Summary of Project Assessment Conclusions Report

Maintaining a Reliable Electricity Supply to the Bowen Basin coal mining area

5 July 2013

Introduction

The Bowen Basin's coal mining production and transportation systems currently deliver over half of the metallurgical coal traded on the international market. The area has significant coal mining development potential, given the large reserves of high quality metallurgical coal.

In April 2012, Powerlink published a Project Specification Consultation Report (PSCR) which set out forecast increases from connection applications and enquiries for new coal mining developments within the next five years.

Following several announcements in late 2012 of coal mining operation closures and delays to previously announced new developments in the Bowen Basin area, information on underlying load growth as well as ramp up profile of committed and new coal mining developments was updated by Ergon Energy and coal mining proponents. Based on the updated information, Powerlink revised the load forecast to reflect the latest load development in the area. This has resulted in a reduced forecast growth in electricity demand with consequential deferral in the timing of a number of potential network projects.

The revised forecast growth in electricity demand still increases loadings on the electricity backbone supply network into the Bowen Basin area. This is expected to result in the need to augment the supply network, specifically the network supplying the Moranbah area, from summer 2013/14. Potential future projects which would progressively increase capacity to the area have also been identified and considered in determining the long run cost for supply to the area. No commitment to these potential projects is required at this time.

In response to current economic imperatives to reduce network costs, and strong signals to take the costs and benefits to consumers into account in network development, Powerlink, along with other network service providers, has been investigating the merits of alternative approaches to setting reliability standards. Powerlink has been active in developing options through a wide range of State and national review processes. While regulatory frameworks have not yet been changed as a result of these reviews, Powerlink has taken the step during this particular augmentation study to consider an alternative reliability of supply standard for the Bowen Basin area.

In November 2012, the Independent Review Panel on Network Costs published an Interim Report. The Panel made a number of draft recommendations on planning and reliability standards for the transmission network, in particular, the need for greater

emphasis on customer expectations in terms of reliability and cost of supply. The Queensland Government's recent response[1] to the Panel's final recommendations on reliability standards accepts the need to improve customer outcomes in this regard.

Powerlink has taken a proactive approach in considering a different balance between reliability and cost to the mandated N-1 planning standard. To facilitate implementation of a varied standard, Powerlink sought and obtained approval of the Queensland Energy Regulator to vary the reliability standard in the Bowen Basin area until November 2016.

The planning standard has been modified as follows:

Until 1 November 2016 Powerlink is to plan and develop the transmission network supplying the Northern Bowen Basin area such that for a single credible network contingency the forecast:

– *maximum load shedding requirement is <50 MW;*
– *expected annual unserved energy (probability weighted) is <1.25 MWh; and*
– *maximum unserved energy (if the critical event occurs) is <600 MWh.*

The variation to the reliability standard for this area partially incorporates consideration of costs and benefits to consumers as proposed in the Energy White Paper 2012 and a number of national and Queensland reviews. As a result some demand will be at risk during single network contingencies. Powerlink has provided an assessment of the potential impact of this variation to the reliability standard as part of this RIT-T consultation.

This Project Assessment Conclusions Report has been prepared as part of a prescribed process under the National Electricity Rules (NER) for the proposed transmission investment. It contains the results of the planning investigation and cost benefit analysis of credible options. In accordance with the AER's Regulatory Investment Test for Transmission (RIT-T), the credible option that maximises the present value of net economic benefit is recommended for implementation.

Options Considered

Powerlink published a Project Specification Consultation Report (PSCR) to Registered Participants, the Australian Energy Market Operator (AEMO) and interested parties in April 2012 with respect to maintaining a reliable electricity supply to the Bowen Basin coal mining area. The PSCR invited submissions particularly on the credible options (network and non-network) to address future supply requirements in the Bowen Basin area from summer 2013/14.

Submissions were received from six (6) parties, namely, Arrow Energy, Department of Natural Resources and Mines, Energy Developments Limited (EDL), Anglo American Metallurgical Coal, Peabody Energy and Stanwell Corporation. EDL proposed a non-network solution based on the upgrade of an existing Waste Coal Mine Gas (WCMG) abatement facility to a generation facility in the Moranbah area and establishment of a new WCMG generation facility also in the Moranbah area.

Discussions were undertaken with EDL to better understand its network support proposal. The proposal was subsequently revised to provide up to 57MW of embedded generation by upgrading an existing WCMG facility, and establishing a new embedded WCMG generation facility also in the Moranbah area. This network support proposal was considered as part of Options 5, 5(a) and 6 in the cost-benefit analysis.

[1] Report to Government, Interdepartmental Committee on Electricity Sector Reform, May 2013.

A Project Assessment Draft Report (PADR) was published on 24 January 2013. Public consultation on the PADR closed on 8 March 2013 with submissions received from five parties – Aurizon, Peabody Energy, Arrow Energy, Anglo American Metallurgical Coal and Ergon Energy.

All submissions supported the continuing development of the shared transmission network to meet future electricity supply needs in the Bowen Basin area, and stressed the importance of reliable electricity supply to promote industry confidence and facilitate economic development. While some submissions supported the thrust of the proposed variation in reliability standard, none provided unqualified support for its application in this area. The submissions also contained comments regarding existing curtailable load arrangements, joint planning practices and the reliability of the proposed network support solution.

Powerlink has considered the issues raised in the submissions and acknowledges the significance of the coal industry to the Queensland economy and the importance of a reliable supply of electricity to the industry. Given the very low probability of a critical contingency occurring, and the relatively small proportion of load that would need to be interrupted, at Powerlink's request, the Queensland Energy Regulator has agreed to a varied reliability standard that allows some load to be at risk. The recommended solution is required to provide the greatest net market benefits while still meeting this varied standard.

The submissions did not propose any additional non-network solutions or demand side options as an alternative to Option 5 as the proposed preferred option.

Powerlink has carried out planning studies and cost-benefit analysis to evaluate credible options to meet future supply requirements in the Bowen Basin area taking into account the 'N-1' standard and the proposed varied standard for the reliability of supply requirements. The following eight credible options[2] published in the PADR, were evaluated in detail to compare the net economic benefit to all those who produce, consume and transport electricity in the National Electricity Market (NEM), in accordance with the RIT-T.

Option 1	Moranbah area capacitor banks, Strathmore Second 275/132kV Transformer followed by future Nebo to Broadlea 132kV line via Moorvale under the varied supply standard timing.
Option 1(a)	Moranbah area capacitor banks, Strathmore Second 275/132kV Transformer followed by Nebo to Broadlea 132kV line via Moorvale under the 'N-1' supply standard timing.
Option 2	Moranbah area capacitor banks, Collinsville SVC followed by future Nebo to Broadlea 132kV line and Moranbah to Northern Hub 132kV line under the varied supply standard timing.
Option 3	Moranbah area capacitor banks, Strathmore Second 275/132kV Transformer followed by future Lilyvale to Broadlea via Moorvale 275kV line and Moorvale 275kV Substation under the varied supply standard timing.
Option 4	Moranbah area capacitor banks, Strathmore to Northern Hub 275kV line and Northern Hub Substation under the varied supply standard timing.
Option 5	Moranbah area capacitor banks, Network support 2014-2016 followed by future Strathmore Second 275/132kV Transformer and Nebo to Broadlea 132kV line via Moorvale under the varied supply standard timing.
Option 5(a)	Moranbah area capacitor banks, Network support 2014-2016 followed by Strathmore Second 275/132kV Transformer and future Nebo to Broadlea 132kV line via Moorvale under the 'N-1' supply standard timing.
Option 6	Moranbah area capacitor banks, Network support 2015-2016 followed by future Strathmore Second 275/132kV Transformer and Nebo to Broadlea 132kV line via Moorvale under the varied supply standard timing.

[2] The description of option titles only has been expanded for clarification purposes. There has been no change to the proposed or anticipated/modelled projects for options as previously described in the PADR and contained in this PACR.

Changes from the Project Assessment Draft Report

A conditional Network Support Agreement between EDL and Powerlink for the provision of network support services for the Bowen Basin area was entered into in April 2013, subject to satisfactory completion of the RIT-T process and other developmental milestones. The network support services from EDL will be supplied by the upgrade of an existing WCMG generation facility by October 2014 and establishment of a new WCMG generation facility by October 2015. Both facilities are located in the Moranbah area.

For completeness, the provision of network support services from only the existing WCMG generation facility has been assessed by Powerlink and is included as a new option, Option 7 in this PACR. As a result, the cost-benefit analysis has also been updated to reflect this change. Option 7 comprises:

Option 7	Moranbah area capacitor banks, Network support from upgraded facility only 2014-2016 followed by Strathmore Second 275/132kV Transformer in 2015 and future Nebo to Broadlea 132kV line via Moorvale under the varied supply standard timing.

Since the publication of the PADR, Powerlink has initiated a practice to publish formal submissions made to its RIT-T consultation reports on the Powerlink website. Should respondents explicitly request that information not be made public, Powerlink will continue its current practice and summarise the issues raised in the relevant submission and also acknowledge that the party has requested that some or all of its submission remain confidential. For this RIT-T consultation, Powerlink has contacted the relevant parties and obtained written permission to publish the submissions which appear on Powerlink's website consultation register.

Evaluation and Conclusion

The RIT-T requires that the proposed preferred option maximises the present value of net economic benefit to all those who produce, consume and transport electricity in the market compared to other credible options.

In the PADR released on 24 January 2013, Powerlink made a draft recommendation to implement Option 5, Moranbah area capacitor banks, network support 2014-2016 followed by future Strathmore Second 275/132kV Transformer and Nebo to Broadlea 132kV line via Moorvale under the varied supply standard timing.

The outcome of the cost-benefit analysis contained in this PACR demonstrates that Option 5 remains the preferred option. The inclusion of Option 7 in the cost-benefit analysis results in a change to the ranking of the Options, with Option 7 being the next preferred option after Option 5. To allow comparison of credible options on an equivalent basis, the cost-benefit analysis was carried out over 15 years and included consideration of anticipated/modelled projects expected to be required in this period to meet forecast growth in electricity demand in the Bowen Basin area. Load development scenarios and other analytical techniques were used to check the sensitivity of the outcome to changes in the underlying assumptions.

The proposed preferred option comprises the following works:

- installation of two 132kV capacitors at Dysart Substation and one 132kV capacitor at both the Moranbah and Newlands substations by summer 2013/14; and
- network support services between 2014 and 2016.

Other anticipated/modelled projects beyond 2016 were included in the evaluation.

Option 5 relies on variation of the reliability standard in Powerlink's Transmission Authority for the Bowen Basin area which was agreed to by the Queensland Energy Regulator in June 2013 and achievement of network support service developmental timeframes.

The estimated capital cost of the proposed preferred option is $12.3 million as well as network support services costs of $11.5 million, in 2011/12 prices. Annual operating and maintenance costs are around 2% of the capital cost. Powerlink is the proponent of the proposed network projects and Energy Developments Limited is the proponent of the network support services.

Consequently, this PACR contains a final recommendation to implement Option 5 to meet the varied future supply requirements within the Bowen Basin area.