusion of static VAr compensators and spare equipment in Murraylink’s alternative projects and the calculation of Murraylink’s Riverland deferral benefit.

#### ***Static VAr compensators and spare equipment***

MTC asked Burns and Roe Worley (“BRW”) to respond to the first points made in ElectraNet’s letter given that BRW has selected and assessed Murraylink’s alternative projects. BRW’s response is contained in **Attachment 1**. In summary, BRW states the following.

- Only the first alternative suggested by ElectraNet, and with additional switched capacitors, is considered to be a suitable alternative to the +120 / -110 MVar SVC for Murraylink’s alternative projects. This would address the Riverland voltage profile issues but would not provide an equivalent service to that of Murraylink. BRW has estimated the installed cost of this alternative in present value terms at September 2003 based on a +/- 40 MVar SVC and additional 18 MVar switched capacitor banks installed in 2007 and 2010 as \$13.8 million compared with \$18.3 million for the +120 / -110 MVar SVC inclusive of spares and the additional switchgear. The cost impact of this on total capital and NPV costs is also given.
  - BRW considers that the level of spares included in Murraylink’s alternative projects is prudent and could not be taken as setting a new benchmark for TNSPs. Each TNSP must make its assessment of spares requirements for particular equipment taking into account factors such as the criticality and numbers of plant items of a particular manufacture and model, interchangeability of spares, their availability through commercial sources and logistical considerations.
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### ***Murraylink's Riverland deferral benefit***

In its letter to the Commission of 12 August 2003, MTC included a memorandum from TransÉnergie US ("TEUS") responding to stakeholder comments in relation to Murraylink's gross market benefits. In this memorandum, TEUS confirmed that, while ElectraNet claimed that it has available to it an option to support the Riverland for 5 years at a cost of approximately \$1 million per year, TEUS's calculation of Murraylink's Riverland deferral benefit remains unchanged because<sup>1</sup>:

- without Murraylink, the existing Robertstown to North West Bend lines are not adequate to carry the forecast load for the coming summer;
- ElectraNet would have constructed the Robertstown to Monash 275 kV transmission line and the associated 275/132 kV substation works to provide support to the Riverland region to meet this need had Murraylink not been built and converted to regulated status;
- with Murraylink operating as a regulated interconnector, the Robertstown to Monash transmission line would not be required until after the summer of 2013/14.

TEUS highlighted public statements by ElectraNet and the Commission's consultants that confirmed the Robertstown to Monash 275 kV line was the most appropriate option available at that time to support the Riverland and meet its near-term supply needs. TEUS also highlighted the Commission's acceptance of this by its approval of a capex allowance for the line<sup>2</sup>. ElectraNet's application for, and acceptance of, this capex allowance was unaffected by the knowledge it gained from the Request for Information<sup>3</sup> process it conducted in October 2002.

Murraylink is now unequivocally the most appropriate option available to support the Riverland and meet its near-term supply needs. An implicit benefit of Murraylink as a regulated interconnector is that it provides Riverland support for no cost to ElectraNet, and, by so doing, it defers the significant capital cost of the Robertstown to Monash 275 kV line from now until the summer of 2013-14<sup>4</sup>. This is the circumstance that forms the basis of Murraylink's Riverland deferral benefits.

In its letter of 9 September 2003, ElectraNet revised the costing of its claimed option to support the Riverland for 5 years to approximately \$1.4 million per year. For the reasons mentioned above, this revised costing has no bearing upon the basis of Murraylink's Riverland deferral benefit, as ElectraNet's previous costing for this claimed option had not.

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<sup>1</sup> TransÉnergie US, *Calculation of Murraylink's Gross Market Benefits - Response to Stakeholder Issues*, 8 August 2003 (submitted to the Commission with MTC's letter of 12 August 2003).

<sup>2</sup> Australian Competition and Consumer Commission, *Decision: South Australian Transmission Network Revenue Caps 2003-2007/08*, 11 December 2002, pp. 62-3.

<sup>3</sup> ElectraNet SA, *Request for Information for Transmission Network Support Services: Riverland Region*, October 2002.

<sup>4</sup> TransÉnergie Australia, *Murraylink Riverland Support – Technical Capability*, 24 June 2003.

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As always, we would be pleased to provide further information in relation to any of these or any other issues that the Commission believes have a bearing on its determination of MTC's application.

Yours sincerely



Stéphane Mailhot  
Chief Executive Officer  
Murraylink Transmission Company

**Attachment**

Burns and Roe Worley, *Murraylink Project – Comments on ElectraNet Letter of 9 September 2003*, 15 September 2003



15 September 2003

**REF:** 024/45003

Murraylink Transmission Company  
GPO Box 7077  
Riverside Centre  
BRISBANE QLD 4001

Attention: Stéphane Mailhot  
Chief Executive

## **RE: MURRAYLINK PROJECT –COMMENTS ON ELECTRANET LETTER OF 9 SEPTEMBER 2003**

Dear Stéphane

Murraylink Transmission Company (MTC) has requested that BRW provide a response to issues raised by ElectraNet SA in its letter to the Australian Competition and Consumer Commission (ACCC) of 9 September 2003 in relation to the Alternative projects.

### **SVC at Monash**

As indicated in Section 3 its report *TransÉnergie – Murraylink: Selection and assessment of alternatives* dated 16 October 2002, BRW selected and scoped the alternative projects to provide the same technical services as Murraylink. Based on the reactive support performance specifications for Murraylink, for Alternative 3 these services included the provision of 30 MVar of switched reactor capacity at Red Cliffs substation and a +120 / -110 MVar SVC at Monash substation. The SVC would provide a “smooth” controllable form of reactive support, similar to that provided by Murraylink.

ElectraNet has carried out an analysis of a worst case contingency involving the trip of a fully loaded Northern Power Station unit and based on this analysis has agreed that voltage support equipment is needed at Monash substation. ElectraNet has also suggested three alternative solutions to the +120 / -110 MVar SVC that BRW proposed at Monash substation for Alternative 3, which are listed below along with BRW’s comments on each:

- Installation of a smaller 35 MVar SVC at an estimated cost of \$5 million excluding spares. From system studies carried out, BRW agrees that an SVC of 35 to 40 MVar capacity would be sufficient to compensate for the low voltage at Monash substation under the contingency condition given current load levels. However, over time and with load growth, the operating point of the SVC would change thus reducing its effective range to provide reactive support for low voltages. For the lower capacity SVC to be effective, BRW considers that it would be necessary to add switched capacitors over time in order to correct the operating point and retain the operating range of the SVC until the 275 kV Robertstown to Monash line is established. Indicatively, 18 MVar of capacitors would be required in 2006-07 and 18 MVar in 2010. Whilst such a configuration of a smaller SVC and switched capacitors could address the voltage profile in the Riverland for the contingency condition, the configuration would provide a lesser service than the Alternative 3 defined by BRW and it would not be a true equivalent to Murraylink.

A smaller SVC would have a lower capital cost, however, BRW considers that the cost estimated by ElectraNet for a 35 MVAR SVC of \$5 million (excluding spares) is unrealistically low. Many of the components in such equipment do not vary or vary significantly with capacity in the ranges being considered. BRW considers that the cost of a 35 or 40 MVAR SVC installed with spares would be in the order of \$11 million. Further comments on SVC costs are made at the end of this letter in the comments relating to spares.

- Installation of 40 MVAR thyristor switched capacitors at an estimated cost of \$5 million excluding spares. An SVC provides both leading and lagging reactive support to provide control of system power factors and voltages under varying conditions. Capacitors are only capable of providing leading reactive support and they would not provide an equivalent service to that of the SVC for the varying operating conditions. Provision of lagging reactive support could be required under lightly loaded conditions in the Riverland or to address high system voltages under other system operating conditions. ElectraNet's first alternative of an SVC would provide bi-directional reactive support and this is taken as an acknowledgement of this requirement. Additional switched capacitors would also be required as the reactive support requirement increases over time as discussed above. This alternative would provide a lower level of service than the smaller SVC and would be even less of an equivalent to Murraylink.
- Establishment of a bypass circuit breaker across the Phase Shifting Transformer (PST) to limit voltage variations at a cost of approximately \$2 million, excluding spares. ElectraNet states that studies have been carried out that indicate that operation of such a circuit breaker under contingent conditions would reduce power flows to the pre-contingent levels and that voltage levels would also be restored close to their original levels.

BRW cannot understand this suggestion proposed by ElectraNet as an alternative to the SVC. A circuit breaker bypassing the 220/132 kV PST would connect the 220 kV system to the 132 kV system under such conditions and this would not be feasible from a technical perspective.

Only the first alternative suggested by ElectraNet, and with additional switched capacitors, is considered to be a suitable alternative to the higher capacity SVC. This would address the Riverland voltage profile issues but would not provide an equivalent service to that of Murraylink. BRW has estimated the installed cost of this alternative in present value terms at September 2003 based on a +/- 40MVAR SVC and additional 18 MVAR switched capacitor banks installed in 2007 and 2010 as \$13.8 million compared with \$18.3 million for the +120 / -110 MVAR SVC inclusive of spares and the additional switchgear. The cost impact of this on total capital and NPV costs is summarised in Table 1.

**Table 1: Cost impact of use of smaller SVC and switched capacitor banks.**

Attribute	Alternative 3 Existing with large SVC	Alternative 3 With small SVC and capacitor banks
Technical equivalence	Provides slightly lesser service than Murraylink	Provides lesser service than Murraylink
<b>Total capital cost (P50 including owner's risk, IDC 9.0% disc rate, Sept 03 \$)</b>	<b>\$216.5 m</b>	<b>\$210.3</b>
O&M costs per annum	\$3.5 m	\$3.5 m
O&M net present over 40 years	\$39.7 m	\$39.7 m
<b>Total net present cost (P50 including owner's risk, IDC 9.0% disc rate, Sept '03 \$)</b>	<b>\$256.2 m</b>	<b>\$250.0 m</b>

## Level of Spares

ElectraNet suggests that the allowance for spares appears "to include full duplication of all major plant items in addition to 6% of general switchyard costs". In particular, ElectraNet suggests that the Monash SVC appears to have been duplicated implying that a full spare SVC has been allowed for. BRW's letter to Murraylink of 10 September 2003 indicated that an allowance of \$1.02 had been made for specialised SVC spares in the original BRW estimate (May 2003 price levels) and this was assessed in the basis of 6% of the SVC cost. ElectraNet's indication of \$5 million for the cost of a 35 MVar SVC could indicate that cost of \$18.02 allowed in BRW's original estimate (May 2003 price levels) may have been taken as covering two SVC's.

As indicated above, it is considered that ElectraNet has significantly underestimated the cost of SVC's. BRW's estimate for the installed cost of the +120 / -110 MVar 220kV SVC inclusive of spares is supported by other project data including, but not limited to, the cost of \$16.9 million quoted in a current Application Notice by Powerlink for a possible -80 / +150 MVAR 132 kV SVC at Woree substation<sup>1</sup>.

The PST is the only major plant item where duplication has been allowed for reasons covered in earlier submissions. The allowance of \$0.166 million for general switchyard spares indicated in BRW's letter of 10 September clearly indicates that duplication of all major plant items has not been allowed for.

The level of spares is considered prudent for a Murraylink alternative and could not be taken as setting a new benchmark for TNSP's. Each TNSP must make its assessment of spares requirements for particular equipment taking into account factors such as the criticality and numbers of plant items of a particular manufacture and model, interchangeability of spares, their availability through commercial sources and logistical considerations.

Yours sincerely  
Burns and Roe Worley



R McD Touzel  
**General Manager, Consulting**

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<sup>1</sup> Refer [http://www.powerlink.com.au/documents/pdfs/Application\\_notice\\_Cairns\\_final\\_03.pdf](http://www.powerlink.com.au/documents/pdfs/Application_notice_Cairns_final_03.pdf)