MURRAYLINK
Transmission
Company

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on behalf of **MURRAYLINK Transmission Partnership**

2 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 the South Australian Electricity Supply Industry Planning Council's ("**ESIPC**") letter of 20 August 2003 in relation to the South Australian Electricity Transmission Code ("**SAETC**") and spare equipment included in Murraylink's alternative projects that have been selected and assessed by Burns and Roe Worley ("**BRW**").

MTC asked BRW to respond to points made in the ESIPC's letter. BRW's response is contained in **Attachment 1**. In summary, BRW states the following.

- The cost estimates for the alternative projects proposed by BRW have been based on using standard sized major components where practical, on the assumption that the sharing of network spares with other Australian transmission network service providers ("**TNSPs**") may prove feasible and could be used to minimize the spares inventory required to be maintained by MTC.

- For Alternative 3, the most significant spares cost item is the spare 220/132 kV phase shifting transformer ("**PST**"), for which no system spare is held by another Australian TNSP.

- BRW considers that the SAETC clearly supports, and indeed requires, that for Alternative 3 MTC must have a spare 220/132 kV PST available, to comply with the restoration time requirement.

- A partial equivalent of either a 220/132 kV fixed phase shift transformer or a standard 220/132 kV transformer would face the same difficulty, as none of the Australian eastern state TNSPs (i.e. ElectaNet SA, SPI PowerNet, TransGrid, Powerlink and Transend) have this combination of network voltage transformers.

- Since without the PST the power flows for an AC link would be substantially reduced and constrained by the flows through the Heywood Victoria to South Australia interconnector based on the relative system impedances, BRW considers that the length of time over which the power transfers would be restricted and the extent of the performance degradation involved until the unit could be repaired or a new unit manufactured and delivered, would significantly exceed normal expectations and be incompatible with the intent of the SAETC requirements.

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

1. Burns and Roe Worley, *Murraylink Project – Comments on ESIPC Letter to ACCC*, 2 September 2003

Burns and Roe Worley

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2 September 2003

REF: 024/45003

Murraylink Transmission Company
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Attention: Stéphane Mailhot
Chief Executive

RE: MURRAYLINK PROJECT - COMMENTS ON ESIPC LETTER TO ACCC

Dear Stéphane

Murraylink Transmission Company (MTC) has requested that BRW provide comment on the Electricity Supply Industry Planning Council (ESIPC) letter of 20 August 2003 to the Australian Competition and Consumer Commission (ACCC) entitled *Use of Spares in Calculating the Value of Alternatives*.

In particular, MTC has asked for further comment on the appropriateness of the level of spares recommended by BRW for the alternative projects to Murraylink, with consideration to:

a) The use of standard size components;

b) A reasonable interpretation of the SA Electricity Transmission Code, given that the projects provide interconnection (support for the SA region) as well as support to the Riverland;

c) Opportunities for sharing with other Transmission Network Service Providers (TNSPs); and

d) Stop-gap measures such as using a standard transformer as a short term spare for a phase shifting transformer (PST).

BRW makes the following comments concerning the issues raised, with particular reference to the spares provisions made for the Alternative 3 (AC link) operational equivalent to the Murraylink project:

BRW Alternative Project Spares

The cost estimates for the alternative projects proposed by BRW have been based on using standard sized major components where practical, on the assumption that the sharing of network spares with other Australian TNSPs may prove feasible and could be used to minimize the spares inventory required to be maintained by MTC.

In accordance with this approach, the spares costs included in the Alternative 3 estimates are limited to one spare 220/132kV PST ($9.0M), SVC spares at 6% ($1.02M) and 6% of the total other new electrical plant costs at the Red Cliffs and Monash substations ($166K). The substation spares include protection relays, switchgear components, SCADA and communications system spares. The most

significant cost item is the PST, a highly customized piece of electrical plant that is essential to replicating the performance of Murraylink[1], would not be held by another TNSP and would need to be manufactured overseas. A lead time from order to deliver of 12-14 months has been advised by suppliers. No specific additional provision was included for the 220kV overhead transmission line spares, because the initial spares requirements have been included in the purchase and construction cost. A reasonable percentage of other lesser lead time switchyard and line spares would be available from other Australian TNSPs or from local suppliers.

The ESIPC letter correctly observes that "… the number, location and type of spares held by an (T)NSP is a management exercise in logistics, inventory and economic efficiency that is generally dictated by the performance requirements and penalties set by the regulatory scheme …" (due to the unavailability of the assets to transmit power). Also that "Network spares normally represent the list of equipment necessarily kept on hand to restore power in the event of the failure of a critical piece of plant."

BRW also considers that the level of spares held by a stand alone new network entrant such as MTC could be expected to be higher than other TNSPs due to the smaller asset base and, as a consequence, relatively higher income impacts should the transmission assets become unavailable for use.

As advised previously[2], the "level of spares for each alternative project has been determined on the basis that critical spare components would be readily available to the asset owner." The level is influenced by the total number of assets of the same type available to the TNSP and it "is not prudent to set an arbitrary limit on spares especially when a new type of plant is installed (eg PSTs) for which there are no existing system spares".

Standard Size Equipment

As stated above, the costing of the BRW Alternative projects has been based on using standard equipment where possible. For Alternative 3, the most significant spares cost item is the spare 220/132kV PST, for which no system spare is held by another Australian TNSP. Since this item is critical to the satisfactory operation of the connection and the lead time for supply and delivery of a replacement is long, BRW considers that the availability of a suitable system spare is crucial.

SA Electricity Transmission Code Requirements

In accordance with *Section 2.2.2 Specific reliability* of the SA *Electricity Transmission Code, Issue TC/4 of 1July 2003*, for Category 1 to 4 load areas, including Riverland:

"A transmission entity shall keep in stock at least one spare transformer capable of replacing the installed transformer capacity. In the event of a transformer failure, a transmission entity will use its best endeavours to repair the installed transformer or install a replacement transformer within 4 days of the failure."

BRW considers that the code clearly supports, and indeed requires, that for Alternative 3 MTC must have a spare 220/132kV PST available, to comply with the restoration time requirement. The issue of a non-equivalent, standard 220/132kV transformer being available as a stop-gap measure to temporarily replace the PST is discussed further below.

Sharing of Spares with Other TNSPs

Spares holdings by a single TNSP are based on the likelihood and consequence of failure of a particular type of network element. Sharing of spares between TNSPs for major network elements is accepted in principle as a potentially economic asset management principle, although few, if any formal

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[1] BRW 14 March 2003 letter to MTC entitled *Murraylink Comments on Inclusion of Phase Shifting Transformers in Alternative Projects.*
[2] BRW 12 August 2003 letter to MTC entitled *Murraylink Project – Issues Raised by Stakeholder Responses to the (ACCC) Preliminary View.*

arrangements between Australian TNSPs are known. For any TNSP this could be expected to involve additional costs above the actual equipment and delivery charges, since a contractual arrangement with another TNSP for sharing of critical system spares would be likely to involve additional liabilities based on sharing the risks of multiple plant failures above the spares inventory quantities. For relatively low cost items, a shared supply arrangement could have higher costs and time risks than independent spares holdings.

In some situations, such as the 220/132kV PST for Alternative 3, a shared arrangement would not be practical, since no other equivalent spares are available. A partial equivalent of either a 220/132kV fixed phase shift transformer or a standard 220/132kV transformer would face the same difficulty, as none of the Australian eastern state TNSPs (i.e. ElectaNet SA, SPI PowerNet, TransGrid, Powerlink and Transend) have this combination of network voltage transformers. Whilst the Western Power has a small number (6) of standard 220/132kV transformers, most of these have only half the required rating (120MVA compared with the required 240MVA) and there are no "cold" spares that could be shared with an eastern state TNSP.

Stop-Gap Measures for Restoring Services

ESIPC proposes that "… the failure of a Phase Shifting Transformer could be temporarily accommodated by using a normal transformer". ESIPC recognizes that the power flows and control would be reduced as a result, but considers that the temporary condition would be sufficient to maintain supply and satisfy reliability requirements until a replacement PST can be sourced.

Since without the PST the power flows for an AC link would be substantially reduced and constrained by the flows through the Heywood Victoria to South Australia interconnector based on the relative system impedances, BRW considers that the length of time over which the power transfers would be restricted and the extent of the performance degradation involved until the unit could be repaired or a new unit manufactured and delivered, would significantly exceed normal expectations and be incompatible with the intent of the SA *Electricity Transmission Code* requirements.

Associated economic issues, including the impact of any cost penalties applied due to the transmission capacity being less than the contracted value is an issue for separate consideration by MTC.

However, BRW considers that this a purely academic argument for the Alternative 3 AC link, since a suitable 220/132kV system spare transformer is not available in Australia.

In conclusion, BRW does not consider that the provisions included for spares in the BRW Alternative projects cost estimates BRW Alternative projects, and for Alternative 3 in particular, are excessive or that they exceed normal and prudent practice.

Yours sincerely
Burns and Roe Worley

R McD Touzel
General Manager, Consulting