Murraylink Transmission Company Pty Ltd

Murraylink Revised Revenue Proposal

Effective

July 2018 to June 2023

December 2017

20171201 Murraylink Revised Revenue Proposal - Public

Contents

Tables

Figures

Attachments

Attachment 1.1	Director's responsibility statement
Attachment 1.2	Plain English Overview
Attachment 3.1	Efficiency benefit sharing scheme model
Attachment 3.2	Capital expenditure model
Attachment 4.1	Regulatory asset base roll forward model
Attachment 6.1	Forecast operating expenditure model
Attachment 6.2	Outsourcing arrangements
Attachment 8.1	Post tax revenue model

Glossary

Term	Definition
AARR	Aggregate Annual Revenue Requirement
ABS	Australian Bureau of Statistics
AC	Alternating Current
ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AWOTE	Average Weekly Ordinary Time Earnings
CGS	Commonwealth Government Securities
DC	Direct Current
DNSP	Distribution Network Provider
DRP	Debt Risk Premium
EBSS	Efficiency Benefit Sharing Scheme
EGWWS	Electricity, Gas, Water and Waste Services
EII	Energy Infrastructure Investments
HVDC	High Voltage Direct Current
LPI	Labour Price Index
MAR	Maximum Allowed Revenue
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NPV	Net Present Value
Proposal	Murraylink Revenue Proposal
PTRM	AER Post Tax Revenue Model
RAB	Regulatory Asset Base
RIT	Regulatory Investment Test
RFM	(Asset Base) Roll Forward Model
Rules	National Electricity Rules
STPIS	Service Target Performance Incentive Scheme

TNSP	Transmission Network Service Provider
WACC	Weighted Average Cost of Capital

Executive Summary

This revised 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 180km, High Voltage Direct Current (HVDC) 220 megawatt transmission link between Red Cliffs in Victoria and Berri in South Australia. It can control power transfers to the limit of its capacity, in either direction, between the Victorian and South Australian transmission networks. The link is dispatched by AEMO, in similar manner to a generator, to control flows between the Victorian and South Australian regions of the National Electricity Market (NEM) and thereby minimise the costs of generation in the NEM.

Murraylink is 'HVDC Light' technology. At the time of commissioning the Direct Current (DC) convertor stations were connected by the longest underground cable in the world. Whilst there have been a number of more recent DC transmission developments throughout the world, this type of equipment remains highly specialised.

This revised revenue proposal outlines Murraylink's response to the AER's draft determination. Murraylink has adjusted some of its proposal for the AER's findings but has supplied additional information on a range of matters including; the calculation of the allowed rate of return and forecast capital expenditure.

More detailed information on Murraylink's rate of return is set out in section 5 and forecast capital expenditure is set out in section 5.

1.1 Current performance

The tables below set out an update of the historic capital expenditure and operating expenditure for the current revenue determination period.

Murraylink's capital expenditure in the current regulatory control period is shown in Table 1.1.

Table 1.1 – Historic capital expenditure ($m nominal)

	2013/14	2014/15	2015/16	2016/17	2017/18(e)	Total
AER forecast	1.8	1.4	1.8	0.5	0.6	5.9
Actual capital expenditure	0.3	0.7	0.9	0.8	12.5	15.3
Actual compared to forecast	-1.5	-0.6	-0.8	0.4	11.9	9.3

The historic Murraylink operating expenditure is set out in Table 1.2. A major component of the operating costs has been competitively outsourced and the actual expenditure is remains closely comparable to the AER's forecast in 2013.

Table 1.2 – Historic operating expenditure ($m nominal)

	2013/14	2014/15	2015/16	2016/17	2017/18(e)	Total
AER Forecast	3.7	3.9	3.9	4.0	4.3	19.9
Actuals	3.7	4.5	4.0	4.2	4.2	20.6
Actual compared to forecast	0.0	-0.6	-0.1	-0.2	0.1	-0.8

1.2 Forecast

The basis for the proposed capital expenditure forecast for Murraylink for the 2018-23 regulatory control period is set out section 5 and summarised in Table 1.3.

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 1.3 – Forecast capital expenditure ($m nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Forecast Capital Expenditure	4.4	12.0	9.7	2.2	0.8	29.0

Murraylink has accepted the AER's draft determination on forecast operating expenditure. Table 1.4 sets out this amount.

Table 1.4 – Forecast operating expenditure ($m nominal)[1]

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Operating expenditure	4.5	4.6	4.8	4.8	5.1	23.8

The proposed Murraylink revenue and price path builds upon these forecast costs and has been calculated in accordance with the National Electricity

[1] Excludes EBSS and debt raising costs.

Rules and the AER's guidelines. The proposed revenue requirement, smoothed revenue and X-factors are set out in Table 1.5.

Table 1.5 – Revenue Requirement and price path ($m nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Return on capital	7.2	7.3	7.9	8.3	8.2	38.8
Return of capital	3.5	3.7	3.6	3.8	5.9	20.4
plus operating expenditure	4.5	4.6	4.8	4.8	5.1	23.8
plus EBSS	-0.2	-0.2	0.5	-	0.1	0.2
plus net tax allowance	1.1	1.1	1.1	1.2	1.2	5.7
Total	16.1	16.4	17.8	18.1	20.6	89.0
Smoothed revenue path	15.1	16.4	17.8	19.2	20.6	89.2
X factors tariff revenue (%)		-6.06%	-5.59%	-5.15%	-4.75%	

This revised proposal builds on those matters included in the revenue proposal Murraylink submitted in January 2017.

2 Revenue proposal requirements

2.1 Revised Revenue proposal and the NEL

The National Electricity rules state

> *6A.12.3 Submission of revised proposal, framework or pricing methodology*
>
> *(a) In addition to making such other written submissions as it considers appropriate, the Transmission Network Service Provider may, not more than 45 business days after the publication of the draft decision, submit to the AER:*
>
> *(1) a revised Revenue Proposal;*
>
> *(2) a revised proposed negotiating framework; or*
>
> *(3) a revised proposed pricing methodology.*
>
> *(b) A Transmission Network Service Provider may only make the revisions referred to in paragraph (a) so as to incorporate the substance of any changes required by, or to address matters raised in, the draft decision.*

This revised revenue proposal responds to the AER's draft determination issued on 28 September 2017 and expands on those matters raised by the AER in that draft determination.

The revenue proposal covers the 5 years, from 1 July 2018 to 30 June 2023.

This revised revenue proposal has been developed in accordance with Chapter 6A of the National Electricity Rules (Rules)[2].

During the 2018-23 regulatory control period, Murraylink will require the investment program outlined in this revised proposal, to continue to reliably perform its role as an interconnection between the Victorian and South Australian Regions of the National Electricity Market (NEM).

Murraylink transmission interconnector is one of a suite of gas and electricity infrastructure assets owned by Energy Infrastructure Investments Pty Limited (ABN 95 104 348 852). Those infrastructure assets are managed by an APA Group wholly owned subsidiary, APA Operations (EII) Pty Ltd.

This Revenue Proposal for Murraylink is submitted by Murraylink Transmission Company Pty Limited (ACN 089 875 080 Level 25, 580 George Street, Sydney) on behalf of Energy Infrastructure Investments.

---

[2] Australian Energy Market Commission, National Electricity Rules Version 45, as at 14 July 2011.

2.2 Structure of this document

The remaining elements of this Revenue Proposal are structured as follows:

- Chapter 3 describes the historic cost and service performance.
- Chapter 4 outlines the calculation of the regulated asset base for the forthcoming regulatory control period, using the AER's Roll Forward Model (RFM).
- Chapter 5 explains Murraylink's capital financing costs and taxation.
- Chapter 5 describes the operating expenditure and capital expenditure forecast.
- Chapter 7 describes the depreciation allowance.
- Chapter 8 presents the revenue needs for the 2018-23 regulatory control period, calculated using the AER's Post-Tax Revenue Model.
- Chapter 9 explains why a Pricing Methodology and a Negotiating Framework are not required for Murraylink.
- Chapter 10 outlines the Incentive schemes, Efficiency Benefit Sharing Scheme, Capital Expenditure Sharing Scheme and Service Target Performance Scheme.

2.3 Directors' statement

In accordance with the National Electricity Rules, this revised proposal contains a certification of the reasonableness of the key assumptions that underlie the capital and operating expenditure forecast by the Directors of Murraylink.

The Directors' responsibility statement is included in Attachment 1.1.

2.4 Consumer engagement

In response to the AER's criticism Murraylink will extend its stakeholder engagement beyond its customers to engage with a broader range of representatives.

To this end Murraylink have included an amount in its forecast capital expenditure for the next revenue determination period to establish broader stakeholder consultation in relation to its next revenue proposal in January 2021.

3 Historic cost and service performance

3.1 Historic capital expenditure

Murraylink has updated the historic capital expenditure in its revenue proposal consistent with the AER's draft determination rejection of the opening regulatory asset base.

The table below sets out Murraylink's capital expenditure for the current regulatory control period. The table includes actuals to the end of September 2017 and an estimate for the remaining nine months of the 2018 financial year.

Table 3.1 – Historic capital expenditure as incurred ($000 nominal)

	2013/14	2014/15	2015/16	2016/17	2017/18 (e)	Total
Switchyard	-	271	568	660	1,170	2,670
Transmission line	-	-	-	-	16	16
Easements	-	-	-	-	-	-
Ancillary 15 - control system	-	63	30	-	-	93
Ancillary 30	-	188	249	7	719	1,163
Inspection and test equipment	-	184	33	-	-	218
Other operating assets	323	-	34	178	10,567	11,102
Office machines	-	-	1	2	-	3
Total	323	707	917	847	12,473	15,266

3.2 Efficiency benefit sharing scheme

3.2.1 *AER's draft determination*

The box below sets out the AER's decision on the Efficiency Benefit Sharing Scheme (EBSS) carryover amounts for the next revenue control period based on performance in the current period.

Figure 3-1 – AER's draft determination on the EBBS

Our draft decision is to approve EBSS carryover amounts totalling $0.4 million ($2017–18) from the application of the EBSS in the 2013–18 regulatory control

period. This is $0.3 million ($2017–18) lower than the carryover amounts Murraylink proposed, which totalled $0.7 million ($2017–18).

The reasons for the difference are:

- Murraylink reported actual opex in real rather than nominal dollars
- Murraylink did not use the same estimate of opex in 2017–18 to calculate its efficiency gains as it used to forecast opex
- some of the formulas in the EBSS model we provided Murraylink referenced incorrect cells
- we updated the CPI index values in the model.

3.2.2 *Murraylink's response*

Murraylink does not accept the AER's draft determination.

Murraylink note the following in response to the AER's draft determination after Murraylink has re-examined the inputs to the EBSS calculation in the AER's Regulatory Information Notice.

- Murraylink can confirm that it provided the operating expenditure in the AER's spreadsheet to calculate EBSS on a nominal basis.
- Murraylink did not need to estimate 2017/18 operating expenditure for the purposes of calculating the EBSS as the EBSS period ended in 2016/17.
- Murraylink has used the EBSS model the AER used for the draft determination in this revised proposal.
- Murraylink has accepted the AER's changes to inflation in the EBSS model.

Murraylink's EBSS calculation is consistent with its regulatory accounts for 2016/17 as filed with the AER. It is important to note that additional regulatory operating expenditure were recognised subsequent to the lodgement of the Regulatory Accounts for the year ended 30 June 2015 and 30 June 2016.

There had been a change in how the operating expenses were recorded for financial accounting purposes in 2014/15. Prior to financial 2015, for financial accounting purposes all operating cost was recorded by Murraylink Transmission Partnership, however from 2014/15 onwards the operating cost was altered to be recorded across Murraylink Transmission Partnership and Murraylink Transmission Company Pty Ltd.

When preparing the regulatory accounts for 2014/15 and 2015/16, the regulatory operating only reflected the expenses recorded in Murraylink Transmission Partnership, whereas the operating expenditure recorded in the other entity should have also been reflected in the regulatory accounts.

This was corrected in the regulatory accounts for 2016/17. It was for this reason that Murraylink used inputs consistent with the 2016/17 regulatory accounts as the basis for its EBSS submission. This had the effect of increasing operating expenditure in 2014/15 and 2015/16.

In the revised proposal Murraylink has used the EBSS model used by the AER and replaced the operating expenditure inputs with those derived from the 2016/17 regulatory accounts - the most accurate representation of Murraylink's operating expenditure. Murraylink has also updated operating expenditure for 2016/17.

Murraylink proposes the EBSS operating expenditure set out in Table3.2

Table3.2 – Efficiency Benefit Sharing Scheme Operating Expenditure ($M nominal)

	2013/14	2014/15	2015/16	2016/17
Total Operating Expenditure	3.7	4.5	4.0	4.2
Excluded items	-1.0	-1.0	-1.0	-1.0
Total	2.7	3.5	3.1	3.2

When applied to the AER's EBBS model used in the draft determination these results produce the EBSS amounts set out in Table 3.3 to be applied to the forecast revenue control period.

Table 3.3 – EBSS outcomes ($m real $2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Efficiency Benefit Sharing Scheme	(0.19)	(0.22)	0.48	0.00	0.10	0.18

4 Regulatory asset base

4.1 AER's draft determination

The AER made a number of changes to the Roll Forward model as part of its draft determination. The box below sets out the AER's draft determination

Figure 4-1 – AER's draft determination on the Regulatory Asset Base

> We do not accept Murraylink's proposed opening RAB of $114.2 million ($nominal) as at 1 July 2018. We instead determine an opening RAB value of $114.3 million ($nominal) as at 1 July 2018.

The AER outlined a number of adjustments to the opening regulatory asset base commencing 1 July 2018. Murraylink address these below.

4.2 Historic Depreciation

4.2.1 AER's draft Determination

The box below sets out the AER's draft determination

Figure 4-2 – AER's draft determination on the historic depreciation

> we made the following amendments to Murraylink's proposed RFM inputs:
>
> - applied the depreciation values based on actual capex rather than forecast capex, which is consistent with our final decision for Murraylink's 2013–18 regulatory control period

4.2.2 Murraylink's revised proposal

Murraylink has based Murraylink's revised proposal depreciation on actual capital expenditure rather than forecast capital expenditure

4.3 "Test equipment" asset class

4.3.1 AER's draft Determination

The box below sets out the AER's draft determination

Figure 4-3 – AER's draft determination on Test Equipment

> we made the following amendments to Murraylink's proposed RFM inputs:
>
> - changed the standard asset life for the 'Test equipment' asset class from 10 years to 'not applicable', which is consistent with our final decision for Murraylink's 2013–18 regulatory control period

4.3.2 *Murraylink's revised proposal*

The AER stated:

> *"The depreciation values used for establishing Murraylink's opening RAB as at 1 July 2018 should be based on the rates and methods allowed in the transmission determination for the 2013–18 regulatory control period…*
>
> *We have reallocated this actual capex to an approved asset class which has a similar standard asset life to the proposed 10 year life for test equipment in the RFM."*

This determination in effect has limited asset classes to those that were contained in the AER's final determination for the current regulatory control period. Murraylink hopes that the AER applies this approach consistently across revenue determinations.

As the AER is not proposing to allow capital expenditure in the "test equipment" asset class now or in the forecast period Murraylink has eliminated this asset class.

Based on the AER's draft determination Murraylink has also revised the name of "Ancillary 7 – pressure vessel testing and inspection" to "Inspection and test equipment". This then makes the content of this asset class consistent with the AER's draft determination. As asset classes are a description of the nature of the assets that fit in that classification this change is necessary.

Murraylink has revised Murraylink's proposed asset class and standard asset lives by asset class in accordance with Table 4.1.

Table 4.1 – Standard asset lives by asset class

Asset class	Useful life
Switchyard	40
Transmission line	40
Easements	n/a
Ancillary 15 - control systems	15
Ancillary 30	30
Inspection and test equipment	7
Other operating assets	5
Office machines	3

4.4 "Switchyard" and "Other operating assets"

4.4.1 *AER's draft Determination*

The box below sets out the AER's draft determination

Figure 4-4 – AER's draft determination on capex allocation

we made the following amendments to Murraylink's proposed RFM inputs:

- corrected the actual capex allocation for 2013–14 from the 'Switchyard' asset class to 'Other operating assets' asset class, to be consistent with Murraylink's regulatory accounts for 2013–14

4.4.2 *Murraylink's revised proposal*

Murraylink has included this expenditure in the "Other operating assets" asset class for the purposes of the revised proposal.

4.5 Inflation

The box below sets out the AER's draft determination

Figure 4-5 – AER's draft determination on inflation

we made the following amendments to Murraylink's proposed RFM inputs:

- updated Murraylink's estimate of inflation for 2016–17 with actual CPI, as it is now available.

Muraylink has reflected the AER's draft determination on historic inflation in the revised proposal roll forward model.

4.6 Opening RAB as at 1 July 2018

The AER adjusted the capital expenditure incurred for a number of projects. As part of the response to the revision of the forecast capital expenditure Murraylink noted some of the amounts from the forecast revenue control period were now expected to occur in the current revenue control period.

Murraylink now has actual capital expenditure costs for the 2016/17 and actual costs for the first three months of the 2017/18 and a better forecast for the remainder of this financial year.

As projects have progressed further through EII's asset management planning process Murraylink is better able to identify those project which will occur in the 2018/19 financial year and those expected to be incurred in the next regulatory control period as well as having better cost estimates for some projects. This has directly affected aspects of the AER's draft determination.

Table 4.2 has a comparison of the capital expenditure for 2016/17 in the proposal and the revised proposal.

Table 4.2 – Comparison of capital expenditure ($M, nominal)

	Proposal		Revised Proposal		Difference	
	16/17	17/18	16/17	17/18	16/17	17/18
Switchyard	0.4	0.1	0.7	1.2	0.3	1.1
Transmission line	0.0	0.0	-	0.0	-0.0	-
Easements	-	-	-	-	-	-
Ancillary 15 - control system	0.0	0.1	-	-	-0.0	-0.1
Ancillary 30	0.4	0.3	0.0	0.7	-0.4	0.4
Inspection and test equipment	-	-	-	-	-	-
Other operating assets	6.6	6.7	0.2	10.6	-6.4	3.8
Office machines	-	-	0.0	-	0.0	-
Total	7.4	7.2	0.8	12.5	-6.6	5.2

The most significant updates relate to a delay in the construction of the fire suppression system. The delay was as a result of undertaking due diligence as the results of the tender had come in significantly lower than Murraylink had expected. The due diligence was necessary to ensure the project was capable of being delivered to the level required. The due diligence was successfully completed with the result being a reduction in the expected cost of delivering the fire suppression system of $2.6m (nominal)

The expected replacement of failed capacitor banks at Berri and Red Cliff early in 2018 (more detail in section 6.6). Murraylink are also expecting to complete the chilled water piping and site security enhancements in early 2018.

The overall impact of the update is a reduction of $1.3m capital expenditure in the current regulatory control period compared to Murraylink's proposal but a delay in the profile of the expenditure.

Murraylink has also reflected the capital expenditure as outlined in Table 1.3 in calculating the opening asset base using the AER's RAB roll forward model. The results of this calculation is set out in Table 4.3.

Table 4.3 – Opening regulatory asset base as at 1 July 2018 ($M, nominal)

	2013/14	2014/15	2015/16	2016/17	2017/18(e)
Opening RAB	106.7	106.7	105.3	103.9	103.2
Capital expenditure	0.3	0.7	0.9	0.9	12.9
Depreciation	-3.4	-3.6	-3.7	-3.8	-3.9
Indexation	3.1	1.4	1.4	2.2	2.1
Adjustment	-	-	-	-	-
Closing RAB	106.7	105.3	103.9	103.2	114.3

The combined impact of these changes is broadly the same as the AER's draft determination of $114.3m.

4.7 Tax Asset Base

Murraylink has also used the AER's Roll forward model to calculate the Tax Asset Base. This is set out in Table 4.4.

Table 4.4 – Opening Tax Asset Base as at 1 July 2018 ($M, nominal)

	2013/14	2014/15	2015/16	2016/17	2017/18(e)
Opening TAB	81.3	78.9	77.1	75.4	73.6
Capital Expenditure	0.3	0.7	0.9	0.8	12.5
Depreciation	-2.7	-2.5	-2.6	-2.6	-2.6
Closing TAB	78.9	77.1	75.4	73.6	83.5

5 Rate of return, value of imputation credits and expected inflation

5.1.1 *Concern about the draft determination*

Murraylink is concerned about the form of the AER's draft determination in relation to the allowed rate of return.

Attachment 3 to the draft determination, which set out the decision pertaining to the rate of return, addressed issues which extended far beyond the issues raised by Murraylink's January 2017 revenue proposal. Murraylink is of the view that approaching the rate of return decision in the way of Attachment 3 led to confusion as to the precise nature of its proposal.[3]

5.1.2 *Revised proposal*

Murraylink has now re-estimated the rate of return for this revised revenue proposal. Murraylink's estimate is 6.4 per cent. This is a current estimate of a rate of return which is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to Murraylink in respect of the provision of prescribed transmission service. The way in which Murraylink has arrived at the rate of return of the revised proposal is set out in section 5.2 below.

Section 5.3 notes that Murraylink has adopted, for the revised proposal, the valuation of imputation credits of the AER's draft determination. Murraylink has adopted an estimate of gamma of 0.4.

In preparing the revised proposal Murraylink has used an estimate of expected inflation of 2.5 per cent. As Murraylink notes in section 5.4, this is the estimate of expected inflation from the AER's draft determination.

5.2 Rate of Return

5.2.1 *AER's draft determination*

The AER's draft determination did not approve Murraylink's proposed allowed rate of return.

Figure 5-1 – AER's draft determination on rate of return

[3] The CCP's presentation to the AER's public forum on the Murraylink revenue proposal was based on the presumption that Murraylink was proposing an approach to estimation of the rate of return on debt which differed from the approach which had actually been proposed.

Our draft decision is to reject Murraylink's rate of return proposal and determine an allowed rate of return of 5.7 per cent (nominal vanilla) (rounded to 5.7 per cent). We are satisfied that this rate of return achieves the allowed rate of return objective (ARORO). That is, we are satisfied that this allowed rate of return is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to Murraylink in providing prescribed transmission services..

Although the proposed allowed rate of return was not approved, the AER accepted a number of the component parts of Murraylink's rate of return proposal. These were:

- adoption of a weighted average of the return on equity and the return on debt (WACC), determined on a nominal vanilla basis (as required by the NGR);
- adoption of a 60 per cent gearing ratio;
- adoption of a 10 year term for the return on debt;
- application of the AER's method of extrapolating third party data series and updating the return on debt each year;
- estimation of the return on debt by reference to third party data series;
- adoption of the Sharpe-Lintner CAPM as the foundation model; and
- estimation of the risk free rate of return using yields on nominal Commonwealth Government securities (CGS) averaged over 20 business days as close as practical to the commencement of the regulatory control period.

5.2.2 Murraylink's response

Return on Debt

Murraylink proposed, and the AER accepted, estimation of the return on debt as the current – on-the-day – cost of debt, with term to maturity of 10 years, issued by a BBB+ rated issuer. This current cost of debt is to be transitioned into a trailing average estimate of the rate of return on debt through a process of annual updating over a period of 10 years.

The on-the-day cost of debt in Murraylink's proposal, 5.16 per cent, was estimated as a simple average of:

- the yield on debt issued by nonfinancial corporations with a credit rating in the BBB range, as published by the Reserve Bank of Australia, but with the data extrapolated to the 10 year term assumed for the debt financing of the benchmark efficient entity; and
- the average of the effective annual rates calculated for the 20 trading days to 30 December 2016, in the way proposed by the AER, from the mid-prices for Australian corporate debt with a credit rating in the BBB range,

and with a tenor of 10 years, posted by the Bloomberg service (series BVCSAB10).

Murraylink understood that the estimate of the return on debt would be revised, using more recent data, during the regulatory approval process. The estimate of the AER's draft determination, 4.78 per cent, Murraylink believes, was made not long before publication of the determination.

For the purpose of this revised proposal, Murraylink has re-estimated the on-the-day cost of debt using data available to 31 October 2017. It has not changed the method of estimation from that approved in the AER's draft determination.

Murraylink's current estimate of the rate of return on debt is 4.70 per cent.

Murraylink understands that the AER will again update the estimate of the rate of return on debt prior to its final determination on the revenue proposal.

Return on equity

Murraylink proposed, and the AER accepted, estimation of the rate of return on equity using the Sharpe-Lintner CAPM.

In its draft determination, the AER:

- accepted estimation of the current risk free rate for application of the Sharpe-Lintner CAPM using nominal yields on CGS with terms to maturity of 10 years averaged over 20 business days as close as practical to the commencement of the regulatory control period;
- did not accept, for use in the Sharpe-Lintner CAPM, an estimate of the equity beta of 0.8; and
- did not accept calculation of the market risk premium of the Sharpe-Lintner CAPM as the difference between the expected return on the market portfolio and the current risk free rate.

Risk free rate of return

For this revised revenue proposal, Murraylink has updated its estimate of the risk free rate of return using nominal yields on CGS with terms to maturity of 10 years averaged over 20 business days to 31 October 2017.

Murraylink's current estimate of the risk free rate is 2.78 per cent.

Murraylink understands that the AER will update the estimate of the risk free rate prior to its final determination on the revenue proposal.

Equity beta

The box below sets out the AER's draft determination on the equity beta.

Figure 5-2 – AER's draft determination on equity beta

> We do not consider that Murraylink has provided satisfactory evidence in support of a material change in equity beta to warrant a departure from our empirical range of 0.4 to 0.7 and a point estimate of 0.7.[4]

Murraylink proposed, but the AER rejected, an estimate of 0.8 for the equity beta used in the Sharpe-Lintner CAPM. The draft determination requires the use of a beta estimate of 0.7.

In its 2013 final determination for Murraylink's last revenue proposal, the AER found that a beta estimate of 0.8 achieved the broader requirements of the NEO. This was in the context of statistical evidence for a range 0.4 to 0.7, the range which subsequently supported the beta estimate of 0.7 adopted by the AER for its Rate of Return Guideline.

The draft determination advises that the earlier estimate of 0.8 was set slightly above the upper limit of the range 0.4 to 0.7 to account for the precision of the estimates.[5] More recent statistical work, the AER advised, gave greater confidence that the statistical estimate of beta is in the range 0.4 to 0.7.[6]

But the issue is not a matter of precision. It is not a matter of standard errors for the range in 2013, and the somewhat lower standard errors for that range in 2017 given the longer series of data now available for estimation.

When previously faced with a range of 0.4 to 0.7 for the statistical estimates, the AER explicitly determined that 0.8 was the appropriate beta: the AER decided that the beta estimate for Murraylink consistent with the broader requirements of the NEO was outside the range established by statistical analysis.

---

[4] Draft Determination, page 3-54.

[5] Draft Determination, page 3-69.

[6] This is, however, inconsistent with the view on pages 3-63 to 3-64 of the draft determination:

Our direct measurements for the equity beta for businesses with a similar degree of risk as Murraylink are primarily based on an expert report from Professor Olan Henry (Henry), which uses data for a set of Australian energy network businesses up to 28 June 2013. We have also analysed suitable Australian empirical equity beta estimates using Henry's methodology and data up to 28 April 2017. Our finding is that the empirical estimates continue to support Henry's empirical range of 0.3 to 0.8.

Although it requires the use of a beta estimate of 0.7, the draft determination advances no substantial reason for a change in the relative risk of Murraylink in respect of the provision of prescribed transmission service since 2013.[7]

The AER may have concluded that the studies to which Murraylink referred, in its January 2017 revenue proposal, did not provide evidence of a material change in empirical estimates of beta which would warrant departure from a point estimate of 0.7.[8] But Murraylink did not claim, on the basis of those studies, that there was a material change in beta. Those studies pointed to, but did not confirm, higher statistical estimates.

In these circumstances, an estimate of beta of 0.8, the estimate made by the AER in 2013, remains appropriate.

Use of an estimate of 0.7 does not, and cannot lead to an estimate of the rate of return on equity which contributes to achievement of an allowed rate of return commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to Murraylink in respect of the provision of prescribed transmission service.

Murraylink has retained a beta estimate of 0.8 in this response to the draft determination.

Market risk premium

Murraylink proposed, but the AER rejected, an estimate of 7.1 per cent for the market risk premium of the Sharpe-Lintner CAPM.

The box below sets out the AER's draft determination on the market risk premium.

Figure 5-3 – AER's draft determination on market risk premium

The draft determination advised:

- the estimate of the market risk premium for this decision was 6.5 per cent;
- this estimate had been derived by applying the approach set out in the Rate of Return Guideline; and

7 Nor were reasons given in the Rate of Return Guideline and its associated Explanatory Statement for why Murraylink's relative risk had changed, and the Guideline beta estimate of 0.7 was now the appropriate one.

8 Draft Determination, page 3-69.

- it was a forward looking estimate of the risk premium.

The draft determination also advised that, in deriving this estimate of the market risk premium, the AER had placed most reliance on historical excess returns.[9]

The Rate of Return Guideline noted:

- *the AER proposed to estimate a range for the MRP, and then select a point estimate from within that range;*
- *the AER would have regard to theoretical and empirical evidence when estimating the range, including historical excess returns, dividend growth model estimates, survey evidence and conditioning variables; regard will also be had to the recent decisions of Australian regulators;*
- *a point estimate would be selected from the range based on the AER's regulatory judgement, taking into account estimates from each of those sources, and considering their strengths and limitations.*[10]

The Explanatory Statement which accompanied the Rate of Return Guideline explained that the AER considered a range of 5.0 per cent to 7.5 per cent for the market risk premium was reasonable. A geometric mean of historical excess returns provided the lowest estimates (3.6 per cent to 4.8 per cent), but there were concerns about using a geometric mean as a forward-looking market risk premium. An arithmetic mean provided a range of 5.7 per cent to 6.4 per cent. These ranges indicated to the AER a lower bound of 5.0 per cent on the estimate of the market risk premium, and an estimate of 6.0 per cent for that premium.[11]

The Explanatory Statement also noted that the AER's dividend growth models, applied using data for two months to November 2013, indicated that a range of 6.1 per cent to 7.5 per cent was reasonable.[12]

From this evidence, and from survey and other material, the AER concluded that 6.5 per cent was an appropriate estimate of the market risk premium having regard to prevailing market conditions. In reaching this conclusion, the

---

9 Draft Determination, page 3-79.

10 AER, *Rate of Return Guideline*, December 2013, page 16.

11 AER, Explanatory Statement – Rate of Return Guideline, December 2016, page 93.

12 AER, Explanatory Statement – Rate of Return Guideline, December 2016, page 93.

AER advised that it gave greatest consideration to historical averages, followed by consideration of the estimates from its dividend growth models.[13]

The AER may have given greatest consideration to historical averages of excess returns when estimating the market risk premium of the Rate of Return Guideline. However, it did not give any consideration to whether an estimate made in that way was the estimate required for application of the Sharpe-Lintner CAPM. Nor did the AER give any consideration to this issue of the appropriateness of an estimate made as a historical average of excess returns when making an estimate of the market risk premium for the Murraylink draft determination.

As Murraylink explained at length in its January 2017 proposal, the market risk premium – the term $E(r_M) - r_f$ as it appears in the Sharpe-Lintner CAPM – is simply the difference between the conceptually distinct risk free rate (r_f) and the expected return on the market portfolio ($E(r_M)$) assumed for model derivation. If the Sharpe-Lintner CAPM is to provide an estimate of the rate of return on equity which can contribute to achievement of the allowed rate of return of rule 87, then the model must be applied in a way consistent with its conceptual and theoretical foundations. The market risk premium must be estimated consistently with those conceptual and theoretical foundations. It must be estimated, at the time the model is applied, as the difference between:

- the rate of return on the risk free asset which investors assume is available at that time; and
- the return that those investors expect, at that time, to earn on a market portfolio of assets.

Applying the Sharpe-Lintner CAPM in any other way would lead to an estimate which was not an estimate of the equilibrium expected rate of return on equity, and which, in consequence, would have no claim to be a rate of return on equity which contributes to achievement of the allowed rate of return of rule 87.

The AER's expert advisors on rate of return, Professors Partington and Satchell, may have advised that:

> *. . . it is the risk premium that determines the market portfolio and practitioners tend to treat the market risk premium as the exogenous variable to the CAPM (instead of the return on the market).*[14]

[13] AER, Explanatory Statement – Rate of Return Guideline, December 2016, page 95.

[14] Draft Determination, page 3-85.

If this were the case – if practitioners treat the market risk premium as an exogenous variable in the Sharpe-Lintner CAPM – then they are incorrect. Treating the market risk premium as an exogenous variable is inconsistent with the conceptual and theoretical foundations of the model.

The market risk premium of the Sharpe-Lintner CAPM is not a single exogenous variable to be estimated separately and independently of estimation of the risk free rate and the expected return on the market portfolio.

In these circumstances, it is not at all obvious that, in deriving an estimate of the market risk premium, most reliance should be placed on historical excess returns.

Use of a historical average of excess returns, as the AER proposes, implies that $E(r_M) - r_f$ is estimated as

$$\frac{1}{n}\sum_{t=1}^{n}(r_{Mt} - r_{ft}) = \bar{r}_M - \bar{r}_f$$

where $\bar{r}_M$ is the average return on the market over the n years of the averaging period, and $\bar{r}_f$ is the average risk free rate over the same historical period.

Now, $E(r_M)$ is not the same as $\bar{r}_M$. $E(r_M)$ is both a mathematical expectation, and an expectation, today, of future returns; it is not an average of past – realised – returns on the market. Nor is the historical average, $\bar{r}_f$, the same as the current risk free rate of return. Without additional, and far from trivial, assumptions, which the AER has not made, a historical average of excess returns is not an estimator of $E(r_M) - r_f$. A historical average of excess returns does not estimate the market risk premium of the Sharpe-Lintner CAPM.

The AER contended that Murraylink's application of the Sharpe-Lintner CAPM – and, in particular, its estimation of the market risk premium as the difference between the expected return on the market and the risk free rate at the time the model is applied – shared similarities with the Wright CAPM, and appeared to be a historical/alternative specification of the CAPM. Furthermore, the draft determination advised that Murraylink had submitted that the Wright specification of the CAPM was relevant material that could inform return on equity estimation.[15]

This is incorrect. Murraylink did not submit that the Wright CAPM was relevant, and explained, at length, why its application of the Sharpe-Lintner CAPM was not the Wright specification of the model.

[15] Draft Determination, pages 3-51 to 3-52.

Murraylink submitted that the rate of return on equity was to be estimated using the Sharpe-Lintner CAPM. To the extent that the same underlying theoretical model is applied, Murraylink's proposal shares similarities with the Wright CAPM, in precisely the same way as the AER's foundation model shares similarities with the Wright CAPM.

The draft determination advised:

> *We note that Murraylink's proposal for the market risk premium shares similarities with the Wright CAPM and appears to be a historical/alternative specification of the CAPM. We have consistently rejected such an approach because alternative specifications off the CAPM make certain unrealistic assumptions and are not theoretically justified.*[16]

But Murraylink made no assumptions beyond those that form the conceptual and theoretical foundations of the Sharpe-Lintner CAPM. Murraylink fully and carefully explained those foundations, the way in which the Sharpe-Lintner CAPM was derived from them, and the implications this had for application of the model. No unrealistic and theoretically unjustified assumptions were made in Murraylink's application of the Sharpe-Lintner CAPM.

It is the AER's application of the model which brings in unrealistic and theoretically unjustified assumptions. Without offering any rationale for its approach, the AER assumes that a historical average of excess returns is an estimator of the market risk premium of the Sharpe-Lintner CAPM.

A historical average of excess returns does not estimate the forward-looking market risk premium of the Sharpe-Lintner CAPM. Reliance on historical excess returns to estimate the risk premium cannot lead to an estimate of the rate of return on equity which is conceptually and theoretically consistent with the model. To the extent that the Sharpe-Lintner CAPM is capable of providing an estimate of the rate of return on equity which can contribute to achievement of the allowed rate of return objective of rule 87(3), the AER's application of the model cannot, except by chance, lead to that outcome.

For this revised revenue proposal, Murraylink has continued to estimate the market risk premium of the Sharpe-Lintner CAPM in a way consistent with the conceptual and theoretical foundations of that model.

Murraylink has estimated the market risk premium as the difference between a current estimate of the expected return on the market and the current estimate of the risk free rate of return.

---

[16] Draft Determination, page 3-54.

Murraylink's current estimate of the risk free rate of return, 2.78 per cent, has been explained above.

Murraylink has used a dividend growth model estimate of the expected return on the market. As Murraylink noted in its January 2017 revenue proposal, the dividend growth model is the only model, among those considered for regulatory rate of return determination, which can provide a forward-looking estimate of the expected return on the market. Murraylink's estimate of that expected return, 10.48 per cent, was calculated from an estimate made by Frontier Economics, but using versions of the AER's dividend growth models.[17]

Murraylink's estimate of the market risk premium of the Sharpe-Lintner CAPM for the revised proposal is, then, 7.70 percent.

Gearing

In the draft determination, the AER accepted Murraylink's proposed gearing for the benchmark efficient entity of rule 87(3). That gearing, 60.0 per cent, was the gearing proposed in the AER's Rate of Return Guideline.

Murraylink has continued to use a gearing of 60.0 per cent in revising its rate of return proposal in response to the AER's draft determination.

Estimate of allowed rate of return

Murraylink's estimate of the allowed rate of return for its revised proposal is 6.4 per cent. The component parts of this estimate have been discussed in the preceding sections of this submission. They are summarised in Table 5-1.

Table 5-1 – Proposed allowed rate of return

	Estimate
Return on equity:	
Risk free rate	2.78%
Beta	0.8
Return on market	10.48%
Market risk premium	7.70%
Rate of return on equity	8.9%
Return on debt:	
From RBA credit spreads of non-financial corporations	4.62%
Bloomberg	4.78%

17 Frontier Economics, Updated rate of return parameter estimated: Report prepared for APA Group, August 2017, section 4.

Rate of return on debt	4.7%
Gearing	60.0%
Allowed rate of return	6.4%

Implementation issues

Murraylink's January 2017 revenue proposal raised four issues arising in implementation of the allowed rate of return. These were:

- credit rating of the benchmark efficient entity;
- data for rate of return on debt estimation;
- annual updating of the rate of return on debt; and
- averaging periods to be used when updating the rate of return.

In this revised proposal responding to the AER's draft determination, Murraylink has retained its earlier assumptions about the credit rating of the benchmark efficient entity. These assumptions were accepted in the draft determination. They were:

- the benchmark efficient entity had a credit rating of BBB+; and
- where financial data to be used in estimating the rate of return were not available for entities with that credit rating, data for BBB rated entities were to be used.

In preparing its revised proposal, Murraylink has used the same data series and assumptions which it used in developing its January 2017 revenue proposal:

- the return on debt has been estimated using historical data on CGS yields and corporate bond spreads published by the Reserve Bank of Australia;
- observed yields on CGS with nominated maturities of 7 years and 10 years have been interpolated to provide estimates of yields for maturities of exactly 7 years and exactly 10 years, respectively;
- spreads on BBB rated bonds of non-financial corporate issuers with effective tenors of 7 years and 10 years have been extrapolated from the actual tenors reported by the Reserve Bank to tenors of exactly 7 years and exactly 10 years, respectively;
- the interpolation and extrapolation methods used by the AER in its estimation of the return on debt have been used; and
- the rate of return on debt has been estimated as a simple average of current yields for BBB rated bonds obtained from the Reserve Bank's corporate bond spread series, and from the series BVCSAB10 available from the Bloomberg service.

The use of these data series and assumptions were accepted in the draft determination.

Murraylink proposed, and the draft determination accepted, annual updating of the rate return on debt:

- the rate of return on debt would be estimated, immediately prior to commencement of the regulatory control period, as the current – on-the-day – cost of debt;
- at the end of the first year of the regulatory control period, one-tenth of this initial current cost of debt would be dropped from the average, and a new term, estimated using current year data, and weighted one-tenth, would be added; the new average would then become the updated return on debt to be used in the post-tax revenue model for the second and subsequent years of the regulatory control period;
- this process of updating would be continued in the second and subsequent years of the regulatory control period;
- the functionality which the AER has now built in to its post-tax revenue model to update the required revenue for the updated return on debt would be used to recalculate the required revenue for the each year of regulatory year of the regulatory control period after the first.

The revised proposal retains this approach to annual updating.

On 8 August 2017, in the course of the regulatory approval process, the AER wrote to Murraylink concerning the averaging periods which had been proposed for the 2018-2023 regulatory control period. Murraylink responded on 16 August, proposing new averaging periods which, if adopted, would address the AER's concerns.

In this revised proposal, Murraylink proposes to use the averaging periods set out in its 16 August letter.

5.3 Value of imputation credits

5.3.1 AER's draft determination

The box below sets out the AER's draft determination on the value of imputation credits.

Figure 5-4 – AER's draft determination on imputation credits

> We do not accept Murraylink's proposed value of imputation credits (or gamma) of 0.25. Instead, we adopt a value of imputation credits of 0.4. We consider that the use of a value for imputation credits of 0.4 will result in equity investors in the benchmark efficient entity receiving an ex ante total return (inclusive of the value of imputation credits) commensurate with the efficient equity financing costs of a benchmark efficient entity.

5.3.2 Murraylink's response

The AER's approach to estimation of gamma, which relies on the equity ownership method, has recently been upheld by the Federal Court and by the

Australian Competition Tribunal. In particular, the Federal Court upheld the AER's view that, in the context of using the post-tax revenue model with a nominal vanilla WACC, the value to be attributed to imputation credits was the value which could be claimed or utilised by the recipients of imputation credits.[18] It was not what is claimed or utilised, as demonstrated by the behaviour of those recipients, and which might be measured by market value studies.

The AER's preference for one theoretical approach over another, in the determination of gamma was not, the Federal Court concluded, a reviewable error. This meant that it was not an error of construction for the AER to focus on utilisation rather than on implied market value.[19]

However, the Court noted, this did not preclude the possibility of error: the AER could err in acting on economic learning outside the mainstream of that discipline, at least if it did so without explaining the basis for so doing.[20]

For its revised revenue proposal, Murraylink has adopted the estimate of gamma of the AER's draft determination. Murraylink has adopted an estimate of 0.4.

5.4 Expected inflation

5.4.1 *AER's draft determination*

The AER's draft determination adopted an estimate of expected inflation of 2.50 per cent.

Figure 5-5 – AER's draft determination on forecast inflation

> Our estimate of expected inflation is 2.50 per cent. It is an estimate of the average annual rate of inflation expected over a ten year period.

5.4.2 *Murraylink's response*

In preparing its revised proposal, Murraylink has used an estimate of expected inflation 2.50 per cent. This is the estimate of expected inflation from the AER's draft determination.

---

18 Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017] FCAFC79, paragraphs 738 to 784.

19 Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017] FCAFC79, paragraphs 756.

20 Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017] FCAFC79, paragraphs 756.

The AER's estimate of inflation has been made as a geometric average of:

- Reserve Bank of Australia inflation forecasts (CPI inflation) for the first two years of Murraylink's 2018-22 regulatory control period; and
- the mid-point of the Reserve Bank's target band for inflation (2.50 per cent) for the following eight years.

Murraylink understands that the AER will update its estimate of inflation prior to a final determination using any new forecasts of CPI inflation published by the Reserve Bank.

6 Forecast operating and capital expenditure

6.1 Forecast operating expenditure

6.1.1 *AER's draft determination for forecast operating expenditure*

The box below sets out the AER's draft determination

Figure 6-1 – AER's draft determination on forecast operating expenditure

> We accept Murraylink's opex forecast of $22.1 million ($2017–18).1 We are satisfied that it reasonably reflects the opex criteria

6.1.2 *Murraylink's revised proposal;*

Murraylink has accepted the outcome of the AER's draft determination with respect to forecast operating expenditure for the upcoming regulatory control period. We have updated the outputs to make it consistent with the AER's historic and forecast inflation.

Murraylink still has significant concerns with the approach the AER has taken to assessing the forecast operating expenditure for Murraylink as it is not particularly fit for the purpose of assessing operating expenditure for a small transmission line like Murraylink.

However, as the results of the AER's assessment has, coincidentally, produced a result similar to Murraylink's assessment under the National Electricity Rules it would be obtuse for Murraylink to reject the outcome based on weaknesses in the AER's methodology.

Table 6.1 – Forecast operating expenditure including debt raising costs ($m real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Controllable operating expenditure	4.4	4.4	4.4	4.4	4.5	22.1
EBSS	-0.2	-0.2	0.5	-	0.1	0.2
Debt raising costs	0.0	0.0	0.0	0.0	0.0	0.0
Total operating expenditure	4.2	4.2	4.9	4.4	4.6	22.3

6.2 Forecast capital expenditure

No capital expenditure corresponding to augmentations or for projects that have satisfied the RIT has been included.

6.2.1 *Capital expenditure objectives*

Murraylink's forecast capital expenditure is capital expenditure that is considered to be required in order to meet the capital expenditure objectives. Rule 6A.6.7(a) sets out the capital expenditure objectives which are:

(1) meet or manage the expected demand for prescribed transmission services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of prescribed transmission services; or

(ii) the reliability or security of the transmission system through the supply of prescribed transmission services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of prescribed transmission services; and

(iv) maintain the reliability and security of the transmission system through the supply of prescribed transmission services; and

(4) maintain the safety of the transmission system through the supply of prescribed transmission services.

Murraylink considers that this revenue proposal achieves the capital expenditure objectives set out in Rule 6A.6.7. Murraylink also considers that the forecast of required capital expenditure reasonably reflects the efficient costs that would be incurred by a prudent network operator in meeting the capital expenditure objectives

6.2.2 *National Transmission Network Development Plan*

The AEMO 2016 National Transmission Network Development Plan (NTNDP) for the National Electricity Market notes that:

- a high-level pre-feasibility study into inter-regional augmentations found multiple credible solutions with positive net market benefits; and

- a combination of services (providing system strength, inertia, FFR, and frequency regulation) could comprise a lower-cost alternative approach to improving South Australia's resilience without additional interconnection. [21]

6.3 Forecast capital projects

The AER summarised its draft determination with regard to Murraylink;'s forecast capital expenditure. This summary is set out in the box below

Figure 6-2 – AER's draft determination on control system replacement

> Our draft decision is to not accept Murraylink's proposed total forecast capex of $33.8 million ($2017-18) for the 2018-23 regulatory control period because we are not satisfied that it reasonably reflects the capex criteria. Our estimate of the total forecast capex that reasonably reflects the capex criteria is $26.6 million ($2017-18), a reduction of 21.3 per cent.

It is important to note in relation to Murraylink's forecast capital expenditure that Murraylink's Asset Management Plan is based on calendar years whereas the Murraylink revenue determination is based on financial years. This results in the need to allocate capital expenditure from calendar years into financial years. The further out this occurs the more difficult it is to determine which half of the calendar year and therefore which financial year particular expenditure items will occur. Murraylink has addressed this by the simple expedient of dividing the capital expenditure for the calendar year in half and allocating each to the relevant financial years.

As the project gets closer it is possible to determine when it will occur and allocate it in finical years with more accuracy. This is what has occurred in the case of Murraylink and Murraylink can now identify with a degree of certainty when some of the capital expenditure in its Asset Management plan will occur in calendar year 2018. This means that we have been able to identify a number of projects in the revenue proposal were included in the forecast capital expenditure for the next revenue control period that Murraylink can be confident will be completed by the end of the current revenue control period. Included in these projects are:

- NSW Runback Scheme
- Site security and enhancement
- Spare capacitors associated with replacement of capacitor banks at both Berri and Red Cliffs

21 AEMO, National Transmission Network Development Plan for the National Electricity Market, November 2016, p.74.

Murraylink accepts the AER's revisions to the Murraylink forecast capital expenditure with the following exceptions.

6.4 Control System Replacement

6.4.1 *AER's draft determination*

The AER's draft determination is set out in the box below.

Figure 6-3 – AER's draft determination on control system replacement

a $4.5 million ($2017-18) reduction to forecast capex for 'Control System Upgrade' related to the scope of APA management costs and further information provided by Murraylink

6.4.2 *Murraylink's Revised Proposal*

Murraylink rejects the AER's draft determination with respect to the control and protection system replacement. Murraylink outlines below why it consider the AER's analysis has led them to an incorrect conclusion with regards to the efficient level of expenditure on the control and protection system replacement project.

Directlink and Murraylink aren't the same

The AER note:

> *we compared Murraylink's proposed capex with the estimated costs of the Directlink control system upgrade. We consider that Directlink is a relevant comparator business as this asset is also a HCVDC interconnector operated and managed by APA under a similar agreement. We noted that the cost for the Directlink upgrade was less than half of that proposed by Murraylink.*
>
> *Murraylink submitted that the Murraylink asset has four control and protection systems per converter while Directlink has only two per converter. Murraylink further submitted that the estimated cost roughly reflects a linear increase that arises from the complexity of the additional control and protections systems that are required for the additional converter stations. While, we accept the basis for the higher estimated costs for Murraylink, we would expect that there may be some scale efficiencies between the estimated costs of the Directlink and Murraylink control system upgrades.*

Comparing the expenditure of Directlink and Murraylink does not provide a useful "sense check" on the proposed expenditure by Murraylink. That approach is based on the assumption that the control and protection systems for the two DC interconnectors are the same or similar.

Directlink has two control and protection system for each converter (cooling and Pole). The Directlink systems are designed as primary and backup within each converter (i.e. same control and protection systems installed on two sets of hardware and one operating as standby) this configuration is copied for the six converters. Expressing it slightly simplistically this requires two sets of operational programs (cooling and pole) which then can be duplicated 12 times (primary and backup x 6 converters).

Murraylink has five control and protection systems for each converter (valve cooling, reactor cooling, Alternating Current, Pole and Remote Customer Interface). Except for the Remote Customer Interface, these Murraylink control and protection systems are designed as within each converter and copied for the two converters. Again expressing it slightly simplistically this requires 5 sets of operation programs (5 sets of completely different software) which are then duplicated twice (primary and backup x two converters).

It is the complexity of the interrelationships and interactions between these elements of the control and protection systems that drive the software of the new control and protection systems. While there may be some scale efficiencies to be identified in the hard ware these will be more than offset by the additional complexity (and cost) for the software. Murraylink's response to the AER's information request was outlining that a conservative approach, one which is likely to underestimate rather than overestimate the cost relationship, is a linear relationship.

It is the complexity of the Murraylink system compared to the Directlink system that makes it a poor "sense check".

The contract with APA is efficient

APA provides asset management, operating, maintenance, capital and commercial services to the Murraylink assets (including Murraylink) under the Management, Operations and Maintenance and Commercial Services Agreement (MOMCSA).

To summarise the contract Murraylink is required to pay APA all the costs and expenses incurred by APA in providing the services under the contract plus 10 percent. The 10 percent margin on the contract gets Murraylink access to economies of scale, scope and other efficiencies, along with asset management and corporate services expertise that Murraylink would not otherwise be able to access.

In attachment 6.2 Murraylink has assessed the MOMSCA against the AER's framework for consideration of service contracts.

The AER's assessment, in effect, is a two tier test.

1. Is this contract of a nature that is reasonable for the AER to presume it is efficient?
2. If no, is the total contract cost consistent with the operating/capital expenditure criteria in the National Electricity Rules?

The MOMSCA is a commercial contract between two unrelated parties, however, recognising that the contract was written at the same time as the sale of Murraylink it is reasonable for the AER to more closely investigate whether MOMSCA is consistent with the National Electricity Rules.

An assessment using the AER's framework reveals that the MOMSCA is consistent with the National Electricity Rules including that the margin paid by Murraylink is comparable with the margin paid by contractors providing similar services in competitive markets.

The total margin on the contract with APA is necessary

The AER discuss the margin in the contract between APA and Murraylink for the provision of operation and maintenance expenditure but only in the context of the control system replacement.

> *"Murraylink is sourcing external consultant engineers to oversee the installation of the control system. As such, we do not consider that a margin which is based on APA know-how should apply to all of the control system upgrade costs as the expertise for the management of this project has been outsourced to an external party."*

Murraylink is concerned by the lack of understanding of economic and legal theory underpinning contracts that the AER seems to be displaying in this analysis. When assessing its efficiency the contract must be considered as a whole. A contract for a multi dimension service cannot be considered against one project in isolation.

While the AER accepts the MOMSCA as efficient, as it has done for Directlink and Murraylink in the past, it seems to be of the view that it can cherry pick the way that it applies an efficient contract.

Assessing a contract as a whole is consistent with the AER's contract assessment framework. Considering the whole also reflects the nature of contracts and the basis on which both parties enter into the contract.

In an efficient contract neither party, nor the AER, can unilaterally change the terms of the contract for a specific project. Any change to the contract would require renegotiation. While it could be expected that in an efficient contract a renegotiation may change the terms and conditions of the contract it would be expected that the overall balance of the contract, including the payment to the provider, would remain consistent with the rest of the contract.

To reduce the level of compensation for a supplier from its efficient level, as implied in the AER's draft decision, would result in the supplier withdrawing services. To put it bluntly if Murraylink doesn't provide the margin then APA doesn't provide the service.

Given APA or any suppliers requirement for efficient compensation if Murraylink was to renegotiate a contract that reduced the scope of the base on which the margin is charged, for example to only include those services APA provides internally, then the rate of the margin itself would be expected to go up so that the supplier (in this case APA) continues to provide the service. The contract as a whole must remain efficient.

The AER changed the scope but did nothing else to maintain the efficiency of the contract. In effect, the inefficiency is if the AER's draft determination was undertaken by Murraylink - the contract would be breached and Murraylink would be forced to pay possibly via legal action.

The AER's draft determination is inconsistent with the National Electricity Rules

The failure of the AER to recognise the nature of the role of APA under the MOMSCA means it has made a determination inconsistent with the National Electricity Rules.

Following the AER's determination Murraylink has only one alternative - to recover less than its efficiently incurred cost. APA will not accept a reduction in the amount to be paid under the MOMSCA. This means that Murraylink will incur the full prudent and efficient cost of replacing the control and protection system but will have revenue set in such a way that they will recover less than the full value of the capital expenditure.

This directly contradicts rule 6A.6.7and the National Electricity Objective by not allowing Murraylink the efficient and prudent amounts necessary to meet the requirements of the forecast capital expenditure objectives and the AER is undermining investment in the network resulting in long term outcomes inconsistent with the National Electricity Objective.

Comparison of margins

The MOMSCA covers both capital and operating expenditure the AER state

> *we note that Murraylink submitted elsewhere in its proposal that the forecast total margin payable under the MOMSCA for the provision of asset management, operating, maintenance and capital services is $0.38 million (nominal) per year or $1.9 million over the 2018-23 regulatory control period.*
>
> *Furthermore, it appears that Murraylink's proposed $0.38 million margin is to be recovered through forecast opex, which already includes the*

relevant margin for capital services as set out in the supporting attachment. We have accepted this amount in out alternative estimate of opex (refer to attachment 7). Relevantly, this suggests that Murraylink is 'double dipping' on the recovery of the management fee that relates to capital services (i.e. the margin for capital services is recovered twice, once through forecast opex and then through forecast capex).

The AER is aware that the MOMCSA includes a 10 percent margin payable to APA on all expenditure. There appear to be some tables that were mislabelled in the attachment to the proposal that the AER are referring to in the above paragraph with these tables only representing operating expenditure. Murraylink has corrected the analysis in this attachment and have resubmitted it as attachment 6.2 to this revised proposal.

The attachment continues to demonstrate, by assessing the contract against the AER's own framework, that the MOMCSA is an efficient contract and that the full forecast of capital expenditure is consistent with the National Electricity Rules requirements. In particular that it complies with rule 6A.6.7 in that it is the prudent and efficient cost required to maintain the quality, reliability and security of supply of prescribed transmission services.

Incentive properties of the AER's draft determination

By drawing a distinction between services provided by a 3rd party and services provided internally by APA the AER is creating perverse incentives to the ongoing efficient management of Murraylink. If Murraylink does not recover the 10 percent margin it is charged by APA then it creates an incentive for Murraylink to have APA provide all the services it utilises internally. This runs the risk of the service provider not optimising the provision of the service provided to Murraylink based on expertise.

It is not in the long term interests of consumers for such an arrangement to be encouraged financially.

On this basis Murraylink is proposing the amounts in Table 6.2 for the replacement of the control and protection system.

Table 6.2 - Capital expenditure control and protection systems replacement ($'000 real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Control systems replacement	3,912	11,298	8,787	1,255	-	25,252

6.5 Insulated Gate Bipolar Transistors

6.5.1 *AER Draft Determination*

The box below sets out the AER's draft determination

Figure 6-4 – AER's draft determination on spare IGBTs

> a $0.6 million ($2017-18) reduction to forecast capex for 'Spare IGBTs' that is consistent with historical unit costs to assess the estimated efficient costs for this project

6.5.2 *Murraylink's response*

Murraylink based the unit cost of the replacement insulated gate bipolar transistors on a cost estimate from the supplier. It is Murraylink's view that this still represents the best estimate of these costs. However, Murraylink has no additional information to provide the AER in this respect and recognising the information before the AER has not been persuasive Murraylink has included the forecast capital expenditure for IGBT's consistent with the AER's draft determination.

6.6 Spare capacitors

6.6.1 *AER Draft Determination*

The box below sets out the AER's draft determination

Figure 6-5 – AER's draft determination on spare capacitors

> a $0.8 million ($2017-18) reduction to forecast capex for 'Spare Capacitors' on the basis that the 'step change' increase in the volume of these assets has not been supported…we are satisfied that an amount of $1.0 million ($2017-18) is reasonably likely to reflect the prudent and efficient costs and have included this amount in our alternative estimate [for spare capacitors]

6.6.2 *Murraylink's response*

Some background on the nature and operation of capacitors may be helpful to the AER's understanding of the nature of the Murraylink forecast for the replacement of capacitors on Murraylink.

Capacitors can serve a number of functions in an electrical circuit including filtering harmonics for the AC connections of the convertor stations to meet power quality requirement, on a HV circuit like Murraylink these are significant pieces of equipment for the operation of the converter stations. There are over 1000 capacitors on Murraylink installed across both Berri and Red Cliffs

convertor stations. A store of capacitors is available to enable replacement of failed capacitors.

Capacitors are assembled in arrangements called "banks", depending on the function they are servicing they are wired in parallel or series. Capacitors can suffer a sudden complete failure, however more often they develop minor internal faults that result in either an open circuit or short circuit between the internal elements. These internal faults result in a gradual degradation of the capacitance which Murraylink detects via measurement. This means capacitor failure is detected by assessment to identify failure prior to it resulting in a failure of the Murraylink service.

When assessing the performance of the capacitors it is important to note that individual capacitors can measure outside of allowed tolerance and separately banks of capacitors can significantly deviate from their commissioned capacitance. That is individual capacitors in a bank do not have to be degraded and outside of tolerance in order for the overall bank capacitance to be outside the commissioned value. This can be as the result of numerous capacitors in a bank all showing a degradation bias in one direction that means that while the individual capacitors remain in the tolerance limits the entire bank no longer does.

APA routinely measures of individual capacitors to determine their capacitance. In 2016 APA did a complete assessment of all capacitors in service at Murraylink. This assessment identified that 74 individual capacitors had failed.

In addition to the failed individual capacitors it was found that six banks at Berri and five at Red Cliffs had also passed outside operational tolerances. This prompted Murraylink to plan for a significant number of capacitor replacements.

The Murraylink forecast is the historically observed rates of capacitors needing to be replaced. Murraylink has adopted a conservative assumption by excluding the capacitors in the banks which have capacitance outside of commissioned value from the forecast of future failure rates, in effect basing the forecast on capacitors that need to be replaced individually rather than collectively in banks.

The result is that this capital expenditure forecast assumes than no bank will be replaced in the forecast period which, given Murraylink is getting older, is probably unlikely but given Murraylink does not have data to support a forecast for a high number of banks needing to be replaced going forward it has not basis on which to specify how many and which banks can be expected to be required to be replaced.

Murraylink will supply the AER with an actual replacement rate along with the actual cost incurred for the 1 July 2018 to 30 June 2021 at the time of the next revenue proposal as part of the AER's capital expenditure assessment.

Since the proposal was lodged in January Murraylink has scheduled an outage to install the new fire suppression system. This outage will also be used to replace those failed capacitor banks. This has meant that the capacitors can all be replaced at one time in a manageable timeframe in the current revenue control period. This in turn has meant that the cost of the replacement of the banks has been reduced in this revised proposal from that originally proposed.

The full forecast of capital expenditure is consistent with the National Energy Rules requirements. In particular that it complies with rule 6A.6.7 in that it is the prudent and efficient cost required to maintain the quality, reliability and security of supply of prescribed transmission services.

It is this that is driving the Murraylink forecast for capacitor replacements on Murraylink.

Table 6.3 - Capital expenditure capacitors ($'000 real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Capacitors	59	105	105	101	99	469

6.7 Maintenance surveillance cameras

6.7.1 *AER Draft Determination*

The box below sets out the AER's draft determination

Figure 6-6 – AER's draft determination on maintenance surveillance cameras

removal of the $0.6 million ($2017-18) to forecast capex for 'Maintenance Surveillance Cameras' on the basis that the proposed costs have not been sufficiently supported by Murraylink and appear to be related to reliability improvements which should not be funded in the forecast capex.

6.7.2 *Murraylink's response*

Murraylink has not included maintenance surveillance cameras in the forecast capital expenditure of the revised regulatory proposal.

6.8 Consumer engagement and revenue proposal costs

Murraylink has ongoing engagement with its customers as part of its normal operations. Feedback from customers forms part of the process of Murraylink operating its business. Engagement with AEMO, ElectraNet and Transgrid in particular was pivotal to Murraylink's consideration of the requirements of the network.

However, the AER, including the CCP, was highly critical that Murraylink had not extended its stakeholder consultation beyond its customers to include groups that the AER considers should be consulted.

Given the AER's view that Murraylink needs to broaden its consultation beyond its customers, Murraylink has commenced discussions with ElectraNet and other parties on ways to participate in their broader consumer consultation processes. This will focus on ways that could provide Murraylink with meaningful avenues to communicate with relevant representatives of the groups identified by the AER.

As this is part of the revenue determination process Murraylink has combined it with the forecast capital expenditure associated with the revenue determination costs. The stakeholder engagement cost represents part payment of shared costs with the body organising the stakeholder engagement. The regulatory determination costs are those associated with preparation of the revenue determination proposal, revised proposal and RIN.

It is consistent with the National Electricity Rules as it is necessary to comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services as the AER defines them. Also if the AER is correct then it forms part of maintaining the quality, reliability and security of supply of prescribed transmission services and maintaining the reliability and security of the transmission system through the supply of prescribed transmission services.

Table 6.4 sets out the expected consumer engagement and revenue determination costs by year. The consumer engagement costs represent the contribution that Murraylink is anticipating to making to the costs of consumer engagement by ElectraNet, AusNet Services and AEMO. The revenue determination costs are based those costs incurred in the current period.

Table 6.4 - Capital expenditure revenue determination costs and consumer engagement ($'000 real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Revenue Determination and consumer engagement	10	36	61	82	56	245

6.9 The difference between model and business cases

6.9.1 *AER Draft Determination*

The box below sets out the AER's draft determination

Figure 6-7 – AER's draft determination on differences between model and business cases

The capex proposal included a further unexplained total of $0.2 million ($2017-18). This was due to higher forecast capex in the capex model than in the business cases for the following projects:

- Cable Relocation
- Other Minor Capital Works
- Replacement of Control System; and
- Spare IGBT's.

6.9.2 *Murraylink's response*

Murraylink's business cases and proposal capital expenditure model had the same forecast for the same time period.

Murraylink's business cases are based on a calendar year basis. They covered the period 2019 to 2023. When the four business cases identified by the AER are summed together they total $29.197m. When the equivalent years are added together from the capital expenditure model submitted with the proposal they sum to $29.197m. The most significant amount of difference is the capex model included $386,000 for Cable Relocation when the Business Case total is $386,100.

As a number of these projects were ongoing projects there is capital expenditure covering these items in the historic capital expenditure and in the 2018 estimate in the capital expenditure model which predates the business cases. But the justification for them complying with the National Electricity rules is the same as that outlined for the expenditure covered in the business cases.

Murraylink notes in respect of this revised proposal that:

- The cost for the control system upgrade was corrected with the AER prior to the draft determination; and
- there has been a minor reduction to the forecast for cable relocation and Murraylink has accepted the AER's draft determination on IGBTs.

Therefore, the amounts in the capex model no longer match the business cases because the capital model reflects a revised understanding of these forecast costs.

There is $82,000 of minor capital works for the second half of calendar year 2018 that falls into the forecast revenue control period not included in the business case. This is expenditure relates to sub system equipment refurbishment and acquisition of maintenance support systems and tools. This expenditure is consistent with prudent and efficient cost required to maintain the quality, reliability and security of supply of prescribed transmission services.

6.10 Forecast capital expenditure

The forecast capital expenditure required to maintain the prescribed transmission services by Murraylink during the 2018-23 regulatory control period is set out in Table 6.5.

Table 6.5 – Forecast capital expenditure 2018-23 by asset class ($'000 real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Switchyard	223	352	273	274	272	1,393
Transmission line	38	77	77	148	148	488
Easements	-	-	-	-	-	-
Control systems	3,912	11,298	8,787	1,255	-	25,252
Ancillary30	-	-	-	-	-	-
Inspection & test equipment	-	-	-	-	-	-
Other operating assets	177	262	529	476	383	1,827
Office machines	-	-	-	-	-	-
Total	4,350	11,988	9,666	2,153	802	28,960

Table 6.6 – Forecast capital expenditure 2018-23 by asset driver ($'000 real 2018)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Augmentation/Expansion	-	-	-	-	-	-
Replacement/Refurbishment	4,340	11,953	9,605	2,071	746	28,715
Non-network	10	36	61	82	56	245
Total	4,350	11,988	9,666	2,153	802	28,960

6.11 Equity Raising Costs

The AER's PTRM calculates some benchmark equity raising analysis. This analysis includes cashflows, taxes paid, debt raising and dividend reinvestment. Where the analysis identifies a shortage after debt raising and dividend reinvestment the model assumes that there is equity raising and calculates a cost associated with this. The model identifies an equity requirement in 2017/18 to 2021/22 of $1,525,327 (real 2017/18). Based on this level of equity raising the AER's post tax revenue model calculates an equity raising cost of $15,253.

Equity raising costs should be estimated in a way consistent with the assumption made about the franking credit payout ratio (or distribution rate) used when estimating the value of imputation credits.

In section 5.3.2 of this revised proposal, Murraylink advises that it has adopted the estimate of the value of imputation credits of the AER's draft determination (0.4).

Tables 4.3 and 4.4 of Attachment 4 to the draft determination summarise estimates of gamma made using the alternative methods available to the AER. The draft determination advises that, in concluding that the estimate of gamma should be 0.4, the AER has given greatest weight to the equity ownership approach.[22]

Application of the equity ownership approach using data for all equity produces an estimate of the payout ratio of 0.7 (see Table 4.3). The use of listed equity data produces an estimate of 0.75 (see Table 4.4). Murraylink has therefore adopted a simple average of these two estimates of the payout ratio for estimation of the equity raising costs of the revised proposal: it has adopted an estimate of the payout ratio of 0.725.[23]

---

[22] Draft Determination, Attachment 4 – Value of imputation credits, page 4-26.

[23] In Table 4.3 of Attachment 4, the utilisation rate for the equity ownership approach is in the range 0.57 to 0.68. The mid-point of that range is 0.625. In Table 4.4, the utilisation rate for the equity ownership approach is in the range 0.38 to 0.55. The mid-point of that range is 0.465. A simple average of these two mid-points is 0.545. Assuming the payout ratio is 0.725 and the utilisation rate is 0.545, the estimate of gamma is 0.725 x 0.545 = 0.4. An estimate of the payout ratio of 0.725 is consistent with the draft determination estimate of gamma.

6.12 Proposed contingent capital expenditure project

6.12.1 *AER's draft determination*

The box below sets out the AER's draft determination

Figure 6-8 – AER's draft determination on the contingent capital expenditure project

> Murraylink should amend its trigger events to the following:
>
> 1. Successful completion of a RIT-T (including comprehensive assessment of credible options), and all joint planning obligations under the NER, demonstrating that the establishment of a new or upgraded high voltage interconnection is the option that maximises the positive net economic benefits.
>
> 2. A determination by the AER that the proposed investment satisfies the regulatory investment test for transmission; and
>
> 3. Murraylink Board commitment to proceed with the project subject to the AER amending Murraylink's revenue determination pursuant to the Rules.

6.12.2 *Murraylink's response*

Murraylink accepts the AER changes to the trigger event for its contingent project.

7 Depreciation

7.1 AER's draft determination

The box below sets out the AER's draft determination

Figure 7-1 – AER's draft determination on forecast depreciation

We do not accept Murraylink's proposed regulatory depreciation allowance of $26.7 million ($ nominal) for the 2018–23 regulatory control period.

7.2 Murraylink's revised proposal

Murraylink recognises that the forecast depreciation and how it is used in this, and the next, revenue determination is a function of:

- the opening regulatory asset base;
- the forecast capital expenditure;
- the forecast for inflation; and
- the depreciation method outlined(forecast or actual).

We reject the AER's draft determination of depreciation for the reasons outlined in section 4 and section 6.2 relating to the regulatory asset base and forecast capital expenditure. The regulatory depreciation in this revised proposal has been calculated using the AER's PTRM to forecast regulatory depreciation. Murraylink propose the depreciation outlined in Table 7.1

Table 7.1 – Forecast depreciation 2019-23 ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Depreciation	6.3	6.5	6.6	7.0	9.1
Indexation	2.8	2.8	3.1	3.3	3.2
Regulatory depreciation	3.5	3.7	3.6	3.8	5.9

7.3 Depreciation forecast method

7.3.1 AER's draft determination

The box below sets out the AER's draft determination

Figure 7-2 – AER's draft determination on the forecast regulatory asset base

We determine that the depreciation approach to be applied to establish Murraylink's RAB at the commencement of the 2023–28 regulatory control period will be based on the depreciation schedules (straight-line) using

forecast capex at the asset class level approved for the 2018–23 regulatory control period.

7.3.2 *Murraylink revised proposal*

We accept the AER's draft determination to use forecast depreciation at the time of the next revenue reset.

7.4 Remaining Asset lives

Murraylink is looking to retain the same asset classes and asset lives that the AER has included in the draft determination, noting the change to the name of one asset class.

The weighted average remaining asset lives are set out in Table 7.2.

Table 7.2 – Weighted average remaining asset lives as at 1 July 2018

Asset class	Useful life
Switchyard	26.0
Transmission line	25.3
Easements	n/a
Ancillary 15 - control systems	12.3
Ancillary 30	29.1
Inspection and test equipment	4.2
Other operating assets	5.0
Office machines	1.8

8 Maximum allowable revenue

Murraylink's Revised Revenue Proposal is derived from the post-tax building block approach outlined in the Rules[24] and the AER's PTRM.[25] The completed PTRM forms attachment 8.1 to this revised revenue proposal. This chapter summarises the building block approach, the components of which are detailed in the preceding chapters. The Maximum Allowed Revenue (MAR) and X factor for Murraylink are calculated from the PTRM. Future adjustments to the revenue cap are also described.

8.1 Building block approach

The building block formula to be applied in each year of the regulatory control period is:

MAR = return on capital + return of capital + opex + tax

= (WACC × RAB) + D + opex + tax

Where:

MAR = Maximum Allowable Revenue.

WACC = post-tax nominal weighted average cost of capital ("vanilla" WACC).

RAB = Regulatory Asset Base.

D = Regulatory Depreciation.

opex = operating expenditure.

tax = income tax allowance.

The MAR is then smoothed with an X factor, in accordance with the Rules requirements.[26]

The Rules allow for revenue increments and decrements arising from the Efficiency Benefit Sharing Scheme (EBSS).

---

24 *National Electricity Rules*, Part C of Chapter 6A, AEMC.

25 AER, Final decision, Amendment - Electricity transmission network service providers Post-tax revenue model, December 2010.

26 AEMC, *National Electricity Rules*, Chapter 6A, clause 6A.6.8.

Any increment or decrement associated with the Service Target Performance Incentive Scheme (STPIS) is not included in this Revenue Proposal, but as a future revenue cap adjustment.

8.2 Building Block components

The building blocks that formed a part of the revenue calculation are set out below.

8.2.1 Forecast Regulatory asset base

AER's Draft Determination

Chapter 4 described the calculation of the estimated RAB as at 1 July 2023.

The capital expenditure forecast in Chapter 5 and was used to roll forward the regulatory asset base, using the expected regulatory depreciation detailed in this chapter. The regulatory asset base for the next regulatory control period is set out in Table 8.1.

Table 8.1 – Summary of forecast regulatory asset base ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Opening regulatory asset base	112.9	113.9	123.1	130.1	128.8
plus indexation	2.8	2.8	3.1	3.3	3.2
plus forecast capital expenditure	4.6	12.8	10.6	2.4	0.9
less forecast depreciation	6.3	6.5	6.6	7.0	9.1
less forecast disposals	-	-	-	-	-
less forecast redundant assets	-	-	-	-	-
Closing regulatory asset base	113.9	123.1	130.1	128.8	123.8

8.2.2 Return on capital

The return on capital was calculated by applying the post-tax nominal vanilla WACC to the opening regulatory asset base in the respective year.

The post-tax nominal vanilla WACC was established as detailed in chapter 5. Murraylink has calculated the return on capital using the PTRM. This calculation is summarised in Table 8.2.

Table 8.2 – Summary of return on capital forecast ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Return on capital	7.2	7.3	7.9	8.3	8.2

8.2.3 *Return of capital*

Chapter 5 describes how Murraylink has calculated the return of capital provided by depreciation. The AER's PTRM combines both the straight line depreciation and an adjustment for inflation on the opening RAB. A summary of the regulatory depreciation allowance is given in Table 8.3.

Table 8.3 – Summary of regulatory depreciation ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Forecast straight line depreciation	6.3	6.5	6.6	7.0	9.1
Forecast Indexation	2.8	2.8	3.1	3.3	3.2
Forecast Regulatory Depreciation	3.5	3.7	3.6	3.8	5.9

8.2.4 *Operating expenditure*

Table 8.4 sets out Murraylinks operating expenditure requirements in each year consistent with the AER's draft determination.

Table 8.4 – Summary of forecast operating expenditure ($M nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Forecast Operating Expenditure	4.5	4.6	4.8	4.8	5.1

8.2.5 *Tax allowance*

The tax allowance is calculated by the AER's PTRM based on the tax asset base outline in section 4.7. The forecast tax allowance is summarised in Table 8.5.

Table 8.5 – Summary of tax allowance 2013-18 ($M nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23
Tax allowance	1.1	1.1	1.1	1.2	1.2

8.3 Maximum Allowable Revenue

The total revenue cap and the MAR for each year of the next regulatory control period is provided below. Based on the building blocks outlined in the previous section, the total revenue cap and maximum allowable unsmoothed revenue requirement is summarised in Table 8.6.

Table 8.6 – Summary of unsmoothed revenue requirement ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Return on capital	7.2	7.3	7.9	8.3	8.2	38.8
Return of capital	3.5	3.7	3.6	3.8	5.9	20.4
plus operating expenditure	4.5	4.6	4.8	4.8	5.1	23.8
plus EBSS	-0.2	-0.2	0.5	-	0.1	0.2
plus net tax allowance	1.1	1.1	1.1	1.2	1.2	5.7
Unsmoothed revenue requirement	16.1	16.4	17.8	18.1	20.6	89.0

8.4 X-Factor smoothed revenue

A net present value (NPV) neutral smoothing process is applied to the building block unsmoothed revenue requirement, while ensuring the expected MAR for the last regulatory year is as close as reasonably possible to the annual building block revenue requirement.

Murraylink has included an X-factor which minimises the revenue increase in any individual year but at the same time meets the requirements of rule 6A.6.8 that the expected maximum allowed revenue in 2022/23 is as close as possible to the building block requirement for that year

The associated X factors are presented in Table 8.7.

Table 8.7 – Smoothed revenue requirement and X factor ($M, nominal)

	2018/19	2019/20	2020/21	2021/22	2022/23	Total
Unsmoothed Revenue	16.1	16.4	17.8	18.1	20.6	89.0
Smoothed Revenue	15.1	16.4	17.8	19.2	20.6	89.2
X factors		-6.06%	-5.59%	-5.15%	-4.75%	

8.5 Revenue cap adjustments

In accordance with the Rules,[27] Murraylink's revenue cap determination by the AER is in the CPI-X format, and may be subject to adjustment during the next regulatory control period for the following reasons:

- ***Adjustment for actual CPI*** - Murraylink's revenue cap will be calculated each year using the actual CPI.
- ***STPIS*** – Murraylink's revenue cap will be adjusted by the impact of the STPIS as discussed in section 10.3;
- ***Pass through*** – Murraylink's revenue cap may be adjusted in the event that an eligible pass through amount is approved by the AER.

8.6 Proposed cost pass through events

8.6.1 *AER's draft Determination*

The box below sets out the AER's draft determination

Figure 8-1 – AER's draft determination on cost pass through events

Our draft decision is to accept Murraylink's proposed connection cost event.

8.6.2 *Murraylink's revised proposal*

Murraylink accepts the AER's draft determination on cost pass through events.

27 AEMC, National Electricity Rules, Chapter 6A.5.3.

9 Pricing methodology and negotiating framework

9.1 Pricing Methodology

9.1.1 *AER's draft determination*

The box below sets out the AER's draft determination

Figure 9-1 – AER's draft determination on Murraylink's pricing methodology

> We approve Murraylink's proposed pricing methodology for the 2018–23 regulatory control period.

9.1.2 *Murraylink's revised proposal*

Murraylink is not proposing any changes to the pricing methodology it submitted as part of its proposal

9.2 Negotiating framework

9.2.1 *AER's draft determination*

The box below sets out the AER's draft determination

Figure 9-2 – AER's draft determination on Murraylink's negotiating framework

> We approve Murraylink's proposed negotiating framework. We will also apply to Murraylink the NTSC we published in April 2017.

9.2.2 *Murraylink's revised proposal*

Murraylink is not proposing any changes to the negotiating framework it submitted as part of its proposal

10 Incentive Schemes

10.1 Efficiency Benefits Sharing Scheme

10.1.1 AER's draft determination

The box below sets out the AER's draft determination

Figure 10-1 – AER's draft determination on the EBSS for the next revenue control period

> Consistent with Murraylink's proposal, we will exclude debt raising costs from the EBSS. This is because we typically do not forecast these costs based on revealed expenditure in a single year…. Our draft position is not to exclude connection charges from the EBSS.

10.1.2 Murraylink's revised proposal

Murraylink accepts the AER's draft determination with regards to the approach to calculating the Efficiency Benefit Sharing Scheme for the next regulatory control period. Noting that this acceptance is predicated on the AER's proposed treatment of the cost pass through in particular the AER's statement that:

> *"The EBSS states that we will adjust forecast opex to add any approved revenue increments (or subtract any approved revenue decrements) made after the initial regulatory determination, including approved pass throughs. In the event we approve a pass through, the effect of this approach would be the same as excluding connection charges from the EBSS."*

Subject to an update of inflation this means that the forecast operating expenditure for the purposes of the next regulatory control period.

Table 10.1 – Operating expenditure forecast for EBSS ($M, real)

	2018/19	2019/20	2020/21	2021/22	2022/23
Operating Expenditure	4.39	4.37	4.41	4.37	4.54
Debt Raising Costs	0.01	0.01	0.01	0.01	0.01
EBSS target	4.39	4.37	4.41	4.37	4.54

10.2 Capital Efficiency Sharing Scheme

10.2.1 AER's draft determination

The box below sets out the AER's draft determination

Figure 10-2 – AER's draft determination on maintenance surveillance cameras

> We will apply version 1 of the CESS as set out in our capex incentive guideline to the 2018–23 regulatory control period, consistent with our framework and approach paper.

10.2.2 Murraylink's revised proposal

Murraylink accepts the AER's draft determination on the introduction of a capital efficiency sharing scheme based on version 1.

10.3 Service Target Performance Incentive Scheme

10.3.1 AER's draft determination

The box below sets out the AER's draft determination

Figure 10-3 – AER's draft determination on STPIS

> We will apply the service and market impact components of version 5 of the STPIS to Murraylink for the 2018/19 – 2022/23 regulatory control period. Under this version of the scheme, the Network capability component does not apply to Murraylink.
>
> The AER set the following targets for the components of the STPIS.
>
> Draft decision — Caps and floors and targets for 2018/19 – 2022/23

Parameter	Distribution	Floor (5th percentile)	Cap (95th percentile)
Average circuit outage rate			
Lines event rate – fault	Poisson	500	0.00
Lines outage rate - forced	Poisson	800	1.00

> [W]e calculated the MIC target as 557 DIs and incentive rate per DI based on our calculated target is $236/DI.

10.3.2 Murraylink's revised proposal

Murraylink accepts the AER's Draft Determination with regards to the Service Target Performance Incentive Scheme