Murraylink Transmission Company Pty Ltd

Murraylink Revenue Proposal - Overview

Effective

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Murraylink - Attachment 1.5 - Murraylink - Plain English Overview - 20170130.docx

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1 Overview

This Revenue Proposal for the Murraylink transmission interconnector is submitted by Murraylink Transmission Company Pty Limited, on behalf of Energy Infrastructure Investments Pty Limited.

Murraylink is a 180 km, High voltage direct current 220 megawatt transmission link between Red Cliffs in Victoria and Berri in South Australia. It can operate to the limit of its capacity, in either direction, between the Victorian and South Australian transmission networks.

The link is dispatched by the Australian Energy Market Operator, in similar manner to a generator, to control flows between the Victorian and South Australian regions of the National Electricity Market and thereby minimise the costs of generation across the market.

The demand for Murraylink's services arises from the need for energy to be dispatched between the Victorian and South Australian regions, in accordance with AEMO's requirements. The need for interconnection capacity is increasing, to match the forecast expansion in renewable generation in South Australia and reduction in thermal generation. This will require Murraylink's maximum available capacity to be maintained with a high level of availability.

At the time of its commissioning, Murraylink represented cutting-edge 'High Voltage Direct Current Light' technology. The direct current convertor stations were connected by the longest underground cable in the world. Whilst there have been a number of more recent direct current transmission developments throughout the world, this type of equipment remains highly specialised.

Murraylink is very reliable with high levels of circuit availability. Murraylink's historic service performance is shown in **Error! Reference source not found.**

Table 1.1– Historic service performance

	2013/14	2014/15	2015/16
Planned circuit availability (%)	99.77	98.45	98.61
Forced peak circuit availability (%)	99.47	99.42	99.96
Forced off–peak circuit availability (%)	100.00	99.68	100.00

Murraylink is now in its second decade of operation. The major elements of equipment that comprise the link (the main transformers, conversion equipment and filters) have a standard life of 40 years. However, most items of the ancillary equipment necessary for the operation of the link (notably

equipment such as air conditioners, ventilation fans, water pumps and treatment apparatus, control and protection systems) have much shorter useful lives than these major assets. Some of this equipment will require refurbishment or replacement during the 2018-23 regulatory control period.

These refurbishment projects have been factored into the capital expenditure program. While, as would be expected for an asset getting older, this component is increasing over time however it remains modest. The major item of capital expenditure is not the replacement of an existing asset, it is the installation of a fire suppression system. Following the fire experienced at another EII asset (Directlink) and the advice of insurers Murraylink will be installing a fire suppression system to prevent fire damage to operating equipment that could result in a catastrophic long term loss of service.

Murraylink's capital expenditure in the current regulatory control period is shown in Table 1.2.

Table 1.2 – Historic capital expenditure ($m nominal)

	2013/14	2014/15	2015/16	2016/17(e)	2017/18(e)	Total
AER forecast	1.7	1.4	1.8	0.5	0.6	5.9
Capital expenditure	0.3	0.7	0.9	7.4	7.2	16.6
Actual compared to forecast	-1.4	-0.6	-0.9	7.0	6.6	10.7

The historic Murraylink operating expenditure is set out in Table 1.3. Major components of the operating costs has been competitively outsourced and the actual expenditure is closely comparable to the AER's forecast in 2013.

Table 1.3 – Historic operating expenditure ($m nominal)

	2013/14	2014/15	2015/16	2016/17(e)	2017/18(e)	Total
AER Forecast	3.7	3.8	3.9	4.0	4.3	19.5
Actuals	3.7	4.5	4.0	4.7	4.2	21.1
Actual compared to forecast	0.0	0.7	0.2	0.8	-0.0	1.6

The proposed capital expenditure forecast for Murraylink for the 2018-23 regulatory control period is summarised in Table 1.4. The majority of this expenditure is associated with the replacement of an obsolete control system. Given the central role of the control system in the operation of Murraylink, the capital expenditure is unavoidable in order to be confident of Murraylink's ongoing availability from 2021 onwards.

Table 1.4 – Forecast capital expenditure ($m real 2018)

	2018/19	2019/20	2020/21	2021/22(e)	2022/23(e)	Total
Forecast Capital Expenditure	5.8	13.9	10.8	2.4	1.0	33.8

Murraylink's proposed operating expenditure is set out in Table 1.5. This forecast is a projection of the existing competitively sourced maintenance costs adjusted for non-recurrent costs and a service level agreement that will deliver benefits in terms of network reliability.

Table 1.5 – Forecast operating expenditure ($m real 2018)[1]

	2018/19	2019/20	2020/21	2021/22(e)	2022/23(e)	Total
Routine	2.1	2.1	2.1	2.1	2.1	10.6
Fault and Condition	0.5	0.5	0.5	0.5	0.5	2.6
Non-Recurring	0.0	-	0.0	-	0.2	0.2
Non System	0.7	0.7	0.7	0.7	0.7	3.7
Connection Charges	1.0	1.0	1.0	1.0	1.0	4.9
Total	4.4	4.4	4.4	4.4	4.5	22.0

The proposed Murraylink revenue and price path builds upon these forecast costs and has been calculated in accordance with the National Electricity Rules and the AER's models. The proposed revenue requirement, smoothed revenue and X-factors are set out in Table 1.6.

Table 1.6 – Revenue Requirement and price path ($m nominal)

	2018/19	2019/20	2020/21	2021/22 (e)	2022/23 (e)	Total
Return on capital	7.5	7.6	8.2	8.7	8.5	40.4
Return of capital	4.4	4.8	4.9	5.2	7.4	26.7
plus operating expenditure	4.5	4.5	4.7	4.7	5.0	23.4
plus EBSS	-0.2	-0.2	0.6	-	0.6	0.8
plus net tax allowance	0.9	0.9	1.0	1.1	1.1	5.0
Total	17.1	17.6	19.4	19.6	22.7	96.4
Smoothed revenue path	17.1	18.1	19.2	20.3	21.6	96.3
X factors tariff revenue (%)		-3.95%	-3.95%	-3.95%	-3.95%	

The principal challenge associated with Murraylink relates to maintaining the electrical installation, with its many sub-components, to meet high standards

[1] Excludes EBSS and debt raising costs.

of availability for service. As noted above these component assets are now approaching their mid-life. Whilst they have so far proven reliable, they must be maintained to rigorous standards and their condition closely monitored, to avert unplanned premature failure.

In addition, the remote rural setting and environment of the link imposes logistics issues and costs for Murraylink's maintenance operations.

The Revenue Proposal demonstrates how Murraylink will address these challenges. It also provides comprehensive evidence of the revenue needs for the 2018-23 regulatory control period.

In recent years the generation mix in South Australia has continued to change, with the development of renewable (wind and solar PV) generation and the closure and proposed closure of thermal generation of more than 1,500 MW by 2017[2]. This is leading to greater reliance on the existing interconnections, Heywood and Murraylink, to export power from and import power to South Australia.

The 28 September 2016 "system black" South Australia incident has further emphasised the dependence of that state on its interconnections with adjacent states.

Murraylink has identified a sequence of projects with the potential to increase the capability of interconnection to South Australia and provide support to the Victorian, NSW and South Australian regional transmission networks. This sequence of projects involves the reinforcement of both the transmission networks and the duplication of Murraylink. As the matter of South Australian interconnection capacity is currently under consideration by AEMO and the TNSPs, the transmission elements constituting this upgrade have been included in this proposal as a contingent project.

[2] AEMO, The Heywood Interconnector: Overview of the Upgrade and Current Status - South Australian Advisory Functions, August 2015, p. 3.