2013–2017
Powerlink Queensland

REVISED REVENUE PROPOSAL

Reliably supporting Queensland's economic growth and a lower emissions NEM

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1 Executive Summary

1.1 Introduction

This Revised Revenue Proposal presents the Queensland Electricity Transmission Corporation Limited's (Powerlink's) revised revenue requirements for prescribed transmission services for the regulatory period from 1 July 2012 to 30 June 2017. This revised proposal provides further supporting information and material in relation to the matters raised by the AER in its Draft Decision.

As in May 2011 when Powerlink submitted its Revenue Proposal, forecasts continue to be for record levels of capital investment in the resources sector in Queensland[1] and in related sectors such as rail and ports[2]. This activity continues to be a key driver of increased demand for electricity over the next regulatory period, including in areas not currently serviced by the transmission network. The impacts of this significant economic activity in Queensland on both electricity demand and Powerlink's operating environment must be appropriately recognised by the Australian Energy Regulator (AER) in making its Final Decision.

Powerlink's Revised Revenue Proposal and revised Negotiating Framework are submitted in accordance with the National Electricity Rules[3] (Rules). Powerlink has carefully reviewed all of the matters raised by the AER in its Draft Decision and has incorporated many of the amounts or values the AER substituted in the Draft Decision for those proposed by Powerlink. However, there are a number of areas where Powerlink has not incorporated those substituted amounts or values and where Powerlink does not agree with the AER's Draft Decision. In particular:

- the demand forecasts substituted by the AER;
- the labour cost escalators, including the productivity adjustment, substituted by the AER;
- the decision to only provide the equivalent 275kV costs, and not the incremental costs, associated with the 500kV suite of projects; and
- the methodology used by the AER to calculate the Debt Risk Premium (DRP).

Where Powerlink has not adopted the AER's Draft Decision, the Revised Revenue Proposal provides supporting information and evidence, including expert reports, to address the AER's concerns. This material also demonstrates that Powerlink's revised forecasts reasonably reflect its efficient and prudent costs and a realistic expectation of the demand forecast and cost inputs required to meet the capital and operating expenditure objectives of the Rules.

The effect of Powerlink's Revised Revenue Proposal on average transmission charges is expected to be an increase in nominal terms from around $17.47 per MWh in 2011/12 to $18.93 per MWh in 2016/17. This is a forecast reduction of 4.8% in the average transmission charges in real terms over the next regulatory period.

The reduction of average transmission charges in real terms is all the more notable given the number of challenges Powerlink faces in developing and operating its transmission network over the next regulatory period including:

- meeting rising electricity demand, Queensland still has the highest demand growth in the National Electricity Market;

[1] Queensland is number one, Queensland Government, 7 December 2011.
[2] Massive Interest in Abbot Point Sees Super-Expansion Approved, Queensland Government, 1 December 2011.
[3] National Electricity Rules, Chapter 6A, Clause 6A.12.3, AEMC.

- forecast competition for skilled labour from Queensland's energy resource and mining industries;
- extending the transmission network to service new areas to facilitate the expansion of Queensland's energy resources and mining industries;
- changes in the mix of power generation supporting a lower emissions National Electricity Market; and
- maintaining reliability to customers by replacing ageing infrastructure which has now reached the end of its life.

1.2 Forecast expenditure

The main drivers of Powerlink's revenue requirements over the next regulatory period are its capital and operating expenditure forecasts coupled with the cost of capital. These items are discussed in the following sections.

1.2.1 Forecast capital expenditure

A summary of the revised capital expenditure for the next regulatory period is provided in Table 1.1.

Table 1.1: Revised capital expenditure forecasts ($m, 2011/12)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Revenue Proposal	830	847	629	653	529	3,488
AER Draft Decision	529	468	513	479	368	2,356
Revised Revenue Proposal	758	711	672	542	637	3,319

*Numbers may not add due to rounding.

Powerlink has updated the demand forecast used to establish its capital expenditure forecast in the Revised Revenue Proposal. The updated demand forecast accounts for the majority of the change in spend profile and reduction in overall capital expenditure compared to the Revenue Proposal. The main differences between the AER Draft Decision and Revised Revenue Proposal capital expenditure is due to the Draft Decision:

- Adopting a lower demand forecast. Powerlink has updated its demand forecast addressing the concerns raised in the AER Draft Decision. The AER's substitute demand forecast is not a realistic expectation of future electricity demand growth given there are a significant number of shortcomings in how it was derived. The demand forecasts are discussed at length in Chapter 6.
- Substituting the equivalent 275kV costs for the proposed suite of 500kV projects. Powerlink disagrees with such an approach and has provided further information and analysis to demonstrate that building the transmission lines capable of running at 500kV is both prudent and efficient. The incremental costs associated with the suite of 500kV projects are discussed in Section 7.7.
- Not including an allowance for the Cost Estimate Risk Factor (CERF). The CERF is a demonstrable cost established by an independent expert using Powerlink's historical project data and which has been accepted by the AER in all transmission revenue determinations since 2007. The appropriateness of including a CERF is reinforced in Section 7.4.

- Applying a capital expenditure efficiency adjustment. The application of such an unsubstantiated adjustment to the capital expenditure is grossly inappropriate and not in accordance with the Rules. The inappropriateness of the efficiency adjustment is detailed further in Section 7.5.
- Only adopting a single Carbon Price Trajectory (CPT) theme set. Powerlink has sought independent expert advice which demonstrates that other CPT theme sets are credible, albeit with lower probability. The reinstatement of the original three CPT theme sets with revised probabilities is discussed further in Section 7.3.

Figure 1.1 depicts Powerlink's current and forecast capital expenditure compared to the AER's Draft Decision.

Figure 1.1: Current and revised forecast capital expenditure comparison ($m, 2011/12)

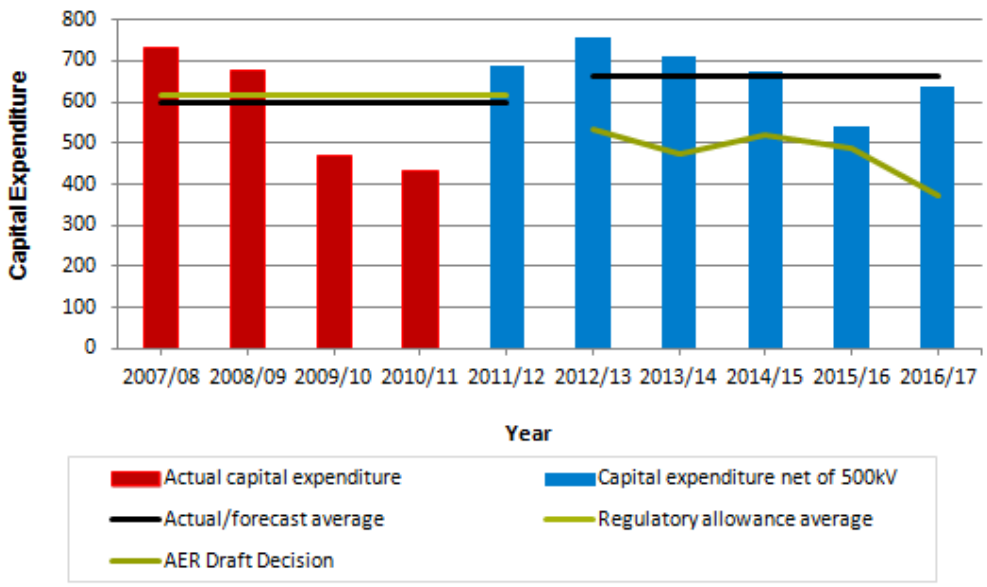


Figure 1.1 shows that the AER's Draft Decision capital expenditure allowance is inadequate when compared to historical capital expenditure, but also in the context that Powerlink:

- continues to have high demand growth, growing from an even higher demand base;
- has a similar ongoing need to replace assets when compared to the current regulatory period;
- is required to extend the transmission network into the Surat Basin; and
- plans to establish a 500kV ready transmission network to meet the long term electricity needs of South East Queensland.

1.2.2 Operating expenditure

Powerlink's revised total operating expenditure forecast is illustrated in Table 1.2.

Table 1.2: Revised forecast of total operating expenditure ($m, 2011/12)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Revenue Proposal	181.3	188.9	198.7	211.1	221.7	1,001.8
AER Draft Decision**	174.0	177.5	180.2	184.5	189.2	905.5
Revised Revenue Proposal	181.0	194.5	201.0	213.5	220.3	1,010.3

** The AER Draft Decision operating expenditure forecast has been updated to include the impact of provisions as clarified by the AER.

In terms of operating expenditure, the main differences between the AER's Draft Decision and the Revised Revenue Proposal is due to the Draft Decision:

- Adopting lower labour cost escalations that include a broad industry sector derived productivity adjustment. Powerlink has provided further information and expert advice to address the concerns associated with the labour escalators in the AER Draft Decision. The AER's substitute real labour cost escalators have not been established on a reasonable basis having regard to the relevant provisions of the Rules. The labour costs escalators are discussed in detail in Chapter 5.
- Removing the movement in provisions from the base year operating expenditure. Powerlink disagrees with the AER's approach which Powerlink considers is based on an incorrect interpretation of the term "provisions" as it is used within Powerlink's financial accounts. The requirement to include the movement in Powerlink's provisions is explained further in Section 9.4.
- Not providing any network support allowance. The stringent evidentiary requirements for network support adopted by the AER are unreasonable and not consistent with the Rules. Powerlink's forecast network support is consistent with the regulatory requirements necessitating network support estimates up to seven years in advance and is further justified in Section 9.7.

Figure 1.2 summarises Powerlink's current and forecast controllable operating expenditure compared to the AER's Draft Decision.

Figure 1.2: Current and forecast of controllable operating expenditure comparison ($m, 2011/12)

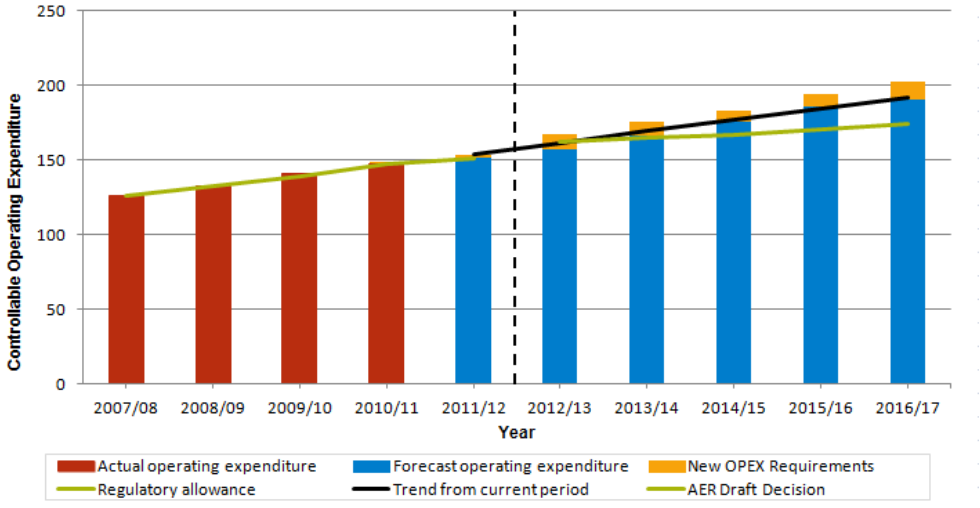


Figure 1.2 shows the AER's Draft Decision operating expenditure allowance is inadequate for Powerlink's future network needs. The operating expenditure allowance proposed by the AER is well below the long term trend, even before the impacts of Powerlink's expected new requirements are taken into account. This is counterintuitive given that most of the new requirements proposed by Powerlink were accepted by the AER in the Draft Decision, the transmission network continues to grow and Powerlink will have to compete with the expanding mining and Liquefied Natural Gas industries for labour.

1.2.3 Cost of capital

Powerlink's Revised Revenue Proposal applies an indicative Weighted Average Cost of Capital (WACC) of 8.68%[4], compared to the AER's Draft Decision WACC of 8.31%. The difference in the two rates reflects, to a large extent, the different market conditions at the time of establishing the risk-free rate and DRP.

Powerlink agrees with, and has incorporated, the AER's Draft Decision for all WACC parameters with the exception of the DRP and nominal risk-free rate. Powerlink's proposed DRP was estimated on the basis of supporting expert advice which has regard to both market data and evidence provided by Bloomberg's fair value curve in deriving an appropriate estimate.

1.3 Revenue requirements

Powerlink has estimated its smoothed revenue requirements using the same approach adopted by the AER in its Draft Decision. The revised smoothed revenue requirement is summarised in Table 1.3.

[4] Calculated over a proxy averaging period of 40 business days ending 9 December 2011, inclusive.

Table 1.3: Revised smoothed revenue requirement ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Revenue Proposal	960.6	1,064.0	1,178.5	1,305.3	1,445.7	5,954.0
AER Draft Decision	825.5	866.9	910.4	956.0	1,004.0	4,562.8
Revised Revenue Proposal	840.0	912.9	992.0	1,078.1	1,171.6	4,994.5

The main differences in the smoothed revenue requirement are due to the changes in the capital and operating expenditure forecasts and the cost of capital discussed above.

1.4 Price path

Powerlink determines its transmission charges based on the AER's approved revenues and the pricing principles contained in the Rules. The effect of Powerlink's Revised Revenue Proposal on average transmission charges can be estimated by taking the smoothed revenue requirement and dividing it by the forecast energy delivered in Queensland[5]. Table 1.4 shows the expected average price path resulting from the Revised Revenue Proposal during the next regulatory period.

Table 1.4: Revised average price path

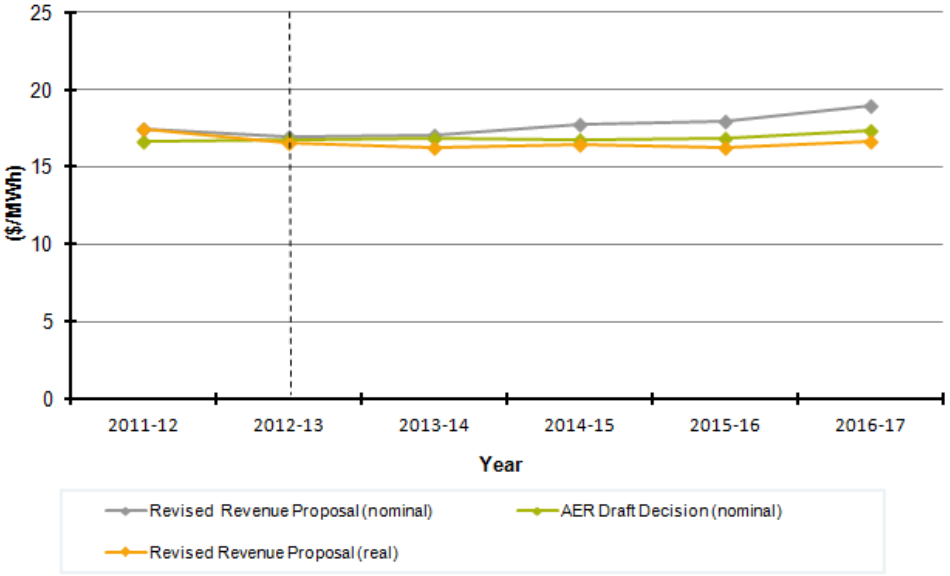
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Smoothed revenue requirement ($m, nominal, end)	828.6	840.0	912.9	992.0	1,078.1	1,171.6
Energy (GWh)	47,431	49,561	53,467	55,855	59,985	61,877
Average transmission price ($/MWh, nominal, end)	17.47	16.95	17.07	17.76	17.97	18.93
Average transmission price ($/MWh, real)	17.47	16.52	16.21	16.43	16.21	16.64

Average transmission charges are estimated to increase in nominal terms from around $17.47 per MWh in 2011/12 to $18.93 per MWh in 2016/17. That is, an expected increase in average transmission charges of 1.6% per annum in nominal terms, or -1.0% per annum in real terms.

Figure 1.3 shows the Revised Revenue Proposal nominal and real expected price paths along with the AER's Draft Decision indicative nominal price path.

[5] Annual Planning Report 2011 Update, Powerlink, January 2012.

Figure 1.3: Average price path from 2011/12 to 2016/17 ($/MWh)



Source: Powerlink data.

Using the same assumptions made by the AER in its Draft Decision of Transmission Use of System (TUOS) charges representing approximately 10% of electricity charges in Queensland and an average annual residential customer electricity bill of $1,655[6], Powerlink estimates that the increase in transmission charges under its Revised Revenue Proposal will add approximately $2.77 per annum, or a small nominal electricity price increase of approximately 0.2% per annum.

[6] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.5, AER, November 2011.

2 Introduction

2.1 Background

The Queensland Electricity Transmission Corporation Limited (Powerlink) is the electricity Transmission Network Service Provider (TNSP) in Queensland. On 31 May 2011, Powerlink submitted its Revenue Proposal to the Australian Energy Regulator (AER) for the regulatory period from 1 July 2012 to 30 June 2017.

Under the National Electricity Law and the National Electricity Rules[7] (Rules), the AER is responsible for the economic regulation of electricity transmission services provided by Powerlink and other TNSPs in the National Electricity Market (NEM).

The AER's transmission determination for Powerlink's 2013-17 regulatory period must be made having regard to a number of important principles, including that the determination provides Powerlink with a reasonable opportunity to recover at least the efficient costs that Powerlink incurs in providing electricity transmission services and complying with its regulatory obligations and requirements.

Powerlink's Revenue Proposal has been the subject of a detailed review by the AER and its consultants. The AER published Powerlink's Revenue Proposal[8] on 27 June 2011 and called for interested parties to make submissions. The AER held a public forum on Powerlink's Revenue Proposal on 26 July 2011, where Powerlink and the Energy Users Association of Australia (EUAA) made presentations. The AER engaged Energy Market Consulting associates (EMCa), Deloitte Access Economics and CHC Associates as technical experts to provide advice on key aspects of the Revenue Proposal.

On 29 November 2011, the AER published its Draft Decision[9] on Powerlink's revenue cap for the 2013-17 regulatory period. This Revised Revenue Proposal is submitted in response to the AER's Draft Decision and indicates where Powerlink has incorporated the changes from the Draft Decision. This Revised Revenue Proposal also provides submissions and materials on those aspects of the AER's Draft Decision that Powerlink has not incorporated and seeks to address those issues in order that the AER may consider approval of them in its Final Decision in April 2012.

2.2 Approach to the Revised Revenue Proposal

Powerlink's Revised Revenue Proposal is submitted in accordance with the Rules and AER Submission Guidelines. Powerlink has carefully reviewed all of the matters raised by the AER in its Draft Decision including, in particular, where the AER has made adjustments to Powerlink's original proposal. Where Powerlink has not fully incorporated the AER's Draft Decision, the Revised Revenue Proposal provides supporting information, including expert reports, to address the matters raised by the AER. Powerlink also considers that this supporting material demonstrates the efficiency and prudency of its forecast costs in the circumstances of Powerlink, consistent with the Rules.

Although Powerlink has adopted many of the AER's adjustments to its Revenue Proposal, this does not necessarily mean that Powerlink accepts the rationale provided by the AER, or its consultants, for making them. Furthermore, it is not necessarily reasonable to make these Draft Decision adjustments unless they are accompanied by the other elements of the Revised Revenue Proposal.

[7] National Electricity Rules, Chapter 6A, AEMC.
[8] 2013-2017 Powerlink Queensland Revenue Proposal, Powerlink, May 2011.
[9] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, AER, November 2011.

Powerlink submits this Revised Revenue Proposal on the basis that the overall revised proposal, and its capital and operating expenditure forecasts in particular, reasonably reflect the efficient costs of a prudent operator in the circumstances of Powerlink and provide a realistic expectation of demand and forecast cost inputs. This Revised Revenue Proposal supplements Powerlink's Revenue Proposal and makes extensive reference to the information contained therein and to the AER's Draft Decision. Therefore, this Revised Revenue Proposal should be read in conjunction with those documents.

Any reference material cited in the Revised Revenue Proposal, or supporting documentation, is available to the AER upon request. Similarly, Powerlink can provide further information and clarification on this Revised Revenue Proposal should the AER or its consultants require.

2.3 Rules requirements overview

The Rules requires that the AER must accept a TNSP's capital expenditure and operating expenditure forecasts[10] if the forecast reasonably reflects the efficient costs, and the costs that a prudent operator in the circumstances of the relevant TNSP would require, in order to achieve the relevant objectives in the Rules, having regard to relevant capital and operating expenditure factors. However, where the AER is not satisfied of these requirements, it has the ability to substitute its own forecast.

The Rules also set out the requirements that the AER must comply with in making a Draft and Final Decision[11]. This includes a requirement that the AER must provide reasons for its decisions[12], which set out the basis and rationale of the decision, including:

- details of the qualitative and quantitative methodologies applied in any calculations and formulae made or used by the AER for the purposes of its decision;
- the values adopted by the AER for each of the input variables in any calculations and formulae, including:
    - whether those values have been taken or derived from the provider's current Revenue Proposal; and
    - if not, the rationale for the adoption of those values;
- details of any assumptions made by the AER in undertaking any material qualitative and quantitative analyses for the purposes of the decision; and
- reasons for the making of any decisions, the giving or withholding of any approvals, and the exercise of any discretions, as referred to in Part C of Chapter 6A, for the purposes of the decision.

Powerlink also notes that Section 16(1) of the National Electricity Law (NEL) is relevant when making a transmission determination. This section provides that the AER must ensure that the relevant service provider is informed of material issues under consideration by the AER and be given a reasonable opportunity to make submissions in respect of that determination before it is made.

Having regard to the National Electricity Law and Rules requirements, Powerlink has a number of concerns in relation to specific matters in the AER's Draft Decision or the AER's supporting consultant reports. These are identified and discussed in the Revised Revenue Proposal where appropriate.

[10] National Electricity Rules, Chapter 6A, Clauses 6A.6.6(c) and 6A.6.7(c), AEMC.
[11] National Electricity Rules, Chapter 6A, Clauses 6A.12, 6A.13 and 6A.14, AEMC.
[12] National Electricity Rules, Chapter 6A, Clause 6A.14.2, AEMC.

2.4 Structure of the Revised Revenue Proposal

The remainder of this Revised Revenue Proposal is structured similarly as follows:

- Chapter 3 discusses the opening Regulated Asset Base (RAB) for the next regulatory period;
- Chapter 4 discusses the cost of capital;
- Chapter 5 justifies the real cost escalators used in the capital and operating expenditure forecasts;
- Chapter 6 supports the updated demand forecast used in developing the load driven capital expenditure;
- Chapter 7 sets out the revised capital expenditure forecast;
- Chapter 8 describes the contingent projects and their triggers;
- Chapter 9 sets out the revised operating expenditure forecast;
- Chapter 10 discusses the revised depreciation allowance;
- Chapter 11 describes the taxation allowance;
- Chapter 12 sets out the Maximum Allowable Revenue (MAR) for the next regulatory period;
- Chapter 13 describes the Efficiency Benefit Sharing Scheme (EBSS) for the current and next regulatory period;
- Chapter 14 sets out the revised values for the Service Target Performance Incentive Scheme (STPIS) parameters; and
- Chapter 15 discusses the Pricing Methodology and Negotiating Framework.

To assist the AER in assessing the Revised Revenue Proposal's compliance with the Rules and Submission Guidelines, Powerlink has provided a compliance checklist, which is contained in Appendix A. The checklist provides guidance as to the relevant sections of the Revenue Proposal and Revised Revenue Proposal that address each of the Submission Guidelines' requirements.

For clarity, historical expenditure is typically expressed in mid-year nominal terms in the year that the expenditure was incurred, while all future expenditure forecasts is presented in mid-year 2011/12 real dollars. Where this has not been adhered to the relevant tables have been clearly labelled. Powerlink has adhered to this standard in its Revised Revenue Proposal, proforma statements, as well as the Post Tax Revenue Model (PTRM) and the Roll Forward Model (RFM). To ensure that all trends are presented on a consistent basis Powerlink has escalate historical expenditure to mid-year 2011/12 real dollars where necessary.

3 Regulatory Asset Base

3.1 Summary

Chapter 5 of Powerlink's Revenue Proposal provides an overview of its historical capital expenditure costs and Chapter 6 sets out the roll forward methodology followed to establish the opening Regulatory Asset Base (RAB) as at 1 July 2012. In its Draft Decision, the AER:

- broadly accepted Powerlink's proposed opening RAB as at 1 July 2012 and determined it to be $6,575.9m (page 19);
- reviewed the actual capital expenditure amounts included in the Roll Forward Model (RFM) and found it reconciled with the regulatory accounts data (page 250);
- did not accept Powerlink's retrospective application of a new asset class for transmission line refit works in the roll forward calculations (page 250);
- identified an input error with the forecast inflation for 2006-07 and amended the value from 2.44% to 2.32%. Similarly Powerlink identified an input error to an asset disposal figure for 2007-08 (page 250);
- accepted Powerlink's proposal to include in its opening RAB for the next regulatory period an amount of $25.8m, as at 1 July 2012, for the Kogan Creek to Braemar line assets (page 251);
- accepted Powerlink's proposed redistribution of asset class values in the opening RAB as at 1 July 2012 (page 252); and
- requires Powerlink to use the actual 2010/11 capital expenditure in the RFM and the 2011/12 capital expenditure may also be updated (page 250).

Powerlink has implemented all aspects of the AER's Draft Decision in relation to the opening RAB. Powerlink has also updated the 2010/11 capital expenditure for actuals and updated the forecast 2011/12 capital expenditure. These updated values discussed in Section 3.3 have been used to establish the revised opening RAB. Powerlink also provides additional information for the AER's consideration in reaching its Final Decision where necessary.

3.2 Intergen submission

Powerlink notes the submission by Intergen to the AER on 28 October regarding Powerlink's Revenue Proposal. In particular, Intergen's view on Powerlink's cost allocation methodology and whether additional assets should be included in the regulatory asset base.

Powerlink does not agree with Intergen's view and confirms that:

- the matter is subject to an agreement contained in a non-regulated commercial contract between Powerlink and Intergen;
- the solution outlined in the Intergen submission would not have satisfied the Regulatory Test and would not have been implemented if the cost of the connection assets had been included in the RAB; and
- Intergen was aware of and acknowledged this given it would benefit from the solution.

3.3 Revised capital expenditure forecast (2008-12)

AER Draft Decision

The AER reviewed the actual capital expenditure amounts included in the RFM and found these to reconcile with the regulatory accounts data, noting forecasts were provided for 2010/11 and 2011/12.

The AER also noted that, as part of finalising its decision on Powerlink's 2013-17 revenue cap, the AER will require Powerlink to update capital expenditure for 2010/11 in the RFM with actual capital expenditure. The forecast capital expenditure for 2011/12 in the RFM may also be updated at that time.

Powerlink's response

Powerlink has updated its Revised Revenue Proposal and supporting models for actual 2010/11 and expected 2011/12 capital expenditure. The revised capital expenditure by category in the current regulatory period is shown in Table 3.1. These categories are consistent with the forecast capital expenditure for the 2013-17 regulatory period set out in Chapter 7.

Table 3.1: Revised capital expenditure (2007/08 to 2011/12) by category ($m, nominal)

Project Category		2007/08	2008/09	2009/10	2010/11	2011/12 (estimate)	Total
NETWORK							
Load driven	Augmentation	410.9	344.2	207.0	133.1	292.0	1,387.1
	Easements	23.0	18.9	16.5	16.7	19.8	94.9
	Connections	22.7	27.4	30.8	12.6	17.4	110.9
Non-load driven	Replacements	169.3	186.9	139.8	206.3	255.2	957.5
	Security/ compliance	2.2	2.1	9.9	3.6	29.0	46.8
	Other	7.3	16.0	11.6	15.4	45.5	95.9
	Total network	**635.5**	**595.4**	**415.6**	**387.7**	**659.0**	**2,693.2**
NON-NETWORK							
Business IT	Information technology	10.4	12.7	11.6	12.4	14.8	61.9
Support the business	Commercial buildings	4.4	6.7	10.6	14.6	4.2	40.5
	Motor vehicles	0.8	1.3	3.3	2.9	4.2	12.5
	Moveable plant	1.3	1.2	1.4	2.1	1.8	7.8
	Total non-network	**16.9**	**21.8**	**26.9**	**32.1**	**25.0**	**122.7**
Total capital expenditure		**652.4**	**617.3**	**442.5**	**419.8**	**684.0**	**2,815.9**

*Numbers may not add due to rounding.
This table is net of disposals.
Note – actual CPI used for 2007/08 to 2010/11, and forecast CPI of 2.5% for 2011/12.

Powerlink has prepared pro forma statements 3.1, 3.2, 3.3 and 3.4 in relation to historical capital expenditure.

3.4 Revised opening Regulatory Asset Base

Powerlink's revised opening RAB as at 1 July 2012 is $6,485.5m compared to $6,575.9m included in the AER's Draft Decision. The difference in the opening RAB is due to the:

- use of actual 2010/11 capital expenditure which was not available at the time the Revenue Proposal was submitted; and
- update of the forecast 2011/12 capital expenditure.

Powerlink notes that the AER will update the opening RAB roll forward with actual March 2012 Consumer Price Index (CPI) before publishing its Final Decision. Table 3.2 shows the revised opening RAB as at 1 July 2012.

Table 3.2: Revised opening RAB at 1 July 2012 ($m, nominal)

	2007/08	2008/09	2009/10	2010/11	2011/12 (estimate)
Opening RAB	3,752.8	4,448.1	5,016.0	5,429.7	5,840.3
Capital expenditure*	693.1	640.8	460.6	439.8	711.0
Regulatory depreciation (CPI** adjusted)	2.2	-72.9	-47.0	-29.1	-79.0
Closing RAB	**4,448.1**	**5,016.0**	**5,429.7**	**5,840.3**	**6,472.4**
Add: return on difference for 2006/07					13.1
Opening RAB at 1 July 2012					**6,485.5**

*Numbers may not add due to rounding.
*Capital expenditure in the RFM calculation of RAB is as-incurred, net of disposals, and adjusted for WACC.
**Consumer Price Index.

Table 3.3 compares the opening RAB with the AER's Draft Decision.

Table 3.3: Revised opening RAB at 1 July 2012 comparison ($m, nominal)

Adjustment	1 July 2012
AER Draft Decision	6,575.9
Revised Revenue Proposal	6,485.5

4 Cost of Capital

4.1 Summary

Chapter 7 of Powerlink's Revenue Proposal outlines the methodology applied to derive Powerlink's proposed Weighted Average Cost of Capital (WACC).

From an overarching perspective, the regulatory framework requires that TNSPs be provided with a reasonable opportunity to recover at least the efficient costs incurred in providing prescribed services and that returns are commensurate with the regulatory and commercial risks involved.

For clarification, as is the case with other regulatory determinations, the actual WACC applicable to Powerlink's 2013-17 regulatory period will not be established until after the relevant averaging period has passed. Powerlink's Revenue Proposal WACC of 10.30% and the AER's Draft Decision WACC of 8.31% are based on proxy averaging periods and are therefore indicative only, and reflects to a large extent the different market conditions at the time of the proxy averaging period used by Powerlink and the AER to measure the risk-free rate and Debt Risk Premium (DRP).

In its Draft Decision, the AER:

- did not accept the proposed WACC of 10.30% (page 212);
- accepted Powerlink's proposed averaging period for calculating the nominal risk-free rate (page 212);
- accepted the proposed values for the equity beta, market risk premium, gearing and assumed value for the utilisation of imputation credits, which are the values established in the AER's 2009 Statement of Revised WACC Parameters (Transmission) (page 212);
- did not accept Powerlink's proposed approach to estimate the DRP, which was based upon PwC's advice (page 212); and
- adopted a 10-year inflation forecast (page 243).

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

4.2 Debt Risk Premium (DRP)

AER Draft Decision

The AER did not accept Powerlink's proposed DRP on the basis that it did not consider it appropriate to rely on or utilise Bloomberg's extrapolated 5 and 7-year BBB rated fair value curves to estimate the DRP.

Instead, the AER calculated its estimate of the DRP using a simple average of nine reported bond yields which resulted in a DRP of 3.19%. The AER's bond sample included:

- bonds with remaining terms to maturity between 7-13 years;
- BBB, BBB+ and A- rated bonds; and
- floating rate bonds converted to fixed rate equivalents.

Powerlink's response

Powerlink's Revenue Proposal was developed on the basis of, and supported by, an expert report from PwC. In preparing its Revised Revenue Proposal and interim response to the AER's Draft Decision, Powerlink sought further assistance from its primary subject matter experts, PwC. PwC's report in relation to the debt risk premium and equity raising costs is attached at Appendix B. PwC's key findings in relation to the DRP are outlined below.

PwC

PwC concluded that there are a number of shortcomings to the approach the AER has adopted, which has led to the AER's estimate of the DRP not reflecting prevailing conditions in the market for funds. These shortcomings include:

- the AER's complete setting aside of the Bloomberg fair value curve, which PwC considers should be retained as a method for calculating a DRP that should be taken into account alongside a direct interpretation of the market evidence as the AER has proposed;
- the manner in which the AER has applied its own method for direct interpretation of observed bond yields. PwC's view is that more sophisticated approaches would be justified for undertaking a direct interpretation of the market information;
- PwC also consider there to be a number of material errors with how the AER has interpreted the wider market evidence which led the AER to conclude that borrowing costs for regulated businesses were currently between 150-330 basis points, and closer to the lower end of this range. This includes that:
    - the debt risk premia (spreads) the AER quotes are defined over the swap rate, rather than the bond rate, which means that the premia are materially understated;
    - most of the issues to which the AER refers are for short term bank debt – all of which have a term of five years or less – and hence cannot provide a direct test of the cost of 10-year debt; and
    - where bank debt is issued, part of the margin is paid up-front. It was not clear whether this had been taken into account.

For the Draft Decision averaging period ending 14 October 2011, PwC conclude that a DRP in the range of 355-408 basis points would have been appropriate for a 10-year BBB+ rated bond. This compares to the AER's estimate of 319 basis points. PwC's range reflects the values obtained by applying two estimation approaches. That is:

- 355 basis points (lower bound) derived from a direct interpretation of the market evidence (applying an appropriate methodology); and
- 408 basis points (upper bound) obtained by extrapolating the Bloomberg fair value curve to the required term of 10 years for the averaging period.

For the purposes of Powerlink's Revised Revenue Proposal, a proxy averaging period of 40 business days ending 9 December 2011 was adopted. For this revised period, PwC conclude that a DRP range of 360-391 basis points would have been appropriate for a 10-year BBB+ rated bond. Once again, the range was determined as follows:

- a lower bound DRP estimate of 360 basis points, which was derived from a direct interpretation of the market evidence (applying an appropriate methodology); and
- an upper bound DRP estimate of 391 basis points, obtained by extrapolating the Bloomberg fair value curve to the required term of 10 years for the averaging period.

PwC also argue that one of the implications of its analysis is that there remains considerable uncertainty with respect to the estimate of the DRP for BBB+ 10-year debt that is obtained from an analysis of Australian corporate bonds. If there were stable market conditions and a large set of comparator bonds with close to 10-year terms to maturity, the estimation of a DRP based on a comparator bond analysis of the type undertaken by the AER would be a relatively simple matter. However, the Australian corporate bond market remains thin, and the few bonds on issue are infrequently traded. Hence, PwC considers that concerns remain about the quantity and quality of the evidence, and therefore the precision of DRP estimates.

In its report, PwC further point out that when faced with uncertain market conditions, and when the evidence is divergent, regulators tend to adopt conservative positions with respect to the cost of capital parameter they are estimating. This approach was present in the AER's overview of the methodology it had adopted when undertaking the electricity transmission and distribution network service providers WACC parameter review in 2009, when the AER noted:

> Where, however, the parameter is a fixed value, the global financial crisis has influenced the AER to adopt a cautious approach to interpreting the market data whilst endeavouring to maintain the integrity of the CAPM framework pursuant to the NER[13].

Therefore, in the case of the DRP for Powerlink, PwC recommend that the AER employ a conservative position that would adopt a point estimate at the higher end of the range identified in its report.

Queensland Treasury Corporation (QTC)

As the Queensland Government's central financing authority and corporate treasury services provider, Powerlink engaged QTC to analyse the AER's proposed approach to calculating the debt risk premium in its Draft Decision and provide its view on whether the AER's approach is reasonable and consistent with the Rules. QTC's report on the Draft Determination 2012/13-2016/17 Debt Risk Premium Analysis is attached at Appendix C.

QTC's key findings are as follows:

- there are reasonable grounds to exclude a number of bonds in the AER's sample on the basis that these are not representative of the benchmark Australian corporate bond;
- detailed analysis of the available data for the bonds in the AER's sample reveals significant data quality issues, including large differences in prices provided by different parties and very infrequent updating of price data;
- the AER's decision to exclude the Bloomberg BBB rated fair value curve is unreasonable, as it has not provided sound arguments or evidence to support its claim that the estimates are unreliable;
- the Bloomberg fair value curve provides a better basis for estimating the debt risk premium. However, given the challenges in estimating the benchmark Australian corporate bond yield and the limitations of any one approach, there may be merit in combining the results of the two approaches, subject to a number of qualifications applicable to the AER's sample approach;
- the Bloomberg BBB rated 5-year fair value curve average DRP over a proxy averaging period[14] was 353 basis points. Using a conservative DRP term premium of 10 basis points per annum produces an estimate for the DRP of 403 basis points; and

[13] Powerlink Debt Raising Premium and Equity Raising Costs, p.viii, PriceWaterhouseCoopers, January 2011.
[14] Indicative period of 40 business days ending 9 December 2011.

- using the AER's 5-15 year sample (excluding SPI Electricity & Gas and Coca-Cola Amatil bonds) and including the Sydney Airport 2018 bond, produces an estimate of 357 basis points for the averaging period[15]. As the 5-15 year adjusted AER sample has an average term to maturity of 9.0 years at 9 December 2011, an additional 10 basis points DRP term premium should be added to derive a 10-year estimate, which gives an outcome of 367 basis points for the sample approach.

Having regard to the data quality issues affecting the AER's sample, QTC consider that a greater weighting should be applied to the Bloomberg BBB rated fair value curve approach, and the DRP should be closer to the upper end of the range of 367-403 basis points derived from these two approaches.

SFG Consulting

Powerlink engaged SFG Consulting (SFG) to comment on the AER's method for calculating the debt risk premium in the context of current financial market conditions. SFG's report is provided at Appendix D. In relation to the debt risk premium, SFG concludes that both the Bloomberg fair value curve and relevant bond yields contain relevant information and some weight should be given to both sources in deriving an estimate of the DRP. SFG's conclusions corroborate the empirical analysis conducted by PwC and QTC.

Overall conclusion

Having regard to the advice provided by its primary and other subject matter experts above, Powerlink maintains its view that the Bloomberg fair value curve should be taken into consideration by the AER as a key source of relevant information on the DRP. However, Powerlink also acknowledges that a direct interpretation of reported bond yields may also provide relevant information, provided that this interpretation is unbiased and appropriately conducted.

To arrive at a reasonable estimate of the DRP consistent with the Rules, the AER may have regard to both market data and evidence provided by Bloomberg's fair value curves. Importantly, in relation to market evidence, the existing deficiencies and errors in the AER's approach must be corrected. In reaching its position, Powerlink considers that the AER should necessarily undertake an objective and thorough examination of the data and other relevant information upon which to base its estimate.

Powerlink notes that its primary subject matter experts, PwC, conclude that 360-391 basis points provides a reasonable range of DRP estimates for the reference period to 9 December 2011. Further, QTC's analysis supports a range of estimates for the DRP of 367-403 basis points.

For the purposes of its Revised Revenue Proposal, Powerlink has adopted an estimate of 391 basis points for the DRP, being the upper end of the range recommended by PwC and within the range recommended by QTC. Powerlink has adopted a conservative approach as recommended by PwC, having regard to current market uncertainty and the specific data concerns raised by its expert advisers in relation to the AER's bond sample. This matter is discussed further in Section 4.4.

[15] Indicative period of 40 business days ending 9 December 2011.

4.3 Risk-free rate

AER Draft Decision

The AER agreed to Powerlink's proposed averaging period for the risk-free rate. The AER also stated its view that, in light of ActewAGL's Federal Court judgment[16], Powerlink cannot amend the averaging period.

Powerlink's response

Powerlink acknowledges the AER's agreement to its proposed averaging period for the risk-free rate. However, Powerlink reiterates its earlier concerns that financial markets may result in abnormal conditions during the identified averaging period such that Powerlink may not be afforded a reasonable opportunity to recover at least the efficient costs incurred in providing prescribed services or a return commensurate with the regulatory and commercial risks involved in providing these services. To the extent abnormal market conditions are experienced during the relevant averaging period, a rigid approach of measuring various parameters during this period combined with a requirement to use the fixed values in the AER's Statement of Revised WACC Parameters (Transmission)[17] is likely to lead to a cost of capital that may not provide Powerlink with a reasonable opportunity to recover at least its efficient costs or otherwise provide a return commensurate with the regulatory and commercial risks involved in providing prescribed transmission services. In exercising any relevant discretion in making a transmission determination, the AER is required to have regard to these matters[18].

Powerlink has observed that financial conditions in Europe have deteriorated in recent months and could potentially impact financial markets in Australia. This view is supported by the Reserve Bank of Australia (RBA):

> the sovereign debt problems in Europe have escalated over recent months and an unfavourable feedback loop has developed between government debt, the banking sector and the economy. The large size of the euro-area economy and the significant role played by European banks in global cross-border banking mean that it is inevitable that there will be spillovers to other parts of the global economy, including Australia[19].

Worsening economic conditions in Europe appear to have driven a flight to the relative safety of Australian Government bonds. At its December 2011 meeting, the RBA also noted the significant fall in yields on 10-year government bonds:

> Sovereign yields in some countries outside Europe – for example, the United States, United Kingdom and Australia – had fallen to historically low levels. Yields on 10-year government bonds in Australia reached a 50-year low of 3.85 per cent during November[20].

That Commonwealth Government bond yields would fall to historical lows as a result of worsening economic conditions in Europe could not be foreseen by Powerlink at the time of lodging its request to fix the averaging period. The Australian Competition Tribunal has previously noted that use of an averaging period during which interest rates were at historically low levels is unlikely to produce a rate of return appropriate for the regulatory period, having regard to the requirements of the National Electricity Law and the Rules[21].

[16] ActewAGL Distribution v the Australian Energy Regulator, FCA 639, paragraph 85, Federal Court of Australia, 2011.
[17] Statement of the Revised WACC Parameters (Transmission), AER, May 2009.
[18] National Electricity Law, sections 7 and 16.
[19] European Financial Developments, Address to the 24th Australasian Finance & Banking Conference, Sydney, Ric Battellino, Deputy Governor, RBA, 14 December 2011.
[20] Minutes of the Monetary Policy Meeting of the Reserve Bank Board, Sydney, RBA, 6 December 2011.
[21] Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8, paragraph 114, Australian Competition Tribunal, 12 November 2009.

Within this context, Powerlink urges the AER to have regard to these current conditions in establishing the overall cost of capital to ensure that it meets the requirements of the Revenue and Pricing Principles in the NEL.

4.4 Overall cost of capital

The WACC determined by the AER in the Draft Decision is around 200 basis points lower than that proposed in Powerlink's Revenue Proposal. This difference is driven by two parameters: the DRP and the risk-free rate. Between Powerlink's Revenue Proposal and the AER's Draft Decision alone, the risk-free rate fell by 130 basis points, resulting in significant declines in the cost of debt and cost of equity components of the WACC. The AER's Draft Decision on the DRP reduced the cost of debt by a further 115 basis points, resulting in an overall reduction in the nominal WACC of 199 basis points (130 plus 0.6 x 115).

Powerlink notes that in its Draft Decision, the AER does not appear to consider whether such a dramatic reduction in the WACC (or at least the risk-free rate component of this) is appropriate in light of prevailing market conditions. The AER does give some consideration to whether the overall WACC determined in the Draft Decision reflects the return required by investors in a commercial enterprise facing a similar risk profile. However, the AER does not appear to consider the reasons why this return could have changed so dramatically in recent months. The AER notes that its WACC falls near the bottom of a range of returns set out in broker reports for companies involved in provision of energy network services. Powerlink notes that any further reductions in the risk-free rate would bring the overall WACC closer to the bottom of this relatively wide range of returns. Moreover, further reductions in the risk-free rate should raise questions as to why the overall WACC is falling so dramatically at a time of turmoil in global financial markets.

Powerlink considers that movements in the risk-free rate cannot be ignored when considering risk premium parameters such as the DRP. It has been previously noted (in the context of global financial crisis (GFC) phase I) that a 'flight to safety' (reflected in falling CGS yields) will typically be mirrored by a 'flight from risk' and an increase in risk premiums.[22] Given this, the risk-free rate and risk premium parameters cannot be viewed in isolation in the current circumstances, and the dramatic fall in the risk-free rate must be taken into account when setting variable risk premium parameters (in this case the DRP). If the risk-free rate is to remain at historically low levels, or even fall further, Powerlink considers that the AER must have regard to the impact this would have on the overall rate of return allowed for Powerlink and exercise any discretion in respect of the DRP accordingly.

Further, as noted in the discussion on the debt risk premium (Section 4.2), Powerlink's advisers have highlighted concerns regarding the robustness of the data available to estimate the DRP, given current market uncertainty and thin trading of longer dated bonds. As noted above, Powerlink's advisers have recommended a conservative approach to determining the DRP in these circumstances.

Powerlink also recognises the inflexibility in the current Rules for transmission to accommodate exceptional circumstances in financial markets. It has been noted that this inflexibility led to formulaic reductions in the cost of equity following commencement of the GFC, which was contrary to the views of informed market commentators such as the RBA[23].

[22] For example: Overview of CEG Analysis: A Report for the JIA, p.3, CEG, January 2009; Refinancing, Debt Markets and Liquidity: Report for the Australian Energy Regulator, p.18, Deloitte, 12 November 2008.
[23] Assessment of the AER's Proposed WACC Framework, A Joint Report for the Energy Networks Association, p.18, ENA, 2011.

Given this inflexibility in the Rules and, in the context of the current unstable financial market conditions, Powerlink has adopted a conservative approach to determining the one WACC parameter over which there may be considered to be some flexibility or relevant discretion to be exercised in determining how it may be appropriately measured, taking the upper end of the range of estimates of the DRP proposed by PwC.

A conservative approach to determining the value to be adopted for the DRP is also appropriate in light of the value for gamma that Powerlink has been required by the Rules to adopt in its Revenue Proposal. While not a component part of the WACC formula, the assumed value for the utilisation of franking credits (gamma) has a significant impact upon after-tax cash flows and, hence, revenues. Powerlink's Revenue Proposal and Revised Revenue Proposal is required to adopt the value of 0.65 for gamma determined by the AER at its 2009 WACC Review, as opposed to the corrected value of 0.25 subsequently determined by the Australian Competition Tribunal.

To ensure that the AER's overall rate of return provides for the recovery of efficient costs and reflects the return required by investors in a commercial enterprise with a similar nature and degree of risk, Powerlink considers that the AER should similarly have regard to the reductions in the risk-free rate and the data quality issues associated with estimating the DRP when establishing the cost of debt. In light of the issues raised in this section, Powerlink considers that the AER should take a conservative approach when exercising any discretion in respect of rate of return parameters, particularly in relation to the DRP.

4.5 Inflation forecast

AER Draft Decision

The AER adopted an inflation forecast of 2.62% per annum for the purposes of its Draft Decision. The forecast is a geometric average developed on the basis of the RBA's short-term inflation forecasts extending out two years and the mid-point of the target range of 2.5% for the remaining eight years.

Powerlink's response

As the AER intends to update its inflation forecast for its Final Decision on Powerlink's 2013-17 revenue cap, Powerlink has applied the AER's forecast of 2.62% in its WACC calculation in the Revised Revenue Proposal for the next regulatory period.

The PTRM also requires a CPI value to be applied to the final year of the current regulatory period. Powerlink has applied the RBA mid-point target range of 2.5% for 2011/12.

4.6 Revised WACC calculation

Table 4.1 provides a summary of the relevant parameters for calculation of the rate of return. This, along with other information, is contained in AER pro forma 7.1.

In proposing the Revised Revenue Proposal values below, Powerlink agrees with and has adopted the AER's Draft Decision for all parameters with the exception of the debt margin and nominal risk-free rate. Powerlink's proposed debt margin below reflects PwC's revised methodology discussed in Section 4.2. Both the debt margin and risk-free rate are indicative values calculated over a reference period of 40 business days ending 9 December 2011.

Table 4.1: Powerlink revised WACC calculation

Parameter/Definition	AER Draft Decision	Revised Revenue Proposal
Nominal risk-free rate	4.32%	4.25%
Inflation rate	2.62%	2.62%
Debt margin	3.19%	3.91%
Proportion of debt funding	60.0%	60.0%
Market risk premium	6.50%	6.50%
Gamma	0.65	0.65
Equity beta	0.80	0.80
Cost of debt (nominal, pre-tax)	7.51%	8.16%
Cost of equity (nominal)	9.52%	9.45%
WACC (nominal, vanilla)	**8.31%**	**8.68%**

5 Real cost escalation

5.1 Summary

Chapters 8 and 9 of Powerlink's Revenue Proposal set out the key inputs and assumptions used to determine the capital and operating expenditure forecasts, including real cost escalators.

In Powerlink's view, the Revenue Proposal set out the costs that a prudent and efficient operator in the circumstances of Powerlink would incur in the next regulatory period having regard to the expected strong economic outlook in Queensland in the medium term due to rising mining, construction and utilities activity[24].

In its Draft Decision, the AER made an assessment of Powerlink's real cost escalators for the next regulatory period and:

- did not accept internal labour cost escalators for the period of Powerlink's current collective agreement (page 51);
- did not accept the Australian Government's stated intention to increase the superannuation guarantee rate will increase Powerlink's total labour costs (page 51);
- did not accept the exchange rate forecasts used by Powerlink to convert from US dollars to Australian dollars (page 55);
- accepted Powerlink's proposed materials cost escalators which were based on forecasts produced by Sinclair Knight Merz (SKM). SKM's methodology is largely consistent with the AER's own model as are their forecasts (page 55);
- did not accept the currency of Powerlink's forecasts, which were produced in early 2011 (page 55);
- did not accept Powerlink's labour cost estimates as the AER considered that labour price increases due to labour productivity growth do not increase labour costs (page 55);
- did not accept the Average Weekly Ordinary Time Earning (AWOTE) Electricity Gas Water (EGW) labour cost measure for the Powerlink internal specialist labour category and AWOTE Business Services (BS) for the Powerlink internal general labour category, and substituted Labour Price Index (LPI) for Electricity Gas Water and Waste Services (EGWWS) for all internal Powerlink labour cost categories (page 60);
- did not accept the AWOTE Queensland Construction labour cost measure, and substituted the Deloitte Access Economics (DAE) Construction LPI measure for Powerlink external construction labour cost categories (page 53); and
- did not accept the land value escalators produced by Urbis (page 55).

The AER substituted its own values for Powerlink's proposed real cost escalators in determining the capital and operating expenditure allowances in its Draft Decision. The impact of the substituted escalators significantly reduces Powerlink's proposed expenditure forecasts. Table 5.1 shows the impact of the AER substituted real cost escalators on Powerlink's Revenue Proposal capital and operating expenditure forecasts for labour, materials and land.

[24] Labour Cost Escalation Forecasts to 2016/17– Australia and Queensland, p.35, BIS Shrapnel, January 2012.

Table 5.1: Reductions in expenditure forecasts due to AER substituted escalators ($m, nominal)

	Labour	Materials	Land
Operating expenditure	62.6	0.0	1.9
Capital expenditure	103.9	82.6	6.7

The most significant driver of the lower labour cost escalators proposed by the AER is the incorporation of large forecast improvements in labour productivity for the Queensland EGWWS sector that have been generated by a subsidiary component of the Deloitte Access Economics Macro (AEM) Model. Deloitte Access Economics' (DAE's) real labour cost forecasts are presented and explained in an accompanying report prepared for the AER for Queensland and Tasmania[25].

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

5.2 Real labour cost escalation

5.2.1 Treatment of labour productivity effects

AER Draft Decision

The AER considered that labour price increases that arise from labour productivity growth do not increase labour costs, and as such forecast labour price changes should be adjusted for labour productivity changes[26]. As Powerlink's proposed labour cost escalators had not been adjusted for productivity, the AER was not satisfied that the forecast escalators reasonably reflect a realistic expectation of labour costs[27].

The substitute labour cost escalator values determined by the AER incorporate assumed average labour productivity improvements over the 2012/13 to 2016/17 period of approximately 1.7% per annum for the EGWWS sector.

Powerlink's response

Prudency and efficiency assessments under the Rules

The Rules[28] require the AER to take into account a TNSP's labour costs in assessing the prudency and efficiency of its capital and operating expenditure forecasts. In particular, the AER must accept a TNSP's capital or operating expenditure forecast if it reasonably reflects, amongst other things, a realistic expectation of the cost inputs required to achieve the capital and operating expenditure objectives, including maintaining the quality, reliability and security of supply of the transmission system and prescribed transmission services.

The Rules do not make any reference to how, if at all, forecasts of the productivity of labour should be taken into account, including whether any adjustments to wages series should be made in this regard. The Rules also do not define labour costs, including clarification of whether these costs should be assessed on a unit or aggregate basis. As a result, a network service provider in its Revenue Proposal must determine an approach and methodology for forecasting

[25] Forecast Growth In Labour Costs: Queensland and Tasmania, Report prepared for AER, Deloitte Access Economics, 15 August 2011.
[26] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.55, AER, November 2011.
[27] Ibid.
[28] National Electricity Rules, Chapter 6A, Clauses 6A.6.6(e)8 and 6A.6.7(e)8, AEMC.

labour costs over the regulatory period which it considers meets the requirements of the Rules. This includes that it provides a forecast that reasonably reflects a realistic expectation of labour cost inputs over the relevant regulatory period.

Powerlink considers that the labour cost forecasts in its Revised Revenue Proposal, which have been formulated on the basis of the methodology adopted in the Revenue Proposal, reasonably reflect a realistic expectation of efficient costs that a prudent operator in the circumstances of Powerlink will incur over the regulatory period.

In relation to the assessment of labour productivity effects, Powerlink sought the opinion of Synergies Economic Consulting (Synergies) regarding how the AER could be expected to approach such an assessment. Synergies advises that it would expect the AER to undertake a "top down" and "bottom up" assessment of forecast expenditure including, for example, a review of individual projects, and comparisons to comparable expenditure programs in peer TNSPs. In doing so, the AER may identify reductions in forecast expenditure, including opportunities for future efficiency gains. To the extent the opportunity for productivity gains can be identified and substantiated, it may be expected that they would be reflected in forecast capital and operating expenditure amounts.

Synergies considers that the AER has generally applied this approach to its assessment of both capital and operating expenditure in previous TNSP regulatory reviews. However, in assessing Powerlink's forecast capital and operating expenditure, the AER has departed from this approach and imposed a labour productivity driven reduction to these forecasts, which is based on expected labour productivity trends over the 2012/13 to 2016/17 period for the Queensland EGWWS sector, for internal labour cost escalators, and Construction sector for external labour cost escalators. In Synergies' view, this approach to assessing the efficiency of Powerlink's forecast costs appears to inappropriately combine a standard business specific expenditure assessment required under the Rules with EGWWS labour productivity adjustments that only loosely relate to Powerlink's specific circumstances. In particular, operating expenditure has been assessed from a business specific perspective, whereas forecast labour escalation has been adjusted using productivity forecasts based on measures incorporating data from a wide range of industries. This inconsistency in approach is discussed in more detail in Synergies' report attached in Appendix E.

In Synergies' view, to the extent a labour productivity factor is warranted at all, estimates of electricity transmission labour productivity should be developed using data from the electricity transmission industry only.

Powerlink agrees with Synergies that the use of such a broadly based sectoral labour productivity estimate to determine future efficiencies in its capital and operating expenditure programs is both arbitrary and inconsistent with the Rules. The arbitrary nature of the AER's proposed labour productivity adjustments is discussed further in Section 5.2.2.

Difficulty in measuring outputs for a TNSP

The AER argues that because labour productivity drives wages over time, an adjustment is required to wages to develop labour costs. Powerlink considers that this is reasonable in principle but flawed in practice.

Productivity is a measure of the physical output produced from the use of a given quantity of inputs. The derivation of labour productivity estimates requires output to be defined to determine how labour inputs contribute to increased output. However, in applying its labour productivity factor to Powerlink's capital and operating expenditure forecasts, the AER has neglected to define the outputs produced by Powerlink or the EGWWS sector in relation to which the EGWWS labour productivity forecasts are being calculated by DAE.

In this regard, Powerlink is required to perform a range of activities and deliver services to meet the Rules, codes and State legislative obligations in relation to energy security, reliability and safety. The capital and operating expenditure programs which underpin Powerlink's expenditure forecasts in its Revenue Proposal and Revised Revenue Proposal are planned and implemented to meet these legislative service performance obligations.

Moreover, Powerlink's service performance is subject to financial incentives in terms of reliability based targets established in the business specific (not industry based) Service Target Performance Incentive Scheme (STPIS) approved by the AER using the following service incentive key indicators:

- transmission circuit availability (with four sub-parameters);
- Loss of Supply (LOS) event frequency (with two sub-parameters);
- average outage duration; and
- market impact of transmission congestion.

Hence, Powerlink considers that to the extent that any "outputs" can be identified for its expenditure programs, these are most likely to relate to these service performance indicators. Moreover, under the Rules[29], the AER's assessment of a TNSP's labour costs included in the capital and operating expenditure forecasts for the regulatory period should ensure its consistency with the incentives provided by the applicable STPIS.

It is unclear to Powerlink how DAE's labour productivity estimates have been derived. However, based on Synergies' advice, Powerlink assumes that the output measure for labour productivity being used in DAE's forecasts is the concept of Gross Value Added (GVA), drawn from the Australian Bureau of Statistics (ABS) National Accounts industry based multifactor productivity series.

Hence, labour productivity for the EGWWS sector is likely to have been calculated as follows:

$$Labour\ productivity\ per\ hour\ worked\ for\ EGWWS = \frac{GVA\ for\ EGWWS}{Total\ hours\ worked\ for\ EGWWS}$$

The relevance of using the output concept of "Gross Value Added" in the calculation of labour productivity estimates and then applying these estimates to represent Powerlink's specific capital and operating expenditure forecasts on efficiency grounds is not soundly based and is inconsistent with the Rules[30].

More generally, Powerlink considers that it is not reasonable for the AER to incorporate broad sectoral labour productivity adjustments to the expected costs of its capital and operating expenditure programs as these adjustments have no regard to what Powerlink is required to achieve in order to meet the capital and operating expenditure objectives under the Rules.

Lack of substantiation of AER's labour productivity forecasts

To the extent that efficiencies have been identified as achievable in undertaking capital or operating expenditure activities, it may be expected that these efficiencies would be captured in the capital and operating expenditure forecasts. However, any adjustment for expected efficiency gains or productivity improvements must be based on material or evidence which demonstrates that Powerlink can be expected to achieve such gains or efficiencies. The basis of the AER's labour productivity forecasts have not been substantiated in the DAE Report, from which the AER has taken without amendment, or in the Draft Decision.

[29] National Electricity Rules, Chapter 6A, Clauses 6A.6.6(e)(8) and 6A.6.7(e)(8), AEMC.
[30] National Electricity Rules, Chapter 6A, Clauses 6A.6.6(e)(8) and 6A.6.7(e)(8), AEMC.

As a result, Powerlink sought clarification and requested the data, source, methodology and model(s) used to establish the labour productivity estimates applied to calculate the financial year changes in the Queensland EGWWS real and nominal productivity adjusted LPI series. The AER sought this information from Deloitte Access Economics, however were informed that the information is confidential and cannot be provided.

It follows that neither the AER nor Powerlink have access to the necessary information, including assumptions and methodology, to understand the basis of DAE's proposed labour productivity forecasts used to adjust its real and nominal LPI series. It is unclear how the AER can be satisfied that its substitute forecast for labour costs is consistent with the requirements of the Rules in circumstances where it does not appear to have questioned the evidential basis that underpins the productivity adjustments made by DAE. Powerlink considers that the AER's substitute of real labour cost escalator values, which are based on DAE's real productivity adjusted LPI series for the Queensland EGWWS sector, have not been established on a reasonable basis in accordance with the Rules[31] which requires:

> The reasons given by the AER for a draft decision under rule 6A.12 or a final decision under rule 6A.13 must set out the basis and rationale of the decision, including:
>
> (1) details of the qualitative and quantitative methodologies applied in any calculations and formulae made or used by the AER for the purposes of its decision;
>
> (2) the values adopted by the AER for each of the input variables in any calculations and formulae, including:
>
> (i) whether those values have been taken or derived from the provider's current Revenue Proposal; and
>
> (ii) if not, the rationale for the adoption of those values;
>
> (3) details of any assumptions made by the AER in undertaking any material qualitative and quantitative analyses for the purposes of the decision; and
>
> (4) reasons for the making of any decisions, the giving or withholding of any approvals, and the exercise of any discretions, as referred to in Part C of this Chapter 6A, for the purposes of the decision.

In this regard Powerlink also notes the requirements of Section 16 of the National Electricity Law (NEL). The application of the productivity adjustment is clearly a material issue for Powerlink. However, Powerlink considers that it has not been adequately informed of this issue nor has it been provided with a reasonable opportunity to make submissions in respect of such a material issue.

In its Revised Revenue Proposal, Powerlink has updated its real labour cost escalators to reflect the market outlook, consistent with the Rules. Powerlink has adopted forecasts which provide a realistic expectation of the cost escalators it requires to achieve the capital and operating expenditure objectives under the Rules. On this basis, Powerlink disagrees that its proposed real labour cost escalator values should be substituted by the AER.

5.2.2 The choice of labour price measure

AER Draft Decision

The AER was not satisfied that forecast growth in AWOTE reasonably reflects a realistic expectation of the change in labour costs. It considered that forecasts based on the LPI, adjusted for labour productivity, most reasonably reflect expected real labour costs during the next regulatory period[32]. The AER considered that accounting for labour composition effects, and the

[31] National Electricity Rules, Chapter 6A, Clause 6A.14.2, AEMC.
[32] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.57, AER, November 2011.

resultant volatility, makes AWOTE unreliable for forecasting labour costs for the utilities industry[33].

The AER stated that, conceptually at least, either labour price measure can quantify the change in labour costs. However, it is important to use matching labour price and productivity measures. According to the AER, a quality adjusted[34] measure of labour productivity, is the appropriate measure to adjust the LPI. While the ABS publishes unadjusted labour productivity statistics for the EGWWS sector, its quality adjusted labour productivity index is available only at the overall market sector level[35].

The AER also stated that as relative input prices change over time, efficient TNSPs will respond with a (new) cost minimising combination of inputs. There is no need to explicitly capture cost changes and productivity changes associated with labour input change as the labour input requirement is endogenous to the production function. To this end, the AER preferred the LPI, adjusted for quality adjusted labour productivity, to AWOTE, adjusted for labour productivity, for the following reasons[36]:

- the LPI provides a more accurate measure of labour price change as it holds labour composition fixed; and
- the quality adjusted labour productivity index provides a better measure of labour productivity as the effective quantity labour input accounts for changes in the skill composition of the labour force.

Finally, the AER acknowledged that the increasing safety related compliance costs Powerlink faces puts downward pressure on labour productivity but this can be taken into account so long as the chosen labour productivity measure is matched to the wage series used.

Powerlink's response

Choice between AWOTE and LPI series for forecasting purposes

Powerlink considers that the most important consideration for any wage series chosen as the basis for wage forecasting purposes under the Rules is that it reasonably reflects a realistic expectation of the labour costs faced by a TNSP over the relevant regulatory period.

Powerlink sought Synergies' view on which wages series would be appropriate to establish labour cost forecasts for Powerlink under the Rules. Synergies concluded that the AWOTE series is a better series than LPI as it:

- is a more comprehensive series of labour costs since it includes penalty rates, bonuses and incentive payments, that in aggregate is more likely to be reflective of the labour costs faced by a TNSP; and
- is prepared by the ABS for the Queensland EGWWS sector, whereas the ABS does not prepare an equivalent LPI series. Consequently, the AER is reliant on an unpublished LPI data series for the Queensland EGWWS sector constructed by DAE as part of its AEM Model, the methodology and performance of which is unknown to Powerlink.

Synergies notes that its conclusion is consistent with the views expressed by BIS Shrapnel in its report attached in Appendix F, with Professor Jeff Borland[37] and Economic Insights[38]. Powerlink

[33] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.58, AER, November 2011.
[34] Adjusted for Educational Attainment and Length of Experience, Productivity, Glossary, ABS Cat 1370.0 Measures of Australia's Progress, 2010.
[35] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.58, AER, November 2011.
[36] Ibid, p.57.
[37] Labour Cost Escalation Report for Envestra, Professor Jeff Borland, 23 March 2011.

also sought the views of Professor John Mangan regarding which of the AWOTE or LPI series is the most appropriate to be used as a proxy for labour cost escalation for Powerlink. Professor Mangan's report is attached in Appendix G.

Professor Mangan notes the ABS's view that the LPI and AWOTE series are not comparable and have different purposes. The LPI series measures changes in the price of a fixed quantity and quality of labour. In contrast, AWOTE measures changes in average gross earnings and may be affected by changes in the level of earnings of employees, as well as changes in the overall composition of the wage and salary earner segment of the labour force. Professor Mangan characterised the LPI measure adopted by the AER as follows:

> [LPI] is best suited to tracing general movements in the direction of labour price movements rather than providing a true picture of these changes over time. In essence the ABS is attempting, through the LPI, to provide a relatively uncomplicated estimate of inter-temporal movements in wage costs by reducing the "noise" of the changes in the composition and behaviour of the complex labour market which influences actual earnings on a quarter to quarter basis[39].

In this regard, Powerlink notes that it must compete for labour resources with the mining and construction sectors and when the Queensland economy is strong and skill shortages emerge, it must meet the market to attract skilled staff. In this case the AWOTE series will recognise the higher earnings and the real cost of labour, while the LPI series, which holds labour quantities and quality constant, will not. As a result, the AWOTE series is more likely to reflect the real labour costs faced by Powerlink and more appropriately reflects the basis for labour cost escalators under the Rules.

Both the AER and DAE have used the volatility of the AWOTE series as a reason for rejecting its use for forecasting purposes. In relation to this issue, Synergies noted that:

> Observed short term volatility in a wages series is a second order concern because wage forecasts for a regulatory period (typically five years) are not required to, nor need attempt to, extrapolate any historical short term volatility[40].

In light of the expert opinion from Synergies summarised above, Powerlink considers that the AWOTE series is the most appropriate wage series for forecasting purposes under the Rules. Consequently, Powerlink has updated its AWOTE based wage forecasts in its Revised Revenue Proposal.

Compositional labour force change

The most significant omission from the LPI series is the influence of compositional change[41] in the workforce and its impact on earnings over time. In contrast, as noted above, the AWOTE series reflects the impact of compositional change in the labour force.

[38] Review of AER Draft Decisions on Envestra Queensland's and Envestra South Australia's Input Price Escalators, Economic Insights, 22 March 2011.
[39] Labour Cost Report: Report Undertaken for Powerlink Regarding Labour Cost Escalators in the AER Powerlink Draft Decision, p.24, Professor John Mangan, January 2012.
[40] Review of Labour Cost Escalation Issues under National Electricity Rules, p.16, Synergies Economic Consulting, January 2012.
[41] Labour Cost Report: Report Undertaken for Powerlink Regarding Labour Cost Escalators in the AER Powerlink Draft Decision, p.24, Professor John Mangan, January 2012.

Powerlink sought the opinion of Professor John Mangan in relation to the importance of compositional change to Powerlink. Based on confidential company specific data provided by Powerlink, Professor Mangan found that labour compositional effects over recent years have had a significant impact on Powerlink's real labour costs. Over the period from 2008/09 to 2010/11, Powerlink's labour cost growth can be broken down into the following drivers:

- around 55% due to the increasing size of its workforce;
- around 28% due to the rise in nominal pay rates across each employee category; and
- around 17% due to changes in the composition of the workforce between the employee categories.

Professor Mangan also found that compositional shifts raised Powerlink's average wage by around 2.7% over this two year period. The compositional shifts have evolved from new technologies and new compliance requirements that necessitate higher skills and increased network performance, but do not necessarily increase output or lower costs. Given the tight labour market conditions Powerlink is expected to face in the medium term, Professor Mangan considered that compositional workforce change would be an ongoing issue for Powerlink.

In Powerlink's view, these findings provide grounds for the AWOTE series to be used as the basis for wage forecasting purposes under the Rules.

Robustness of AER's substitute real labour cost escalator forecasts

Powerlink considers that neither DAE or the AER provided any information on the predictive power of the AEM model used to generate the AER's substitute real labour cost forecasts in its Draft Decision. As a result, Powerlink engaged Synergies and BIS Shrapnel to examine the DAE model outcomes provided as part of the AER's 2007 Powerlink Final Decision, which should provide an indication of the predictive power of the model.

Given limited availability of data in respect to DAE's forecasts, Synergies was requested to assess the 2007 DAE Australian LPI forecasts against actual changes in the LPI for a number of industry sectors over the period 2006/07 to 2010/11[42]. Synergies found that the DAE model consistently under forecast growth in the LPI series over the forecast period by an average 1.2-3.0% per annum. This suggests that the model forecasts used by the AER are likely to have underestimated Powerlink's labour costs over the 2008-12 period. Similarly, BIS Shrapnel note that over the medium to long term, DAE has consistently forecast that growth will ease. However wages growth has remained above or equal to the All Industries average, which further reinforces that DAE's utilities wage forecasts are too pessimistic[43]. Further, a review of BIS's comparable labour forecast records demonstrate that the BIS forecasts have stayed above the All Industries average, and have returned Utilities forecasts which have been closer to actual, particularly in recent years[44].

In its Draft Decision, the AER concluded that a quality adjusted measure of labour productivity is the appropriate measure by which to adjust the LPI. Powerlink notes that the quality adjusted LPI series to which the AER refers is not published by the ABS on a 'by State' and 'by sector' basis. Rather it is based on the National Market Sector. That is, an Australia wide estimate.

DAE has argued that it does not believe that the value of the quality adjustment is large and therefore values it at zero both in forecasting the LPI and making the labour productivity

[42] Australian data was used rather than Queensland data as relevant LPI data by State and sector is not published by the ABS.
[43] Labour Cost Escalation Forecasts to 2016/17 – Australia and Queensland, Section 6, BIS Shrapnel, January 2012.
[44] Ibid.

adjustment to the LPI[45]. Powerlink notes that while these assumptions are convenient they suffer from the following problems:

- DAE does not consider that compositional change in the utilities sector has had a significant impact on labour productivity and average wages in recent years;
    - Professor Mangan has shown that this conclusion is incorrect in relation to Powerlink in recent years;
- the ABS does not release quality adjusted labour productivity data for the EGWWS sector therefore DAE's assumption that the value of quality adjustments should be zero is based on economy wide not utilities sector data, recognising that even utilities sector data would be very broadly based relative to the electricity transmission sector;
    - In practice, Powerlink is unable to assess the reasonableness of DAE's zero quality adjustment assumption, or the predictive performance of DAE's forecasts for its constructed LPI series for the EGWWS sector as the ABS does not publish a comparable series;
- given its zero quality adjustment assumption, DAE is effectively using the ABS standard labour productivity series for the EGWWS sector, including compositional effects, as the basis for its productivity forecasts. However, these productivity forecasts are then applied to its forecasts of an LPI series that excludes the impact of those compositional productivity effects.

Having regard to this latter problem, Professor Mangan states that if the LPI series is adjusted downwards by assumed labour productivity increases which incorporate compositional work force effects, the resulting labour cost series will understate real labour cost changes that could be expected to be faced by a prudent operator in the circumstances of Powerlink. Professor Mangan's concerns are borne out by the real LPI productivity adjusted escalators generated by DAE which, as indicated in Table 5.2, are negative for all but the first year of the next regulatory period. DAE's forecast of reducing labour costs in real terms is not consistent with the forecast above average growth[46], or is it representative of the costs that Powerlink is likely to incur.

Table 5.2: Impact of DAE's labour productivity adjustments on real labour cost escalators

	2012/13	2013/14	2014/15	2015/16	2016/17
DAE's real LPI series	1.6%	0.6%	0.6%	0.0%	0.5%
DAE's real LPI productivity adjusted series	1.2%	-0.8%	-1.4%	-2.3%	-1.7%
DAE's Implied labour productivity adjustment	0.4%	1.4%	2.0%	2.3%	2.2%

In contrast, Powerlink notes that the ABS EGW labour Partial Factor Productivity series has consistently declined by 3.6% per annum since 1998[47]. As a result, it is difficult to understand the basis of the sharp turnaround in expected labour productivity for this sector in the next five years[48]. In Synergies' view, DAE has not adequately explained the reasons for this sharp turnaround. As a result, the AER's productivity adjustment could not be said to match the LPI

[45] Productivity Measures to Adjust LPI and AWOTE, p.11, Deloitte Access Economics, 8 November 2011.
[46] Labour Cost Report: Report Undertaken for Powerlink Regarding Labour Cost Escalators in the AER Powerlink Draft Decision, p.21, Professor John Mangan, January 2012.
[47] Experimental Estimates of Industry Multifactor Productivity, Australia: Detailed Productivity Estimates, Cat No 5260.0.55.002, Australian Bureau of Statistics (ABS), 2010.
[48] Treasury Secretary, Martin Parkinson, sees "little reason to believe (productivity) will improve in the immediate term", Forecast Growth in Labour Costs: Queensland and Tasmania, p.(v), Deloitte Access Economics, 15 August 2011.

series used by DAE and the AER, regardless of the bigger concern about the appropriateness of a labour productivity adjustment only loosely related to Powerlink's circumstances.

Consequently, Powerlink considers that the AER's substitute real labour cost escalator values have not been established on a reasonable basis as the labour productivity component of the forecasts has not been substantiated by DAE or the AER. Further the size of the proposed labour productivity adjustments has not been justified in the context of the AER's use of the LPI series for labour cost forecasting purposes. In addition, the LPI wage forecasts generated by the AEM model appear to be systematically underestimating actual LPI wage movements.

Efficiencies included in Powerlink's capital and operating expenditure programs

Powerlink's AWOTE based real labour cost forecasts for the next regulatory period do not include specific labour productivity adjustments as productivity related and broader efficiency gains were already built into the capital and operating expenditure forecasts.

Powerlink is an efficient organisation whose performance benchmarks well as evidenced by:

- Powerlink's high ranking in ITOMS, with above average reliability and below average costs;
- good correlation of Powerlink's cost estimating process against Power System Consultants (PSC)[49] estimates;
- the AER's acknowledgement of Powerlink's robust cost estimating and governance processes[50] [51]. The AER considered the BPO updating process an appropriate tool for improving Powerlink's base cost estimating procedures, and found the governance processes consistent with good industry practice, which should lead to efficient investment outcomes; and
- the AER's acknowledgement that Powerlink's current operating expenditure benchmark ratios are consistent and in the average range compared to other TNSPs[52].

As Powerlink is close to the efficiency frontier significant additional gains in efficiency and productivity are not achievable. Powerlink has already implemented significant savings through a number of initiatives including:

- the relocation of its offices from the city to the suburbs in 1997;
- consolidating control centre functions in 2000; and
- the introduction of program management in 2006 which provides coordinated delivery of the portfolio of work.

The benefits of these and other initiatives are included in the capital and operating expenditure forecasts for the next regulatory period.

For the operating expenditure, the impact and benefits of these initiatives has been included in the efficient base year operating costs which underpin Powerlink's future operating expenditure forecasts. For the capital expenditure program, these costs are captured in Powerlink's BPO based estimating process.

In the current regulatory period, Powerlink has been subject to the AER's Efficiency Benefit Sharing Scheme (EBSS). The EBSS provides a continuous incentive to achieve efficiencies by allowing the TNSP to retain, for a fixed period, the difference (negative or positive) between its

[49] 2013-2017 Powerlink Queensland Revenue Proposal, pp.79-80, Powerlink, May 2011.
[50] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.119, AER, November 2011.
[51] Ibid, p.103.
[52] Ibid, p.174.

actual and forecast operating expenditure[53]. The EBSS encourages TNSPs to closely monitor and reduce operating expenditure.

Powerlink's operating expenditure allowance for the current period and operating expenditure forecasts for the next regulatory period include economy of scale factors[54] which represent the decreasing long run average costs associated with increased network size. The economy of scale factors represent the declining costs associated with the operation of a transmission network of increased scale, i.e. they have the impact of reducing the operating expenditure forecast for an expanding transmission network.

Section 9.2 highlights that there were no material year on year variations between Powerlink's actual and estimated controllable operating expenditure and the AER allowance. In order to meet the AER's operating expenditure allowance with the substantial economy of scale factors, Powerlink has developed levels of productivity within its existing and base year operating expenditure activities. As operating expenditure activities are primarily driven by labour, it follows that labour productivity is inherently included within the economy of scale factors.

As such, it is not appropriate to adjust labour rates for productivity without backing out gains which have been integrated into the base year operating costs and forecasts going forward via the economies of scale factor. Not to do so would be akin to double counting. As the productivity improvements have already been included in the operating expenditure forecasts, the associated labour escalators should not be productivity adjusted.

Powerlink's capital expenditure forecasts have also been shown to be efficient by the independent benchmarking results of the cost estimating process undertaken by PSC[55]. These results have been achieved through Powerlink's commitment to continuous improvement of its estimating and governance processes which in turn lead to efficient investment outcomes.

Finally, Powerlink notes that, over the course of the next regulatory period, it will be required to make further incremental efficiency improvements to offset additional costs. These additional costs are associated with likely new legislative requirements such as harmonisation of safety legislation, and expected increased input costs from the introduction of the carbon tax. These and other less material new requirements have not been built into the capital and operating expenditure forecasts.

AER productivity adjustments

The presumption of the AER's labour productivity adjustments appears to be that there is a simple relationship between Powerlink's labour inputs and its outputs. As previously noted in this chapter, the AER has not attempted to identify these outputs or to consider the influences on labour productivity.

The ABS has commented as follows regarding the measurement of labour productivity[56]:

> Partial measures of productivity, such as labour productivity, do not specifically identify the sources of productivity growth. Put differently, labour productivity indexes reflect not only the contribution of labour to changes in production per labour unit, but are also influenced by the contribution of capital and other factors affecting production such as technological change as well as labour efficiency.

As a result, to apply an average labour productivity adjustment of 1.7% per annum over the 2013-17 period is unreasonable having regard to Powerlink's specific circumstances as the AER's

[53] First Proposed Electricity Transmission Network Service Providers Efficiency Benefit Sharing Scheme, Explanatory Statement and Issues Paper, p.1, AER, January 2007.
[54] 2013-2017 Powerlink Queensland Revenue Proposal, p.92, Powerlink, May 2011.
[55] Ibid, pp.79-80.
[56] The ABS Multifactor Productivity Measurement Program, Hui Wei, ABS, 13 July 2011.

proposed labour productivity measure is not specific to either Powerlink or the Australian electricity transmission sector. Instead, forecast labour productivity is based on the entire Queensland EGWWS sector, with potentially an economy wide labour productivity quality adjustment also applied. Given the wide range of industries included in this sector, Powerlink considers this approach to be inappropriate.

Moreover, the proposed average labour productivity gains of 1.7% per annum is aggressive and appears inconsistent having regard to the historical performance of the EGW sector. More importantly, it is also inconsistent with the AER's own benchmarking analysis which indicates Powerlink's current operating expenditure is in the average range when compared to other TNSPs in the National Electricity Market[57].

Clearly, business specific labour productivity gains cannot be reflected in the real labour cost forecasts generated by DAE's AEM model and adopted by the AER. As a result, Powerlink considers that the AER must carefully consider the appropriateness of applying broad based labour productivity adjustments to Powerlink's capital and operating expenditure forecasts. While the AER has assessed some components of Powerlink's forecast expenditure from a business specific perspective, such as proposed new requirements on operating expenditure forecasts, in substituting its labour productivity adjustment, it has failed to provide the same rigour to Powerlink's business specific labour requirements.

The AER also proposed significant reductions to Powerlink's forecast capital expenditure based on EMCa's assessment of the proposed capital expenditure forecast. However, EMCa was not required to form a view on the quantum of the labour escalators used by Powerlink in its forecasts. At best, the AER's approach has resulted in a partial assessment of Powerlink's proposed capital expenditure program and, at worst, could result in a 'double counting' of labour productivity and efficiencies already included in the program.

For the reasons outlined in this section, Powerlink considers that the AER's substitute LPI based real productivity adjusted labour cost escalators have not been established on a reasonable basis having regard to the Rules[58].

As a result, the labour escalators do not reasonably reflect a realistic expectation of cost inputs for a prudent operator in the circumstances of Powerlink.

5.2.3 Internal labour cost escalation

AER Draft Decision

The AER disagreed with the BIS Shrapnel view that Powerlink's internal labour costs are influenced by both specialist and administrative skill sets. Instead, the AER noted that the ABS labour price statistics for the EGWWS industry reflects both specialised electricity network related labour and general labour[59].

It also rejected the use of BIS Shrapnel's EGW measure derived by removing the waste water sector from the ABS' EGWWS measure on the grounds that the difference in series is not statistically significant. Further, it considered that removing the waste services component from the data would introduce a potential source of forecasting error since it is necessary to estimate the waste services component[60] .

[57] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.174, AER, November 2011.
[58] National Electricity Rules, Chapter 6A, Clause 6A.14.2, AEMC.
[59] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.60, AER, November 2011.
[60] Ibid, p.60.

The AER considered labour cost forecasts for the EGWWS sector most reasonably reflects a realistic expectation of labour costs for all internal Powerlink labour during the next regulatory period[61] .

Powerlink's response

Powerlink's approach to proposing its labour cost escalators has been consistent with the AER's approach in recent electricity transmission determinations, where the AER has considered specialist and general labour to be discrete labour categories[62]. However, Powerlink's fundamental concern about the AER's real labour cost forecasts is the low level of the AER's substitute labour cost values for the EGWWS sector rather than this classification issue.

In relation to BIS Shrapnel's adjustment for the effect of the waste services sector in the EGWWS sector series, Powerlink notes that occupations in the electricity sector are, in general, more highly skilled and in higher demand than occupations in the waste services sector[63]. Hence, the inclusion of the waste services industry in the EGWWS sector will understate growth in electricity industry labour costs over time compared to the EGW measure. On the grounds that a more accurate measure of labour costs of TNSPs is appropriate under the Rules, BIS Shrapnel's adjustment to the EGWWS measure is reasonable.

Moreover, BIS Shrapnel has based its adjustment on an observation of the historical performance of the two series and using the difference in growth profiles of the two series as the basis for its EGW forecasts. Powerlink considers this to be a sound basis for the forecasts. While the AER's concern about forecasting error in the derived EGW series is relevant, in Powerlink's view, the more important issue is that a wages series is used that is more likely to accurately reflect a TNSP's expected labour costs. Moreover, Powerlink notes that the EGWWS LPI series favoured by the AER is an unpublished constructed series, which is potentially subject to large forecasting error.

As a result, in its Revised Revenue Proposal, Powerlink has adopted the Queensland EGW sector AWOTE forecasts prepared by BIS Shrapnel as being representative of all of Powerlink's internal real labour cost forecasts over the next regulatory period.

5.2.4 Comparison of labour cost forecasts

AER Draft Decision

In addition to the choice of labour measure and treatment of productivity effects, the AER has also considered its forecast in the context of the underlying macro economic conditions. The key differences are the sustained growth cycle predicted by BIS Shrapnel as opposed to a slowdown foreseen by DAE.

The AER expanded this further and considered that real labour cost growth, which is adjusted for productivity improvements, should increase by CPI over the long term. DAE's labour cost forecast of average real labour costs for the next regulatory period will be 0.4% less than those in 2010/11 for EGWWS and 0.8% greater for construction. Given the AER's assumption that labour costs should increase by CPI over the long term, and that DAE forecasts this change, the AER was not satisfied that BIS Shrapnel's forecasts of labour cost growth, which are greater than CPI, reasonably reflect a realistic expectation of labour costs over the next regulatory period. The AER was satisfied that DAE's labour cost forecasts reflect a realistic expectation of labour costs[64].

[61] Ibid, p.59.
[62] TransGrid Transmission Determination 2009-10 to 2013-14 – Final Decision, p.149, AER, April 2009.
[63] Labour Cost Escalation Forecasts to 2016-17 – Australia and Queensland, p.A-5, BIS Shrapnel, November 2011.
[64] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.62, AER, November 2011.

Powerlink's response

Powerlink has a number of concerns about the real labour costs (excluding productivity adjustments) developed by DAE and adopted by the AER without amendment in its Draft Decision. As a result, Powerlink commissioned Synergies and Professor John Mangan to assess the robustness of the real wage forecasts developed by DAE. These reports are attached in Appendices E and G respectively. The main conclusions of Synergies' review are that the AEM model and/or DAE's Report:

- fails to provide adequate recognition of the specific labour market conditions facing Powerlink;
- lacks sufficient transparency to enable an adequate review of the model parameters and outputs by Powerlink or stakeholders more generally;
- fails to adequately account for institutional labour market factors in deriving labour price forecasts;
- develops real labour cost forecasts (excluding productivity adjustments) that do not appear plausible having regard to the expected labour market conditions in Queensland and, in particular, Central Queensland during the next regulatory period; and
- provides insufficient information on the derivation of the labour productivity forecasts used to adjust its real LPI wage forecasts to understand the basis of these forecasts.

Professor Mangan also notes that given the strong economic outlook for the Queensland economy over Powerlink's next regulatory period and the expected skill shortages that will emerge, DAE's real productivity adjusted LPI forecasts appear implausible[65]. However, the AER has adopted these estimates as substitute real labour cost escalator values in its Draft Decision.

Synergies also notes that there appears to be some inconsistency between DAE's views on expected labour market conditions in Queensland in the medium term in a recent report it prepared for the Queensland Resources Council[66] compared to the views it has expressed in the context of the AER's Draft Decision for Powerlink. Hence, DAE notes the importance of the supply side having a dampening influence on wage outcomes for Powerlink, which is reflected in the modest outlook for real wages growth in the utilities sector, while simultaneously posing a significant medium term problem for the Queensland resources sector. In Powerlink's view, it is difficult to reconcile this subdued wages outlook with the labour market conditions DAE expects the Queensland resources sector, a competing employer for Powerlink, to face over the same period.

Of particular concern is that DAE's labour productivity assumptions for the EGWWS sector appear to have changed fundamentally between 2007 and 2011. In 2007, at Powerlink's last regulatory reset, DAE forecast that labour productivity growth would actually be negative each year until 2015/16. In 2011, DAE is now forecasting that labour productivity growth for the EGWWS sector will turn positive from 2011/12 and remain so until the end of the forecasting horizon in 2018/19. The swings from negative to positive in the 2007 and 2011 forecasts are generally very large, which raises doubts about the robustness of the model outputs. Moreover, this fundamental and unsubstantiated change in DAE's outlook for labour productivity growth in the EGWWS sector has resulted in a significant reduction in Powerlink's capital and operating expenditure forecasts, shown in Table 5.1.

[65] Labour Cost Report: Report Undertaken for Powerlink Regarding Labour Cost Escalators in the AER Powerlink Draft Decision, p.34, Professor John Mangan, January 2012.
[66] Queensland Resource Sector State Growth Outlook Study, Queensland Resources Council, November 2011.

In light of the findings of Synergies and Professor Mangan, Powerlink considers that the AER's substituted real labour cost forecasts are implausible having regard to the outlook for the Queensland economy over the next regulatory period. In proposing substitute real labour cost forecast values, the AER has relied completely on the outputs of DAE's AEM model which lacks transparency and have not been fully substantiated. On these grounds, Powerlink considers that the AER's substitute real labour cost forecasts have not been established on a reasonable basis under the Rules.

5.2.5 The use of negotiated wage rate agreements

AER Draft Decision

The AER has applied the annual increase to Powerlink's collective agreement to escalate labour costs to the end of the current agreement, but has removed the productivity component of the wage increase.

The AER was satisfied the annual wage increase of 4.0% included in Powerlink's existing collective agreement reasonably reflects labour cost increases to the end of the agreement in November 2011. It is not satisfied, however, that the annual 0.5% productivity allowance included in the collective agreement reasonably reflects the labour costs required to meet the capital and operating expenditure objectives[67].

The AER noted that it considered the incentives a TNSP faces when negotiating wage agreements to minimise labour costs, with a view to ensuring the TNSP has an incentive to minimise any future wage increases.

Powerlink's response

Powerlink adopted its existing collective agreement's wage increases as reflective of its internal labour costs to deliver the program of capital and operating expenditure works to 2011. Powerlink adopted the BIS Shrapnel real labour cost forecasts thereafter, spanning the 2013-17 regulatory period.

The inclusion of the productivity payment of 0.5% in the current collective agreement reflects a higher gross labour cost which has returned service delivery benefits to Powerlink for a range of productivity initiatives including[68]:

- commitment to safety;
- workplace flexibility;
- commitment to continuous improvement;
- commitment to collaborative conduct; and
- work in accordance with the fatigue management plan.

In Powerlink's view, the benefits from these labour productivity related initiatives have improved the delivery of its capital and operating expenditure programs. For example, safety improvements in work practices assist in the delivery of work but may not result in lower costs. Similarly, workplace flexibility may enable more effective and efficient use of various resources to ensure the capital program is delivered, but may actually increase labour costs. The assessment of prudency and efficiency of such forecasts, including the appropriateness of adjusting for labour productivity under the Rules should consider the business specific expenditures that are reflective of Powerlink's specific circumstances as addressed in Section 5.2.1.

[67] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.63, AER, November 2011.
[68] Working at Powerlink 2008 – Union Collective Agreement, p.49, Powerlink Queensland, November 2008.

Finally, Powerlink notes that the 4.5% annual wage increases (including productivity payment) reflected in the existing collective agreement were reasonable having regard to the level of increases reported in enterprise bargaining agreements in the EGWWS sector at the time it was negotiated. In other words, the wage increases in Powerlink's collective agreement were not out of line with the EGWWS sector and Powerlink was also able to negotiate more flexible working arrangements to facilitate the delivery of the work program, but not necessarily labour costs. However, the AER's productivity adjustment implies that it considers a 4.5% wage increase to be unreasonably high relative to comparable benchmarks. It should be noted the 4.5% increase does not include compositional effects as demonstrated by Professor Mangan discussed in Section 5.2.2, so Powerlink's labour costs over the period would have been even higher. Powerlink does not consider that the evidence supports the AER's position.

As a result, Powerlink has retained the 4.5% annual wage increase of its existing collective agreement to the end of the agreement's term for the purpose of escalating labour costs to develop capital and operating expenditure forecasts.

5.2.6 Superannuation guarantee

AER Draft Decision

The AER did not allow the inclusion of the proposed increases to the superannuation guarantee charge to employers that were included in the real labour cost escalators in Powerlink's Revenue Proposal.

In its Draft Decision, the AER noted the Australian Government has announced that, if agreed to by Parliament, it will gradually increase the superannuation guarantee rate from 9% to 12% by 2019/20, commencing in 2013/14.

The AER considered the phased increase to 12%, with a three year lead time from announcement, will allow employers to take the increased superannuation guarantee contributions into account when negotiating future wage settlements. On this basis, the AER considers the intended increases to the superannuation guarantee rate will not affect labour costs and hence forecast total capital and operating expenditure should not be escalated in anticipation of it.

Powerlink's response

The assumption that the proposed increases to the superannuation guarantee rate will be a substitute for future wage increases is reasonable in theory, but less reasonable in practice. In Powerlink's view, the most likely outcome is that all, or at least a large part, of the superannuation guarantee increase will be borne by employers. As such, Powerlink will face higher future labour costs than would otherwise be the case.

However, Powerlink accepts that the superannuation guarantee increases are yet to be legislated. On the basis that the timing of the proposed increases are not yet fully known, Powerlink has removed the superannuation guarantee cost increases from its capital and operating expenditure forecasts in its Revised Revenue Proposal.

This is however another example of the potential cost increases, due to legislative changes, that will have to be either absorbed by Powerlink or offset by efficiency gains in the next regulatory period.

5.2.7 Summary of revised labour cost escalators

In its Draft Decision, the AER has substituted real labour cost escalator values proposed by Powerlink on the basis that these cost escalators do not reasonably reflect a realistic expectation

of the cost inputs required to achieve the capital and operating expenditure objectives under the Rules.

The impact of the AER's substituted escalators is to significantly reduce Powerlink's proposed expenditure forecasts as indicated in Table 5.1. In Powerlink's view, the AER's substitute real labour cost escalators have not been established on a reasonable basis having regard to the relevant provisions of the Rules. This is a material issue for Powerlink. The areas of the Draft Decision of most concern to Powerlink having regard to the Rules are as follows:

- The AWOTE series is a better wage series for forecasting purposes under the Rules than the LPI series used by the AER as it is more likely to reflect the real labour costs faced by TNSPs on the grounds that it:
    - is a more comprehensive measure of wages than the LPI series preferred by the AER;
    - is available in a published form for the Queensland EGWWS sector whereas the LPI series is not and must be constructed by DAE; and
    - takes into account compositional labour force change, which is an important issue for Powerlink.
- It is not reasonable for the AER to incorporate broad sectoral labour productivity adjustments to the expected costs of Powerlink's capital and operating expenditure programs as these adjustments have no regard to what Powerlink requires to achieve the capital and operating expenditure objectives under the Rules.
- The AER was unable to respond to Powerlink's request for clarification of the methodology used by DAE to establish the labour productivity estimates applied to calculate the financial year changes in the Queensland EGWWS real and nominal productivity adjusted Labour Price Index (LPI) series due to the claimed confidentiality of DAE's model. Powerlink submits that this response is directly contrary to the Rules[69] and the NEL.
- The LPI wage forecasts developed by the AEM model and accepted by the AER without amendment:
    - fails to provide adequate recognition of the specific labour market conditions facing Powerlink as an employer competing for labour resources with the mining and construction industries;
    - lacks sufficient transparency to enable an adequate understanding of how the forecasts have been developed, particularly the labour productivity forecasts;
    - fails to adequately account for institutional labour market factors in deriving labour cost forecasts; and
    - produces real labour cost forecasts (excluding productivity adjustments) that do not appear plausible having regard to the expected labour market conditions in Queensland and, in particular, Central Queensland during Powerlink's next regulatory period.
- The AER's removal of the 0.5% productivity related payment included in Powerlink's existing collective agreement is unreasonable as the benefits associated with the payments have not been properly assessed by the AER. In addition, the 4.5% annual wage increases (including productivity payment) reflected in the existing collective agreement were reasonable having regard to the level of increases reported in enterprise bargaining agreements in the EGWWS sector at the time it was negotiated.

[69] National Electricity Rules, Chapter 6A, Clause 6A.14.2, AEMC.

Powerlink's Revenue Proposal presented transparent, substantiated forecasts of the real labour costs it reasonably expected will incur over the next regulatory period in accordance with the Rules. For these reasons, Powerlink considers that it's proposed real labour cost forecasts, which have been updated for its Revised Revenue Proposal, provide a more reasonable and realistic expectation of what it requires to meet the capital and operating expenditure objectives in the Rules than the substitute values in the AER's Draft Decision.

Further details on which the response to the AER's labour cost escalations was prepared are provided are in the subject matter expert reports from BIS Shrapnel, Synergies and Professor Mangan. These reports are attached to the Revised Revenue Proposal.

5.3 Currency of forecasts

AER Draft Decision

In its Draft Decision, the AER substituted real cost escalators citing the currency of data as a contributing reason. In particular the AER considered the forecasts proposed by Powerlink no longer reflect the current market outlook, and do not reasonably reflect a realistic expectation of labour, materials and land cost inputs.

Further, the AER noted the need to ensure close correlation of interdependent data. For example, materials escalation factors require forecasts of both the movement in the price of commodities (such as copper and steel) as well as exchange rate forecasts to convert commodity prices into Australian dollars. To the extent possible these two forecasts should be derived at the same time[70].

Powerlink's response

Powerlink regards the rejection of any aspect of its cost escalation rate forecasts on the grounds of its currency to be inappropriate. The nature of the regulatory framework under the Rules is such that the AER will always benefit from access to more recent information than a TNSP given its Draft Decision will be prepared months after a Revenue Proposal is submitted. Powerlink considers that its proposed escalation rates should be assessed solely on the basis of the soundness of the forecast methodologies adopted. To the extent that the AER has concerns regarding the currency of any forecasts, it should engage with Powerlink to obtain updates rather than simply rejecting what has been proposed.

Powerlink acknowledges that it is appropriate that data which is correlated is established within a similar reference period. The materials cost forecasts in Powerlink's Revised Revenue Proposal and prepared by SKM have been established as at the end of October 2011. SKM's report is provided in Appendix H. The associated forecast foreign exchange rate data has been sourced from the KPMG Australian National, State and Industry Outlook (ANSIO) report[71] finalised in October 2011. As such these data sets are closely correlated and address the AER's concerns relating to the correlation of interdependent data.

5.4 Foreign exchange rate forecasts

AER Draft Decision

The AER adopted the use of forward exchange rates to convert the US dollar denominated price inputs for materials escalation to Australian dollars as it considered they were the most realistic expectation of exchange rates during the next regulatory period.

[70] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.65, AER, November 2011.
[71] Australian National, State and Industry Outlook 2011, no.2, p.102, KPMG Econtech, 2011.

Powerlink proposed that US dollar denominated input prices be converted to Australian dollars using exchange rates forecast by KPMG Econtech[72]. The AER compared these rates to the average rate available in the forward market during the month of August 2011 and noted that the proposed rates were lower[73] .

Given the difficulty in forecasting exchange rates, the AER considers the use of forward exchange rates will produce a realistic expectation of materials costs[74].

Powerlink's response

Powerlink considers the adoption of forward rates is not an appropriate predictor of a future exchange rate. Foreign exchange forward rates are established by applying the forecast interest rate differential of the two currencies and applying this to the spot rate of the day. This is typically used as the basis of contracts to secure the cost of a future foreign exchange transaction. Significant empirical evidence is available that demonstrates that forward rates are a biased estimate of the expected future spot rate[75]. As such forward rates are not a reliable predictor of a future exchange rate.

Forecast exchange rates by independent experts such as KPMG Econtech[76] rely on analysis of global economic conditions that are expected to prevail in the future. The adoption of forecast foreign exchange rates to establish materials real cost escalators is consistent with the methodology adopted by SKM and agreed in previous decisions by the AER. Similarly KPMG Econtech foreign exchange forecasts were also adopted by the AER in previous decisions[77].

As such Powerlink has again used KPMG Econtech forecast foreign exchange rates in the Revised Revenue Proposal for the following reasons:

- it is likely to better reflect the future value of a currency than forward rates;
- the use of a forecast foreign exchange rate allows a broad range of economic inputs to be considered; and
- KPMG's forecast methodology has previously been adopted by the AER.

The USD/AUD foreign exchange forecast from KPMG Econtech[78] shown in Table 5.3 reasonably reflects the future costs that an efficient and prudent TNSP will incur.

Table 5.3: USD/AUD foreign exchange forecast

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
USD/AUD	1.07	1.03	0.99	0.96	0.93	0.90	0.85

Source: KPMG Econtech, October 2011.

[72] Ibid.
[73] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.66, AER, November 2011.
[74] Ibid, p.66.
[75] Forward and Spot Exchange Rates, Journal of Monetary Economics 14, pp.319-338, Fama, 1984.
[76] Australian National, State and Industry Outlook 2011, no.2, p.102, KPMG Econtech, 2011.
[77] Final Decision – Appendices, Victorian Electricity Distribution Network Service Providers – Distribution Determination 2011-2015, p.240, AER, October 2010.
[78] Australian National, State and Industry Outlook 2011, no.2, p.102, KPMG Econtech, 2011.

5.5 Land value escalation

AER Draft Decision

The AER has substituted Powerlink's forecast real cost land escalators on the basis that the Urbis forecasts adopted by Powerlink were higher than the long term average ABS land value data series.

In particular, the AER was not satisfied that Powerlink's proposed real land value escalators reasonably reflects a realistic expectation of the cost inputs required to achieve the operating expenditure and capital expenditure objectives. The AER used the historical land values data published by the ABS for Queensland from 1988/89 to 2009/10 for calculating the forecast real land value escalators.

The AER considered that the recent flooding and cyclones in Queensland will have a negative impact on both urban and rural land values in the short term. It therefore considered the lower forecasts proposed by Powerlink for 2010/11 and 2011/12 land escalators were reasonable[79].

To assess the reasonableness of Urbis' forecasts, the AER compared the proposed land value escalators for the period 2012/13 to 2016/17 against the average of historical land value data for the period 1989/90 to 2009/10. This analysis showed Powerlink's forecast growth in urban land value for the period 2012/13 to 2016/17 to be significantly higher than the long term average growth rate of ABS's rural and commercial land values for Queensland. Powerlink's forecast growth rates for rural land for the period 2012/13 to 2016/17 are slightly higher than the long term average growth in the ABS rural land value.

The AER considered that it is more prudent to use the average of the entire land value series published by the ABS as estimates of future growth in land value. This approach takes into account the full business cycle and long term trend of the property market and avoids the uncertainties of using economic variables.

Powerlink's response

Powerlink does not agree with the selective approach adopted by the AER in it Draft Decision for land escalators. The AER was not satisfied with Powerlink's forecast real land value escalators, but has adopted Powerlink's methodology and hence lower forecasts in 2010/11 and 2011/12 as being representative of appropriate future movements to reflect the impact of the recent natural disasters. However, the AER did not reflect the expected higher increases in land values in subsequent years by adopting its own methodology thereafter.

Powerlink notes the historical land value trending over the last twenty years performed by the AER. However average land values over the last 10 years (2000-10) exhibit significantly different characteristics to the average in the 10 years prior (1990-2000). To compare land value escalators over the last 20 years without recognising this fact has the potential to understate land escalator values in the next regulatory period.

Urbis, Powerlink's independent expert in land value forecasting, has updated its forecast real land value escalators. This update includes actual data for 2010/11, which should address the AER's concerns regarding 2010/11 CPI assumptions. The Urbis report is attached in Appendix I.

The revised Urbis escalation factors have been established with due regard to historical data, and consideration of forecast economic factors to forecast real land value changes. The revised land value growth forecasts are close to the 20 year long term historical average and below the 10 year historical data[80]. The average of Powerlink's forecast land value movements to the end of the next regulatory period compares closely to those established by the AER, but better reflect

[79] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.67, AER, November 2011.
[80] Ibid, p.69.

the expected movements from year to year. For these reasons Powerlink considers the methodology recommended by Urbis and resultant land value escalators reasonably reflect the costs that a prudent TNSP in the circumstances of Powerlink will incur in the next regulatory period.

5.6 Revised real cost escalators

In its Draft Decision, the AER did not agree that Powerlink's proposed real cost escalators reasonably reflect a realistic expectation of the cost inputs required to achieve the AER's capital and operating objectives. The AER proposed substitute escalators which are summarised in Table 5.4[81].

Table 5.4: AER determined real cost escalators (%)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Internal labour - specialist	0.6	1.2	1.2	-0.8	-1.4	-2.3	-1.7
Internal labour - general	0.6	1.2	1.2	-0.8	-1.4	-2.3	-1.7
External labour	0.9	0.6	1.5	0.1	-0.8	-1.6	-1.1
Aluminium	1.1	-3.7	4.9	4.9	-0.3	2.1	1.0
Copper	10.9	-1.4	0.8	-2.5	-11.8	-7.1	-4.6
Steel	3.2	1.6	3.2	1.4	-1.7	-2.2	0.3
Plant and equipment	-11.5	-3.9	4.2	3.8	3.6	3.2	1.8
Land - urban	-3.3	5.5	8.4	8.4	8.4	8.4	8.4
Land - rural	0.7	8.5	8.8	8.8	8.8	8.8	8.8

Source: AER analysis and Deloitte Access Economics.

As discussed in detail in the above sections, Powerlink considers the escalators proposed by the AER in its Draft Decision do not reflect the costs that Powerlink will incur. As a result, Powerlink has provided further evidentiary and contemporary information to address the AER's concerns and to support the methodologies for escalators proposed in its Revenue Proposal. Powerlink's updated real cost escalators are provided in Table 5.5.

[81] Ibid, p.52.

Table 5.5: Powerlink revised real cost escalators (%)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Internal labour - specialist	1.1	3.8	2.2	3.6	3.5	3.3	3.3
Internal labour - general	1.1	3.8	2.2	3.6	3.5	3.3	3.3
External labour	7.3	1.6	3.2	4.9	4.0	2.6	6.1
Aluminium	-5.8	-3.6	3.1	4.8	3.3	2.9	5.4
Copper	3.4	-8.6	-2.9	1.0	-1.0	-1.6	0.8
Steel	-2.4	10.4	2.9	2.2	1.2	1.2	3.8
Plant and equipment	-16.2	3.0	3.1	3.3	3.3	3.4	6.2
Land - urban	-8.0	4.0	10.0	11.0	11.0	11.0	8.0
Land - rural	3.0	3.0	7.0	10.0	10.0	9.0	7.0

Source: SKM, BIS Shrapnel, KPMG Econtech and Urbis.

Powerlink considers that its revised real cost escalators establish costs that are both efficient and prudent. The methodology applied to establish the real cost escalators is transparent, independently sourced, robust and returns a realistic expectation of the reasonable cost inputs required to achieve the capital and operating expenditure objectives.

6 Demand Forecast

6.1 Summary

Chapter 8 of Powerlink's Revenue Proposal outlines the methodology applied to developing Powerlink's capital expenditure forecasts, and in particular the approach to demand forecasting. In developing the Revenue Proposal the 2010 Annual Planning Report (APR) was used to establish the forecast capital expenditure.

In its Draft Decision, the AER:

- did not accept Powerlink's demand forecast on the basis that it was not a realistic expectation of demand for the next regulatory period. The AER identified two key issues with Powerlink's demand forecast which the AER considered resulted in the forecast being too high:
    - Powerlink's temperature correction method (page 76); and
    - assumptions and inputs to Powerlink's demand models (page 76).
- accepted Powerlink's direct connect mining and industrial forecasts (page 94) as EMCa found that Powerlink reported the process whereby it had consulted directly with these customers[82].

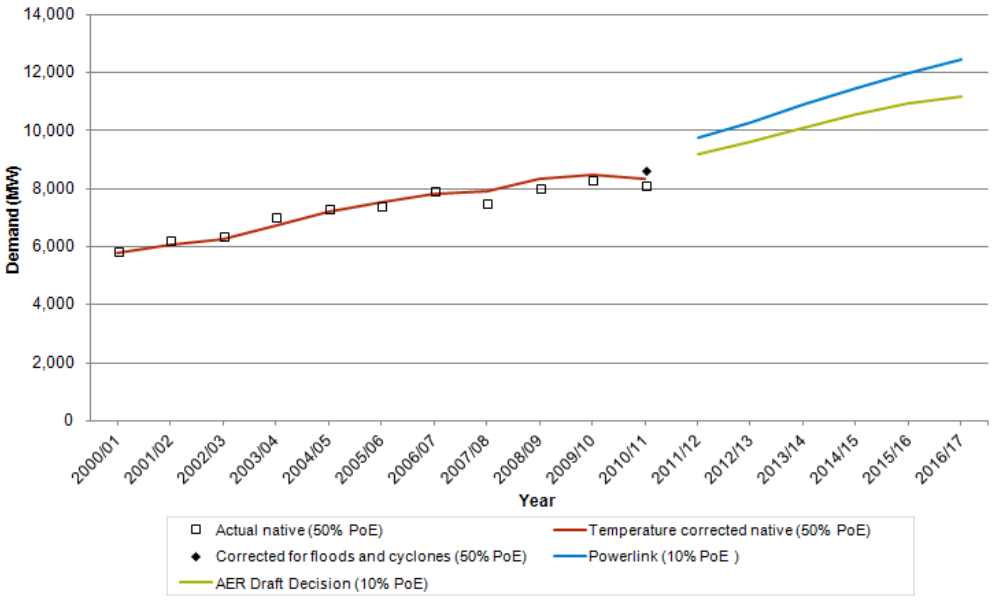
In place of Powerlink's demand forecast, the AER substituted its own view of the demand forecast for Queensland. The AER forecast is provided in Table 6.1, and shown in Figure 6.1, along with the demand forecast used to develop Powerlink's Revenue Proposal. Note that the historical "temperature corrected native demand" shown is corrected to 50% Probability of Exceedance (PoE)[83], whilst the AER shows the forward forecasts as 10% PoE.

Table 6.1: Powerlink and AER (10% PoE) demand forecasts (MW)[84]

	2012/13	2013/14	2014/15	2015/16	2016/17
Revenue Proposal	10,252	10,907	11,450	11,984	12,437
AER Draft Decision	9,632	10,090	10,547	10,931	11,146

[82] Demand Forecast Review, Report to AER, p.45, EMCa/NZIER, September 2011.
[83] Probability of Exceedance is further defined in the Annual Planning Report 2011, p.18, Powerlink Queensland, 2011.
[84] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.9, AER, November 2011.

Figure 6.1: Powerlink and AER demand forecasts[85]



Source: AER/Powerlink. Note that historical demand values are corrected to 50% PoE.

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree with the AER's conclusions. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

In preparing its Revised Revenue Proposal, Powerlink has adopted a revised demand forecast to take into account the latest information available from the National Institute of Economic and Industry Research (NIEIR), in particular the use of the latest economic outlooks for Queensland and the recent commitment of additional new customers connecting directly to Powerlink's network.

6.2 Powerlink's demand forecast methodology

AER Draft Decision

The AER's consultant, EMCa[86], considered Powerlink's approach to demand forecasting to be consistent with its regulatory requirements and has been adapted to support its probabilistic scenario-based capital expenditure planning approach. However, EMCa goes on to say that it had concerns that Powerlink has adopted a one size fits all forecasting approach[87].

Powerlink's response

The Rules[88] requires Powerlink to develop and publish the Queensland demand forecast, together with supporting detailed analysis and assumptions, every year as part of the Annual Planning Report (APR) and to consistently apply that demand forecast throughout the year. As market participants use Powerlink's demand forecast for investment and operational decisions, it is critical that it be prepared using good industry practice and be published on a

[85] Ibid.
[86] The report and comments attributed to EMCa throughout this chapter are the product of a report prepared jointly by EMCa and NZIER, however for clarity Powerlink refers only to EMCa to avoid confusion with NIEIR, the demand consultant used by Powerlink.
[87] Demand Forecast Review, Report to AER, EMCa/NZIER, p.17, September 2011.
[88] National Electricity Rules, Chapter 5, Clause 5.6.2A(b)(1), AEMC.

consistent and transparent basis. The Rules[89] further requires the TNSP to provide the forecast loads submitted by a Distribution Network Service Provider (DNSP) in accordance with Clause 5.6.1 or as modified in accordance with Clause 5.6.1(d). Clause 5.6.1 states that each relevant Registered Participant must provide short and long term electricity load forecast information for each connection point. Clause 5.6.1(d) provides that if Powerlink reasonably believes any forecast information to be inaccurate, Powerlink may modify the forecast information and notify parties of any modifications made.

The Rules[90] also requires that the annual planning reviews conducted with DNSPs be done using the forecast loads submitted or modified. The results of the annual planning review, including the demand forecast, are published in the APR by 30 June each year. The demand forecast is also provided to the Australian Energy Market Operator (AEMO) for use in the Electricity Statement of Opportunities (ESOO) and the National Transmission Network Development Plan (NTNDP).

Powerlink's Revenue Proposal included the forecasts of load growth relied upon to derive the capital expenditure forecasts and the methodology used for developing those forecasts of load growth, as set out in the Rules [91]. The AER Submission Guidelines also set out an expectation that the demand forecast will be in the same form as that provided to AEMO[92].

While EMCa appear to have applied the requirements of Chapter 5 of the Rules in assessing Powerlink's demand forecasting methodology, it has not similarly complied with the same requirements when developing its own alternate demand forecast as discussed in Section 6.7.

6.3 Temperature correction methodology

AER Draft Decision

The AER's Draft Decision accepted that using Queensland's actual demand for the 2010/11 summer would not be representative due to the floods and cyclones that occurred that summer. That is using actual demand for the 2010/11 summer as the starting point would bias the forecast[93].

Powerlink's response

Powerlink uses temperature correction to assess historical peak demands on a consistent basis. The AER has accepted that using actual historical demand adjusted for weather and diversity as the basis for forecasting future demand is reasonable in principle, and is common practice among network service providers in the NEM[94].

However, Powerlink has not corrected for the economic effect of floods and cyclones in the (historical) input to its demand forecasting model. These events also impacted on Gross State Product (GSP), which is an input to Powerlink's demand forecast model, and there was no requirement to correct the maximum demand for the floods and cyclones of 2011. In its 2011 APR, Powerlink has shown an adjustment to the demand in an effort to illustrate that summer 2010/11 demand was affected by the floods. For clarity this adjustment was not used as part of the demand forecast calculations used in this Revised Revenue Proposal.

[89] National Electricity Rules, Chapter 5, Clause 5.6.2A(b)(1), AEMC.
[90] National Electricity Rules, Chapter 5, Clause 5.6.2(b)1, AEMC.
[91] National Electricity Rules, Schedule 6A, Clause 1.1(3), AEMC.
[92] Electricity Transmission Network Service Providers Submission Guidelines, Clause 4.3.16, AER, September 2007.
[93] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.78, AER, November 2011.
[94] Ibid.

6.3.1 Use of average temperatures

AER Draft Decision

In its Draft Decision, the AER considered that Powerlink's use of the relationship between daily maximum demand and daily average temperature to correct historical demand was not appropriate. The AER regarded daily maximum demand as more highly correlated with daily maximum temperature, and thus considered maximum daily temperature was more appropriate for use in temperature correction[95].

In its report to the AER, EMCa stated that it had concerns with the use of daily average temperature ((max + min)/2) as the standard temperature in the adjustment calculation. EMCa was of the view that average temperatures may not reflect the full impact on demand compared to maximum temperatures[96]. EMCa was also persuaded by the use of max temperature in two recent temperature adjustment studies that they identified[97].

EMCa stated that it considered it preferable to use actual demands to calibrate forecasting models rather than "temperature-corrected" data and as described later, its analysis found a better fit to actual data. EMCa noted that Powerlink's temperature corrections have changed over time, so that historical corrected data tends not to be stable. This issue can be seen from successive APRs where corrected "actuals" are restated based on actual temperature corrections for that year[98].

Powerlink's response

Powerlink notes that EMCa does not cite the sources directly that led them to consider maximum temperature as more appropriate than average temperature. The reports referenced in EMCa's report[99] do not compare the use of maximum and average temperatures, but use maximum temperatures as the dependant variable. Powerlink does not consider this a sufficiently robust reason to substitute maximum temperature for average temperature.

Powerlink's weather and diversity corrected native demand may vary from year to year due to the fact that the changes in diversity associated with the five components that make up Queensland's demand (South West Queensland (SWQ), South East Queensland (SEQ), Central Queensland (CQ), North Queensland (NQ) and Industrial) need to be accounted for. These are updated each year based on 10 year rolling averages. That is, it is not the temperature correction that has changed, but the diversity factors[100].

Powerlink uses average temperatures for temperature correction as the average has been shown to be more representative of the conditions that drive Queensland summer peak demand days. Powerlink considers that there is an impact of overnight temperatures, and thus previous day temperatures, which has been verified by ACIL Tasman. In Queensland, overnight temperatures are recognised as an important factor, for example, the heat stored in buildings contributes to air conditioning demand the following day.

ACIL Tasman estimated separate linear regressions for the SEQ region for each summer season from 2000/01 to 2010/11. Separate regressions were estimated relating daily peak demands to daily maximum temperature, daily average ((max + min)/2), and both daily maximum and minimum separately, with each regression including a constant[101].

[95] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.76, AER, November 2011.
[96] Demand Forecast Review, Report to AER, p.27, EMCa/NZIER, September 2011.
[97] Ibid.
[98] Ibid, p.29.
[99] Ibid, p.53.
[100] The diversity factor is the ratio of the sum of the regional demands at their own peak to the system peak demand.
[101] Assessment of Load Forecast Methodology and Results, p.16, ACIL Tasman, December 2011.

The least squares of the temperature sensitivity regressions are shown in Table 6.2, where an R^2 value closer to one represents a better the fit of the model. All of the temperature sensitivity coefficients were statistically significant at the 5% level of significance.

Table 6.2: Results of temperature sensitivity regressions (R^2) for SEQ[102]

Year	Maximum temperature	Average temperature	Both maximum and minimum temperatures
2000/01	0.19	0.28	0.28
2001/02	0.43	0.46	0.49
2002/03	0.36	0.42	0.42
2003/04	0.58	0.74	0.74
2004/05	0.54	0.74	0.84
2005/06	0.74	0.68	0.81
2006/07	0.63	0.64	0.68
2007/08	0.39	0.56	0.55
2008/09	0.73	0.64	0.82
2009/10	0.72	0.69	0.78
2010/11	0.65	0.62	0.69

Data source: ACIL Tasman.

The data shows that the results are mixed, but that it is not sensible to make the claim that maximum temperature provides a superior fit to average temperature. In fact, in seven out of 11 years, the R^2 from the temperature sensitivity regression using the average of the daily maximum and minimum was superior to the use of the maximum temperature only.

The third column in the table shows the R^2 from a regression which included both the daily maximum and daily minimum. The fit from these models was superior to the regressions of maximum temperature alone in every single summer season. This suggests that there is indeed a role for the daily minimum temperature in any temperature correction methodology in Queensland, and that the use of the daily maximum temperature by itself does not capture some of the subtle interaction between daily maximum and minimum temperatures in determining the daily peak[103]. Powerlink considers that it is necessary, appropriate and reasonable to temperature correct actual demand using a daily average temperature when forecasting demand in Queensland.

6.3.2 Use of S-curve for South East Queensland

AER Draft Decision

In its Draft Decision, the AER considered that Powerlink's use of the S-curve in correcting demand in SEQ as not appropriate. EMCa considered that upward corrections to demand using the S-curve tend to be larger per degree Celsius than downward corrections, producing an upward bias to the resulting demand forecast[104].

In its report to the AER, EMCa stated that it was also concerned that the use of an S-curve rather than a linear relationship introduces an asymmetric adjustment[105].

[102] Assessment of Load Forecast Methodology and Results, p.19, ACIL Tasman, January 2012.
[103] Ibid.
[104] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.76, AER, November 2011.
[105] Demand Forecast Review, Report to AER, p.27, EMCa/NZIER, September 2011.

Powerlink's response

Powerlink is aware that the temperature correction adjustment is asymmetrical. However, Powerlink considers this to be reasonable as it more accurately reflects the observed sensitivity of demand in SEQ to temperature change compared to a linear approach. Whilst Powerlink notes that recently there have been few days in the higher temperature portion of the S-curve, there is a distinct relationship at the lower end of the S-curve that has been observed and must be considered. As such, Powerlink considers that use of a linear sensitivity must have a lower bound, as there is a temperature insensitive component to the load.

ACIL Tasman's analysis found that, as the temperature correction procedure was required to adjust the demand upwards along a flattening curve, it leads to a smaller correction than would occur if the correction was applied linearly. To demonstrate this, ACIL Tasman undertook linear temperature correction for the last three years, with the results of both the linear and S-curve corrected demands shown in Table 6.3[106].

Table 6.3: S-curve temperature versus linear temperature correction for SEQ[107]

Year	Actual Peak (MW)	Powerlink S-curve 50% PoE (MW)	Linear temperature correction 50% PoE (MW)	Per cent difference
2008/09	4,635	4,907	5,156	-4.84%
2009/10	4,740	4,914	4,925	-0.23%
2010/11	4,674	4,845	4,874	-0.60%

Data source: ACIL Tasman and Powerlink.

The analysis in Table 6.3 clearly shows that using an S-curve rather than a linear relationship to temperature correct would result in a lower temperature corrected demand over the last three years. This demonstrates that the S-curve approach is not biased in any particular way.

Furthermore, in demonstrating the dependency of demand on temperature in Figure 14 of its report, EMCa presented data from 2000 to 2011 as a single series. Powerlink does not consider this to be reasonable, as it failed to take account of any network growth component or the changing nature of the relationship between temperature and demand. Powerlink considers that it is inappropriate and misleading to compare demand on a 27 degree day in 2000 to demand on a 27 degree day in 2011 in this way. Figure 6.2 compares peak working day demand for SEQ as a function of average temperature for 2004 and 2010, two separate years of the (single) series shown by EMCa.

[106] Assessment of Load Forecasting Methodology and Results, p.16, ACIL Tasman, January 2012.
[107] Ibid.

Figure 6.2: SEQ working day summer demand versus average temperature, 2004 and 2010

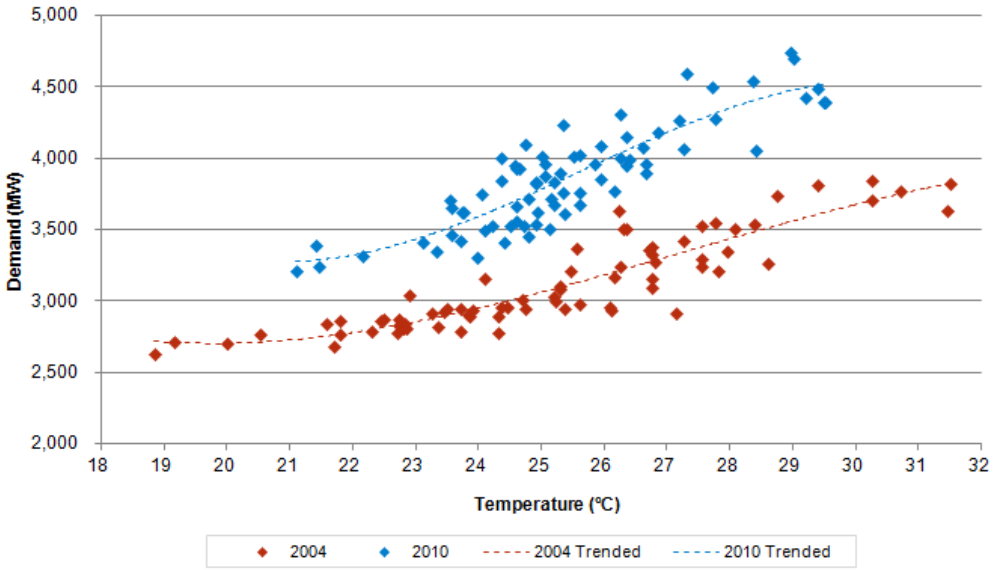


Figure 6.2 not only demonstrates the underlying demand growth from 2004 to 2010, but also demonstrates the non-linear relationship of demand to temperature, as well as the increasing slope of the line of best fit indicating increasing temperature sensitivity over time.

The above demonstrates that the S-curve approach to temperature correction in SEQ is a more appropriate method of temperature correction compared to a linear method. Powerlink maintains that the AER and EMCa have erred in proposing to use a linear approach and claiming that Powerlink's S-curve approach has an upward bias.

Further, historical demand should be temperature corrected to provide a standardised base on which to accurately forecast future demand. Failing to temperature correct actual demand for the purposes of forecasting future demand shows a lack of understanding of demand forecasting for Queensland conditions, as it will not take account of the changing Queensland demand diversity and result in an incorrect demand forecast.

6.4 Inputs to Powerlink's demand forecast

6.4.1 Population

AER Draft Decision

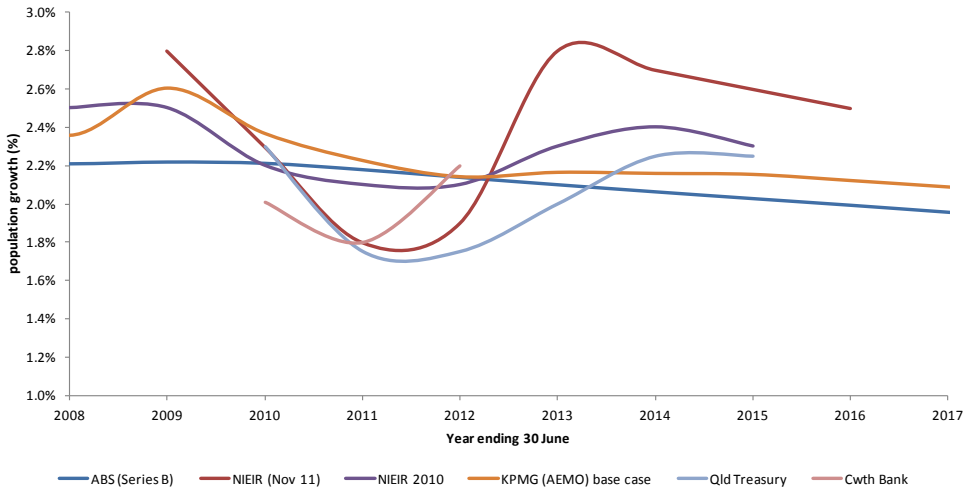
In its Draft Decision, the AER considered that certain inputs to Powerlink's top-down forecast are higher than forecasts from other sources, e.g. population. The AER was concerned that such inputs produced an upward bias to Powerlink's top-down demand forecast[108].

Powerlink's response

Powerlink, along with NIEIR and many other economic forecasters, do not consider the overall population as an indicator for future demand growth, rather the population growth. Figure 6.3 shows that there is a measure of uncertainty regarding the future growth of Queensland's population, as depicted by the variability in the forecast curves. However the NIEIR average population growth over the period is similar to other forecasts[109].

[108] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.76, AER, November 2011.
[109] While the figure does not show forecasts for other locations, this uncertainty is by no means peculiar to Queensland.

Figure 6.3: Population growth forecasts



Source: ACIL Tasman[110].

Figure 6.3 also shows that some forecasters, such as NIEIR and the Queensland Treasury, attempt to forecast the short term cycle in population growth while others such as the ABS and AEMO focus on the longer term trend[111].

Powerlink also notes that the AER accepted that NIEIR's forecast population growth rates appear consistent among other forecasters[112]. Given that it is the rate of population growth, rather than absolute population, that contributes to increases in demand and the acceptance by the AER that NIEIR's population growth rates are consistent with other forecasters, it is clearly wrong to conclude that the absolute population values used by NIEIR is providing an upward bias to the demand forecast. Therefore Powerlink consider that the AER should take account of this in reassessing Powerlink's demand forecast.

6.4.2 Electricity prices

AER Draft Decision

In its Draft Decision, the AER considered that other inputs to Powerlink's top-down forecast are considerably lower than forecasts from other sources, e.g. electricity prices. The AER also considered Powerlink did not appropriately recognise falling energy intensity trends when calibrating its econometric models, and that such inputs and assumptions also biased Powerlink's top-down demand forecast upward[113].

Powerlink's response

Powerlink notes that the Draft Decision quotes that "the Queensland Energy Minister expects retail price rises of 10% per year"[114], citing a website link as the source.

Having reviewed the source material, Powerlink is concerned that the AER has misunderstood the reference, as it is an unqualified comment made by a solar power system provider in response to an article in the Courier Mail on 1 June 2011. In the article, the Minster and the precedent press release, are referring to the Queensland Competition Authority (QCA) decision

[110] Assessment of Load Forecast Methodology and Results, p.27, ACIL Tasman, January 2012.
[111] Ibid.
[112] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.81, AER, November 2011.
[113] Ibid, p.76.
[114] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.82, AER, November 2011.

to set a price increase for 2011/12 of 6.6%, partially to recover from low energy sales in 2010/11 resulting from the floods and cyclones. The website that the AER has cited is a provider of solar power systems. Powerlink considers that appropriately robust sources should form the basis of key assumptions by the AER, as is expected of and adopted by Powerlink.

In developing its alternative forecast, EMCa has derived electricity price data from a number of sources and amalgamated them as a single series for forecasting purposes. Powerlink is concerned with this practice, as underlying assumptions may differ between sources, which can lead to unexplained step changes in the data. Given the ambiguity surrounding the sources of EMCa's price forecasts, as well as a lack of robust longer term price forecasts, Powerlink considers that the significant reliance EMCa place on forecast prices is flawed.

More importantly, Powerlink is concerned that the AER and EMCa have not fully understood the mechanism by which price rises would impact peak demand. To properly understand this, it is important to understand the difference between peak demand (in Watts) and energy consumption (in Watt hours).

Price elasticity is the measure by which demand (in this sense "demand" refers to the quantity sought by a market) responds to a change in price. AEMO considers that the price elasticity of peak demand is less than half the price elasticity of energy consumption. This is a very important and logical distinction which must be appreciated in forecasting peak demand in that consumers will moderate consumption during the year due to price, but will still use the air conditioning on a hot and humid summer afternoon given the price of electricity is the same all year round. AEMO has estimated that the elasticity of energy consumption in Queensland is -0.29. This implies that a value of approximately -0.14 or less would be expected for elasticity of peak demand[115]. The price elasticities derived using the EMCa methodology, of approximately -0.29, are much higher than expected by other experts' values of elasticity of peak demand.

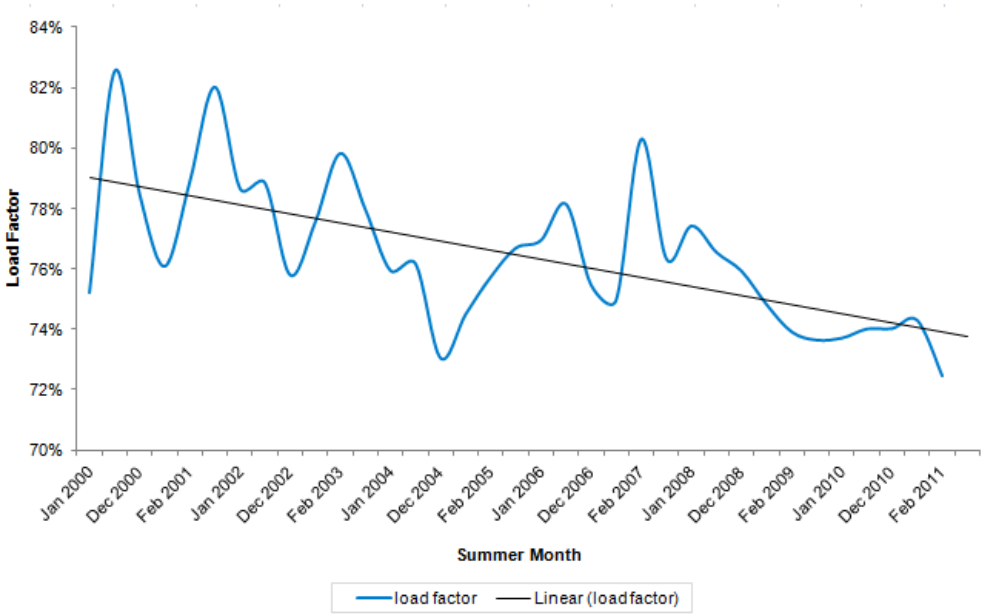
EMCa stated that they do not see evidence in Powerlink's peak demand forecasting approach that they would find satisfactory, to account for increasing embedded generation, distributed generation and energy efficiency measures. Although EMCa go on to say that these matters are partially addressed in NIEIR's 2011 forecast advice to Powerlink[116].

EMCa also found that a range of structural changes is evident from its independent examination of data, including a declining demand growth rate and a declining energy intensity of demand growth with GSP and population. Powerlink is well aware of the declining energy intensity of the network, and this is incorporated into its future demand forecasts in the form of the load factor. The load factor describes the relationship between peak demand and the average demand of a load. The average demand over the year corresponds to the energy consumption.

Consistent with Powerlink's observations, ACIL Tasman also noted that the load factor has been reducing over time, indicating that peak demand and energy consumption are growing at different rates. This trend can be seen in Figure 6.4, which shows the decline in load factor over the last decade in Queensland. This decline is largely due to the increasing penetration of air conditioning and the reduction in off-peak electricity usage for water heating and lighting due to mandated energy efficiency initiatives. Given the decline in load factor, it is consistent for demand growth to exceed energy consumption growth[117].

[115] Assessment of Load Forecast Methodology and Results, p.37, ACIL Tasman, January 2012.
[116] Demand Forecast Review, Report to AER, p.43, EMCa/NZIER, September 2011.
[117] Assessment of Load Forecast Methodology and Results, p.39, ACIL Tasman, January 2012.

Figure 6.4: Queensland load factor 2000 to 2011



Source: ACIL Tasman calculations based on AEMO data.

Powerlink's revised demand forecast is based on the latest NIEIR data available in November 2011 and includes the effects of embedded generation and recent policy changes[118]. Powerlink also considers that, in the near term, energy efficiency policies such as the use of efficient light bulbs and the phase-out of off-peak electric hot water systems will impact on energy consumption. However, these will have a negligible impact on peak electricity demand and contribute further to a declining load factor.

The impact of EMCa's pricing assumptions are all the more concerning given the flawed analysis that predicts a much higher price elasticity than expected from other industry experts[119]. The higher price elasticity and higher price assumptions account for the downward bias of the AER's alternate peak demand forecast. Powerlink considers that the reason for EMCa's higher price elasticity is due its non-inclusion of GSP in forecasting future peak demand, discussed further in the next section.

[redacted]

[118] Long Run Economic and Electricity Load Forecasts to 2029-30, p.54, NIEIR, November 2011.
[119] Assessment of Load Forecast Methodology and Results, p.36, ACIL Tasman, January 2012. Note the values in Table 6 of the ACIL Tasman report are estimates of price elasticity of energy consumption.

6.4.3 Gross State Product

AER Draft Decision

In its Draft Decision, the AER adopted EMCa's view that excluding GSP was appropriate in forecasting electricity demand as it had little explanatory power in the analysis. EMCa considered that the factors influenced by GSP were covered by other variables, such as population[121].

Powerlink's response

Powerlink's Revenue Proposal forecast an average annual demand growth of 4.2% per annum over the next regulatory period, which the AER summarised as being attributable to:

- the resource industry boom (particularly in the Surat Basin);
- strong population growth;
- return to pre-GFC economic growth trends; and
- the continuing penetration of domestic air conditioning.

Powerlink considers that, by excluding GSP from the analysis, the AER has not forecast the return to pre-GFC conditions in Queensland, and that it has underestimated the flow on effects of the resource industry boom in Queensland. To be clear, this economic activity is not just forecast to occur in the Surat Basin and the new Liquefied Natural Gas (LNG) industry, but also a resurgence in coal mining, with Queensland providing 75% of global export tonnage of metallurgical coal exports[122].

As noted previously, the AER accepted Powerlink's direct connect mining and industrial forecast. In undertaking its assessment of the factors driving growth in Queensland's underlying demand, EMCa determined that it was:

> appropriate to base underlying forecasts for non-mining electricity demands on GSP forecasts that do not include the mining contribution to GSP, in order to avoid double-counting[123].

In addition EMCa state that:

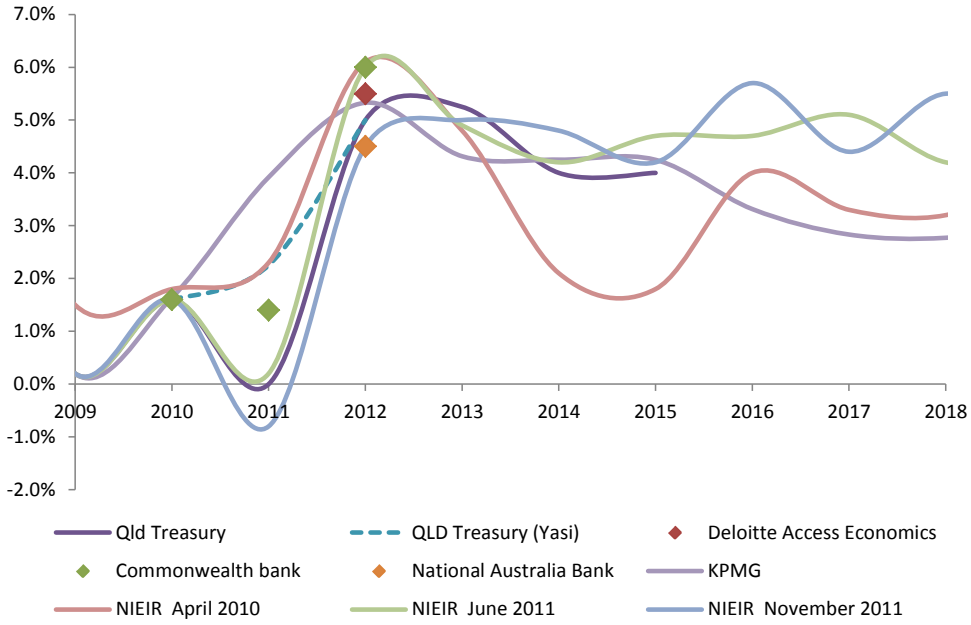
> Recalling that we had concerns with double counting of economic drivers we assembled our historic data on drivers, we used Queensland state GSP without mining contributions in our testing as mining/industrial demand was added directly to the output of the regression results[124].

Powerlink considers that the removal of mining contributions to GSP may explain why EMCa found that GSP had little explanatory power in the analysis. To address concerns over double counting of economic drivers, EMCa removed the mining GSP in undertaking its regression analysis as it considered that the mining GSP is entirely attributable to the Powerlink direct connect mining and industrial loads.

[120] Long Run Economic and Electricity Load Forecasts to 2029-30, p.52, NIEIR, November 2011.
[121] Demand Forecast Review, Report to AER, p.47, EMCa/NZIER, September 2011.
[122] Queensland Coal Export Forecast to 2015, A Business Intelligence Report by Bede Boyle, December 2010.
[123] Demand Forecast Review, Report to AER, p.32, EMCa/NZIER, September 2011.
[124] Demand Forecast Review, Report to AER, p.46, EMCa/NZIER, September 2011.

In fact, there is currently over 400MW of mining loads connected to Ergon through the distribution network. The current load growth Ergon forecasts to occur in the mining sector alone will exceed the 114MW of load growth that EMCa has forecast throughout the entire Ergon supply area to the end of the next regulatory period. There is a considerable amount of growth attributable to mining in the regions as well, with supporting infrastructure and ancillary loads and the flow on economic effect, not only in the local towns but throughout Queensland. EMCa appears not to have analysed NIEIR's expectations for GSP growth in detail, although it makes the general statement that Powerlink's (NIEIR's) assumed macroeconomic inputs are towards the upper end of accepted forecast ranges. Figure 6.5 provides a snapshot of various economic growth forecasts for Queensland.

Figure 6.5: Forecasts of GSP growth in Queensland[125]



Source: ACIL Tasman.

Figure 6.5 shows that the forecasts are broadly consistent to the extent that they all forecast a strong recovery in 2011/12, as Queensland recovers from the effects of the floods of early 2011, Cyclone Yasi and the global financial turmoil of recent years.

Powerlink considers that the NIEIR April 2010 forecast of GSP, which Powerlink's APR 2010 was based upon, was largely consistent with other forecasts in the longer term. Powerlink's revised demand forecast, discussed later in Section 6.8, is based upon the NIEIR outlook provided in late 2011. Figure 6.5 indicates that NIEIR's GSP forecast is within range of other forecasts in the shorter term, although higher than KPMG's view.

Powerlink considers that GSP is a better indicator of growth in Queensland than population. EMCa excluded GSP on the basis that it had little explanatory power in the analysis, and went on to say that most likely, the factors influenced by GSP were covered by other variables, such as population[126]. Using population as the sole indicator of economic activity implies that there is no change in economic productivity. That is, that the relationship between population and economic output remains constant.

[125] Assessment of Load Forecast Methodology and Results, p.30, ACIL Tasman, January 2012.
[126] Demand Forecast Review, Report to AER, p.47, EMCa/NZIER, September 2011.

Yet Deloitte Access Economics, in reviewing labour escalation rates for the AER in September 2011, made the following observations on the outlook for Queensland:

> The State's population kept growing, but its economy didn't. For that matter, population growth itself dropped away, as it has done in recent years, a consequence of the long period of poor performance that Queensland's economy has seen, as well as fewer foreign students starting courses[127].

Queensland Treasury is also optimistic on the outlook for Queensland:

> The benefits of the mining investment boom are starting to flow through to the rest of the economy, pointing to a surge in demand for professional, scientific and technical services workers.
>
> This, Queensland Treasury says, "includes roles that are directly benefiting from surging engineering construction, such as surveying and engineering design and consulting, as well as roles that are indirectly benefiting from increased corporate presence in the state, such as accounting, legal and management roles".
>
> "A sustained improvement in employment growth is expected to occur during 2012. Growth related to resource sector activity is expected to continue to remain strong. Moreover, a recovery in the household and non-engineering construction sectors is anticipated to gather pace over the year, supporting a more broad-based improvement in employment growth."[128]

Queensland Premier Anna Bligh pointed out that Business Investment in Queensland increased by 11.6% in the July-Sept Quarter of 2011, with Queensland making the biggest contribution to demand in the nation's economy, contributing 0.6 % to growth in Gross Domestic Product (GDP) in the quarter, ahead of Western Australia's contribution of 0.5 %[129].

Powerlink strongly considers failing to account of GSP growth in forecasting future demand growth in a growing economy such as Queensland is inappropriate. The analysis performed by ACIL Tasman shows that relying on population growth to reflect economic activity does not enable the expected bounce back in the Queensland economy and its impact on peak demand to be accurately forecast. The approach taken by EMCa to only use population growth over the last 11 years results in a low economic growth demand forecast as a result of the bias due to the recent GFC.

ACIL Tasman, in assessing the past performance of NIEIR's GSP performance, assessed the accuracy and bias of NIEIR's previous GSP and GDP forecasts for the financial year the report was released and for one to four financial years ahead[130]. ACIL Tasman considers the magnitude of the Mean Absolute Error (MAE) for the current financial year plus two, three and four years ahead to be low. For example, the MAE of 1.2 for the current financial year plus two years ahead implies that the average forecast real GDP growth over the three years was different by 1.2 percentage points (or approximately 0.4 percentage points per year). The results of this analysis are shown in Table 6.4.

[127] Report to AER on Labour Escalators, p.ii, Deloitte Access Economics, August 2011.
[128] Unprecedented Energy Boom Drives Queensland Economy, p.14, Courier Mail, 17 December 2011.
[129] Queensland is Number One, Queensland Government, 7 December 2011.
[130] Assessment of Load Forecast Methodology and Results, p.32, ACIL Tasman, January 2012.

Table 6.4: Accuracy and bias of NIEIR's historical forecasts compared to history

	Sample size	Average deviation (MAE)	Bias direction
	no.	% points	%
Australian real GDP			
Current year accuracy	5	0.4	-22.3
Current + one year ahead	5	1.4	-20.6
Current + two years ahead	4	1.2	26.9
Current + three years ahead	3	0.7	-50.7
Current + four years ahead	2	0.9	100.0
Queensland real GSP			
Current year accuracy	5	0.7	-60.7
Current + one year ahead	4	1.8	-35.5
Current + two years ahead	3	2.6	-46.9
Current + three years ahead	2	2.6	-84.0
Current + four years ahead	1	0.6	-100.0

Source: ACIL Tasman calculations from previous NIEIR forecasting reports and ABS catalogues 5206 and 5220.

Table 6.4 shows that NIEIR's previous Queensland GSP forecasts have historically exhibited a bias towards understating the rate of actual of growth (bias direction). Therefore it would be reasonable to expect that NIEIR's GSP forecasts are more likely to understate the rate of growth in the future. Considering the short term variance in the inputs this can be seen to contribute to the accuracy of recent forecasts. NIEIR provided the following in its November 2011 Outlook by way of explanation:

> As mentioned in the national outlook, GSP was much weaker in 2010-11 than originally forecast, driven by the (effect of the) floods. Weak consumer demand and slow recovery in mining production after the floods are some of the reasons GSP growth is particularly low in Queensland in 2010-11 at -0.8 per cent.
>
> Coal exports from Queensland in 2010-11 were down an estimated 25 million tonnes. The Floods had a large impact on 2010-11 Queensland GSP growth. Other factors contributing to such low forecasts are a contraction in government consumption, low growth in private expenditure, weaker of tourism as well (as) temporary crop damage[131].

GSP as an explanatory variable therefore incorporates both the effect of rising population and changing economic productivity over time. The use of population on its own can only capture part of the story, and will fail to fully capture the impact of changing economic activity over time. For this reason ACIL Tasman consider that GSP is a superior explanatory variable to use in the regression than population[132].

NIEIR's November 2011 model takes into account recent changes in Queensland GSP trends in forecasting future peak demand. ACIL Tasman found that the forecasts of GSP are within the

[131] Long Run Economic and Electricity Load Forecasts to 2029-30, p.21, NIEIR, November 2011.
[132] Assessment of Load Forecast Methodology and Results, p.43, ACIL Tasman, January 2012.

range of other economic forecasters[133], as can be seen in Figure 6.5. Again this demonstrates that the inclusion of GSP in preparing peak demand forecasts is reasonable and any alternative forecast that does not include GSP is inappropriate and will result in a downwards bias given the recent GFC.

6.4.4 Two-speed economy

AER Draft Decision

EMCa stated that it does not see evidence of the demand forecast accounting appropriately for the effects of the "two-speed economy" or of assessing forecast demands appropriately at a sectoral level. Further, EMCa considered that growth in the commercial component of the demand forecast used as a key input by Powerlink appears high and the effects of lower economic activity in the non-mining sectors appears not to have been fully accounted for.

EMCa also raised concerns that:

> Apart from the adjustments that Powerlink make to the DNSP inputs (and which are stated as being "minor") the core demand forecast uses only NIEIR input data. We have concerns that there appears to be a circularity in the preparation of the forecasts caused by the same data being used (i.e. temperature adjusted data provided by Powerlink to NIEIR and NIEIR inputs to Powerlink and to DNSP's) in both the top-down and the bottom-up aspects of Powerlink's methodology[134].

Powerlink's response

For clarification, Powerlink would like to clarify that it provides metered data to NIEIR, not temperature adjusted data as misunderstood by EMCa. Furthermore, both ENERGEX and Ergon have confirmed that they do not use the NIEIR system demand forecast for any formal forecasts. It is used as an independent check of the demand forecasts produced by ENERGEX and Ergon.

Powerlink considers that the NIEIR model, as well as the bottom-up demand forecast provided by the DNSP's, takes into account the "two speed economy" referred to by EMCa. The information being provided to Ergon and ENERGEX is that the growth industries are not just those directly in the mining and industry sectors, but also those which indirectly service this sector. For example, the road and rail transport, manufacturing and engineering industries.

NIEIR's forecast separates energy growth into large industrial (connected to Powerlink), commercial and industrial, and residential (both connected to the DNSP's) sectors. EMCa noted that residential energy growth was steady up until 2008, whilst the commercial and large industrial energy growth has fluctuated throughout the period since 2000/01[135]. EMCa has questioned the growth of what it classes as the commercial sector. For Queensland DNSPs, this is in fact the commercial and industrial component of the DNSP demand, which as mentioned previously includes a large component of mining load.

Powerlink considers that there is no circularity in the demand forecast inputs, and that its demand forecast does correctly account for the two-speed economy as the positive flow on effects of the resource boom will be seen throughout Queensland.

6.5 Demand forecast: direct connect industrial and mining loads

AER Draft Decision

The AER accepted Powerlink's direct connect mining and industrial component of the demand forecast as being reasonable. EMCa accepted Powerlink's mining forecasts as Powerlink reported

[133] Ibid, p.32.
[134] Demand Forecast Review, Report to AER, pp.18-19, EMCa/NZIER, September 2011.
[135] Ibid, p.37.

the process whereby it had consulted directly with these customers and they accepted that process[136].

Powerlink's response

The mining and industrial component of Powerlink's revised demand forecast includes only those loads that are already directly connected to the Powerlink transmission network or have executed (or are in the process of executing) a formal connection agreement with Powerlink to commit to such a connection. To be clear, this is distinct from the mining and associated load growth included in the distribution demand forecasts. In addition Powerlink continues to experience record levels of connection enquiries, particularly in the Surat Basin, Bowen Basin, Galilee Basin and the Gladstone area. Whilst no allowance has been included in Powerlink's demand forecast for these prospective new loads, these may trigger investments in contingent projects in the next regulatory period (refer to Chapter 8). Some of these proponents have reached financial close but have not yet committed to a Powerlink connection, while others are at an advanced stage of their investigations. The allowance for direct connect industrial and mining loads in Powerlink's revised demand forecast has increased, compared to the 2011 APR, reflecting the additional commitments that have since been made.

6.6 Past demand forecasting performance

AER Draft Decision

The AER is concerned that Powerlink's recent forecasts have consistently over-stated demand. It suggests Powerlink's methods and processes introduce an upward bias to its demand forecasts, including the forecasts for the next regulatory period. The AER considered that Powerlink's demand forecasts for the next regulatory period did not reflect a realistic expectation of demand.

Furthermore, in its report to the AER, EMCa stated that it had reviewed Powerlink's performance in forecasting demand since 2004 and that all forecasts from 2004 onwards have over-forecast demand. Specifically, EMCa noted that the forecasts have all commenced with significant first-year step increases followed by high growth paths and each of these has considerably over-estimated the peak demands that have eventuated[137].

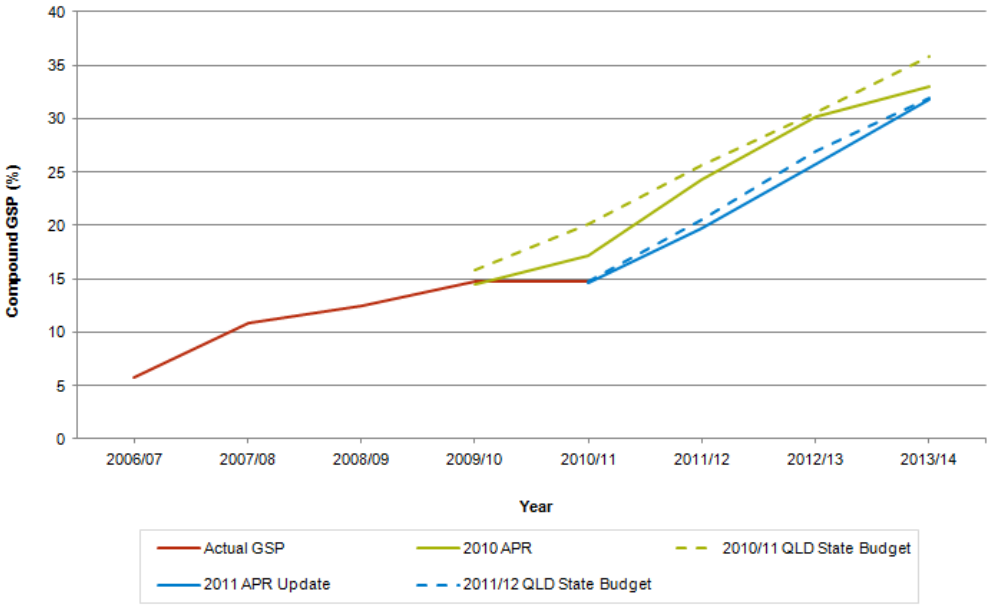
Powerlink's response

Powerlink's demand forecast is based on a number of input variables, all of which are effectively forecasts in themselves. Powerlink relies on industry experts to produce demand forecasts based on key economic inputs. As with any forecast process, a change to the inputs will affect the outputs, and this must be considered when analysing past performance.

When assessing Powerlink's past demand forecast, it is important to consider that recent forecasts of GSP have been optimistic, and that NIEIR has not been alone in overstating forecasts of GSP in Queensland. Other forecasts of GSP have predicted the return to economic prosperity, post GFC, sooner than has occurred. The economic forecasts of Queensland Treasury and NIEIR, shown in Figure 6.6 were similar in 2010/11 (at the time of developing the 2010 APR used in Powerlink's Revenue Proposal) and 2011/12 (at the time of developing the 2011 APR Update used in the Revised Revenue Proposal).

[136] Demand Forecast Review, Report to AER, pp.14-15, EMCa/NZIER, September 2011.
[137] Ibid, pp.14-15.

Figure 6.6: Comparison of recent NIEIR and QLD Treasury GSP forecasts



Source: Powerlink, NIEIR, QLD Treasury.

Powerlink has concerns that an assessment of the past forecasts without looking at the changes in the inputs to those forecasts does not separate variations due to the forecasting models from variations due to the inputs. Back-casting is a more effective measure of analysing past performance, and is similar to that performed on Powerlink's check model, discussed further in Section 6.6.1.

Back-casting is defined by AEMO in its 2011 Electricity Statement of Opportunities (ESOO), as:

> Back-casting involves "forecasting" historical maximum demands (MDs), and applies the current forecasting model to project values of seasonal MD that have already occurred (but were not used to derive the model).
>
> Back-casting takes actual economic and climatic conditions and temperatures into account to produce a single point MD projection for each season for comparison with the actual (historical) seasonal MDs [138].

It is important to note that back-casting can take the form of within-sample and out-of-sample analysis. The analysis applied by EMCa is classed as within-sample back-casting, which is running the least squares regression which minimises the sum of squared errors in the sample. In doing so, EMCa selected the model that delivered the highest R^2.

While back-casting provides an indication of model fit against the historical data, it is no guarantee that the model is reasonable for the purposes of forecasting. In fact, it is only by taking a subset of the historical sample and using the model to forecast out-of-sample that a true assessment of the model's forecasting performance can be obtained.

6.6.1 Powerlink's DNSP check model

In order to check whether Powerlink's demand forecast is reasonable, Powerlink has developed an econometric check model for the load connected to Powerlink through the DNSP's. This check model does not use NIEIR data to ensure that it represents an independent view.

[138] 2011 Electricity Statement of Opportunities, p.G2, Australian Energy Market Operator, August 2011.

To summarise, the check model:

- produces a demand forecast for the DNSP component that is consistent with NIEIR's forecast; and
- performs well when an out of sample back-cast is applied, thereby validating the model.

Method

Powerlink's check model regresses the following data against DNSP energy using a log/log approach from 2000/01 to 2010/11:

- Queensland GSP (Deloitte Access Economics – September 2011 Business outlook); and
- total Queensland electricity price (KPMG for AEMO- April 2011).

Following this regression the forecast DNSP energy is converted to demand by applying the trend of load factors. The historical load factors used to establish this trend are based on historical demand and energy. Forecast load factors are based both from this trend and expectations of air conditioning trends in the Queensland Household Survey[139]. A modest reduction in future load factors is assumed going forward based on flattening of the historical load factor curve. This demand is then adjusted to allow for the contribution of additional Photovoltaic (PV) systems expected to be installed in the future, on the basis that 50% of PV capacity is available at the time of peak demand, typically around 2:30-3:00pm. This is in line with findings by ENERGEX[140] and Ausgrid[141] in their respective studies into the effects of PV on peak demand.

Model Format

Powerlink has provided its demand forecast check model to the AER and its consultants on a confidential basis.

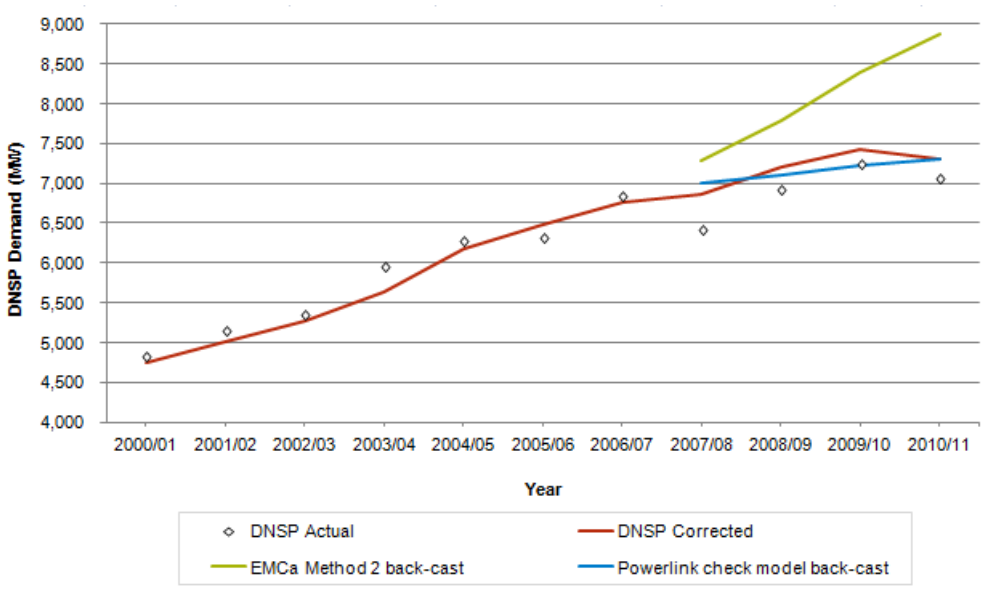
Out of sample back-cast validation

An out of sample back-cast has been included which uses the first seven years (2000/01 to 2006/07) to predict the final four years (2007/08 to 2010/11) of history. The inputs for the final four years are fed into the model predicted by the first seven years. The predicted outcomes of the final four years are then compared to the actual outcomes that occurred to determine the accuracy of the model. When comparing predicted to actual demand for these four years, the Mean Absolute Percentage Error (MAPE)[142] for energy is 1.8% while the MAPE for demand is 2.0%. By comparison, the same back-cast was carried out on the EMCa model and produced a

[139] Queensland Household Energy Survey 2010, p.60, Colman Brunton, February 2011.
[140] Electricity Network Capital Program Review 2011, p.63, Detailed Report of the Independent Panel, December 2011.
[141] Effect of Small Solar Photovoltaic (PV) Systems on Network Peak Demand, p.4, Ausgrid, October 2011.
[142] MAPE will be zero when the fit of the model is perfect, and a lower MAPE indicates a better fit of the model.

MAPE of 18.6% for South East Queensland[143]. Figure 6.7 shows the outputs of this analysis, and demonstrates that the Powerlink check model is likely to be a much better predictor of future demand.

Figure 6.7: Powerlink and EMCa Method 2 model back-cast



Source: Powerlink, EMCa, ACIL Tasman.

Figure 6.7 shows that the EMCa Method 2 fails to predict the actual demand outcomes during the last four years, most likely due to EMCa not using GSP and not reflecting the GFC, which casts serious doubts on its accuracy.

Check model compared to Powerlink's forecast

The check model aligns closely with NIEIR's forecast of the DNSP component of Powerlink's demand throughout the next regulatory period. Note that only the DNSP component of load is shown in Table 6.5 below:

[143] Assessment of Load Forecast Methodology and Results, p.56, ACIL Tasman, January 2012.

Table 6.5: Powerlink's check model forecast of DNSP Component (50% PoE medium growth)

Year	Powerlink check model (MW)	NIEIR (DNSP) late 2011 (MW)
2011/12	7,575	7,680
2012/13	7,935	8,023
2013/14	8,249	8,343
2014/15	8,530	8,626
2015/16	8,878	8,972
2016/17	9,184	9,274
2017/18	9,491	9,635
2018/19	9,772	9,967
2019/20	10,073	10,310
2020/21	10,399	10,608

6.6.2 Other matters

The AER also considered a submission by a third party in commenting on past demand forecasting performance. PAGE, in its submission to the AER, stated that:

> Powerlink's demand forecasting process is not robust or consistent in its application. PAGE also stated Powerlink's APRs continually exaggerated peak demand growth in order to justify projects such as the Woologah–Eerwah Vale, which has since been terminated[144].

For the avoidance of doubt Powerlink confirms that the above referenced project, which has been terminated, was an easement acquisition. The reason for the termination of the acquisition was due to a shift in the interest for new entrant gas fired generation from Central Queensland to South West Queensland. The resultant effect of this shift in generation was a reduction in the forecast flows on the network from Central Queensland into South East Queensland. Powerlink accounted for this in its forward planning, and determined the need to upgrade the network in this area had been deferred. Accordingly, the easement acquisition project to support this deferred augmentation was also deferred. Powerlink has not exaggerated its peak demand forecast to justify project augmentations. In fact, the Woolooga–Eerwah Vale augmentation project was already deferred outside the next regulatory period based on the demand forecast proposed by Powerlink in its Revenue Proposal.

Powerlink considers that the criticism levelled at the historical accuracy of its demand forecast in recent years does not take into account the variability around inputs to the demand forecast. Furthermore, prior to 2005, Powerlink's demand forecast, which relied on principally the same methodology used to develop the current forecasts, understated actual demand.

The demand forecast prepared by Powerlink is based on the best available information at the time, and considers not only economic indicators but also the information provided by its customers and the DNSPs, who are much "closer to the action". Powerlink considers that its demand forecast methodology is robust and is consistent in its application. Powerlink does not, under any circumstances, exaggerate peak demand growth in order to justify projects.

[144] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.92, AER, November 2011. (For clarification, the correct spelling is "Woolooga")

6.7 EMCa's alternative demand forecast

Powerlink found that the demand forecast proposed by EMCa did not meet the AER's own best practice forecasting format, in so far as it did not:

- utilise a bottom-up / top-down reconciliation approach;
- correctly take into account economic drivers; and
- did not provide any validation in terms of back-casting.

EMCa has only provided a high level top-down forecast and did not consider the bottom-up assessment suggested by the AER as being consistent with best practice forecasting, i.e. the DNSP demand forecast from ENERGEX and Ergon which is a key component that underpins Powerlink's demand forecast.

In its 2009/10 regulatory review of the Queensland DNSPs, the AER, through its consultants McLennan Magasanik Associates (MMA), significantly reduced the ENERGEX and Ergon demand growth rates in its Final Decision [145] to between 3.8% and 3.4% per annum, respectively. However, the AER's Draft Decision for Powerlink has assumed a DNSP growth rate for demand of only 1.8% per annum, which is completely at odds with the growth rate in the AER's associated distribution decision.

Powerlink considers that, having not taken into account the effect of growth in the DNSP component of Powerlink's demand, the AER has created a mismatch between the bottom-up and top-down forecasts.

6.7.1 Independent review

Powerlink engaged ACIL Tasman to undertake an independent analysis of EMCa's demand forecast and the methodology used to develop the alternative demand forecast that the AER accepted. ACIL Tasman's report is provided in Appendix J. ACIL Tasman found that the demand forecast prepared by EMCa and adopted by the AER suffers from an unsound methodology and produces a demand forecast which is strongly biased downwards for a number of reasons, including:

- EMCa's model does not capture economic drivers;
- it exhibits a biased relationship between population and peak demand;
- it is based upon an unreasonable relationship between price and peak demand;
- maximum temperature coefficient fails to capture increasing temperature sensitivity over time; and
- EMCa's Method 2 model provides a poor back-cast of demand.

These points are discussed further below.

EMCa model does not capture economic drivers

Since the peak demand in a region is driven primarily by economic and demographic factors, a well specified model should incorporate both drivers. ACIL Tasman stated that its:

> first concern with EMCa's model is that it does not capture the economic drivers of peak demand[146].

[145] Final Decision, Queensland Distribution Determination 2010–11 to 2014–15, pp.64-65, AER, May 2010.
[146] Assessment of Load Forecast Methodology and Results, p.42, ACIL Tasman, January 2012.

EMCa considered two alternative measures of economic activity for its forecasting model, population and GSP. However, EMCa subsequently omitted GSP from its consideration on the basis that GSP had little explanatory power in the analysis.

Population, when used as a substitute for GSP as an economic driver, assumes that economic productivity remains constant throughout the period. While changing economic conditions will influence population growth, population trends are much more stable than those exhibited by GSP, which also moves due to wide variations in economic output.

ACIL Tasman's view is:

> that using GSP instead of population as an explanatory variable is more sound, both from an empirical and theoretical perspective. Even with the empirical observation that in a model containing both population and GSP variables where population is significant but GSP is not, we are of the view that, if either variable is to be omitted, it should be population[147].

Therefore, Powerlink does not consider that EMCa's analysis appropriately captures economic drivers of demand.

Biased relationship between population and peak demand

ACIL Tasman found that the failure of EMCa's Method 2 to capture the economic slowdown experienced in Queensland over the last three years will lead to potential biases in the existing coefficients of the model.

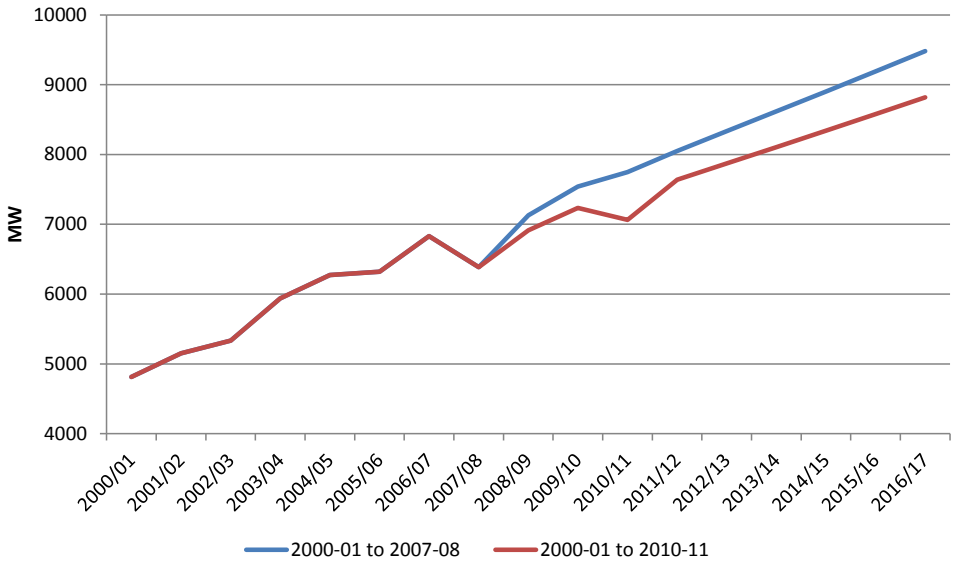
By omitting GSP as a variable in its model, EMCa's existing model specification will mistakenly attribute some of the decline in economic activity to the existing variables in the model, the two most important of these being price and population. Since population trends are much more stable than those exhibited by GSP, the expected impact of this specification is to overstate the sensitivity of demand due to recent price changes while reducing the sensitivity of peak demand to changes in population.

To demonstrate the significance of the effect of the economic slowdown of the last three years on the relationship between population and peak demand in EMCa's model specification, ACIL Tasman has estimated the population coefficients measuring the sensitivity of peak demand to changing population for both the full historical sample as well as the period up to the end of 2007/08, before the onset of the economic slowdown. Note that the effect of price has been excluded from this analysis to show the effect of population only. However, temperature has been considered.

The results in Figure 6.8 show the effect of the economic slowdown using EMCa's model, in which population is the key driver. The red curve shows the regression based on the full 11 years of historical data. The blue curve is an out of sample back-cast that uses the first eight years of historical data to establish the model and uses the next three years of actual input data to forecast from 2008/09. The divergence between the two curves shows that population alone cannot be used to explain the variables influenced by economic activity. Ignoring the GSP and regressing against population introduces a downward bias in the population coefficient because of the GFC and therefore leads to a downward bias in the EMCa demand forecast.

[147] Assessment of Load Forecast Methodology and Results, pp.44-45, ACIL Tasman, January 2012.

Figure 6.8: Impact of economic slowdown on a population driven model



Source: ACIL Tasman (DNSP forecasts only).

EMCa's model, which does not account for the economic effects of the GFC, will fail to capture the effects of any economic recovery. Powerlink considers that this is unrealistic and hence contrary to the requirements of the Rules[148].

Unreasonable relationship between price and peak demand

ACIL Tasman also has concerns that EMCa's model suggests a strong relationship between electricity demand and price that is not consistent with theoretical expectations or other empirical studies. ACIL Tasman go on to say that:

> The price coefficients in the EMCa Method 2 regression model cannot be interpreted directly other than to note that they have the correct sign, i.e. they are negative, so demand falls when price increases[149].

and that:

> while the elasticities of EMCa's Method 2 regression model look to be within an acceptable range for price elasticities of energy (as summarised by Fan and Hyndman), they are in fact too high to be credible estimates of the price elasticity of peak demand [150].

ACIL Tasman considers that the reason EMCA's price elasticity coefficients are biased is due to EMCa's decision to use population in place of GSP as the economic input to its Method 2 model. As demonstrated in Figure 6.8 above, population alone fails to capture the economic effects of the GFC, and this has the effect of placing undue reliance on the electricity price.

ACIL Tasman agrees that, in assessing the input data to EMCa's model, increases in price result in a decline in demand growth. The decline in demand growth noted by EMCa also coincides with significant reductions in GSP growth. As EMCa had not included GSP in its analysis, it appears to have assigned the entire reduction in demand to the increase in electricity price. Whilst this is likely to be a contributing factor, ACIL Tasman considers that the decline in GSP would be of greater importance.

[148] National Electricity Rules, Chapter 6A, Clause 6A.6.7(c)(3), AEMC.
[149] Assessment of Load Forecast Methodology and Results, p.49, ACIL Tasman, January 2012.
[150] Ibid.

Maximum temperature coefficient fails to capture increasing temperature sensitivity over time

EMCa's Method 2 model includes maximum temperature on the day of the annual peak in electricity demand in Queensland as a way of controlling for temperature effects as it is based on a series of peak demands that is not weather corrected.

ACIL Tasman identified that, in using a linear regression to determine the relationship between weather and demand over the historical period 2000/01 to 2010/11, EMCa has assessed that this relationship remains constant over time.

EMCa's decision to assume that the relationship between weather and electricity demand has been constant is likely to understate future demand, even if it is assumed that air conditioner penetration has saturated and there is no further growth in temperature sensitivity available from this source in the forecast period. Powerlink considers that EMCa are being very conservative in assuming that air conditioner penetration has saturated in Queensland. Powerlink's view is that air conditioning growth has not saturated[151], and the effect of recently installed units will not be seen until the "stinking hot and humid summer" conditions occur.

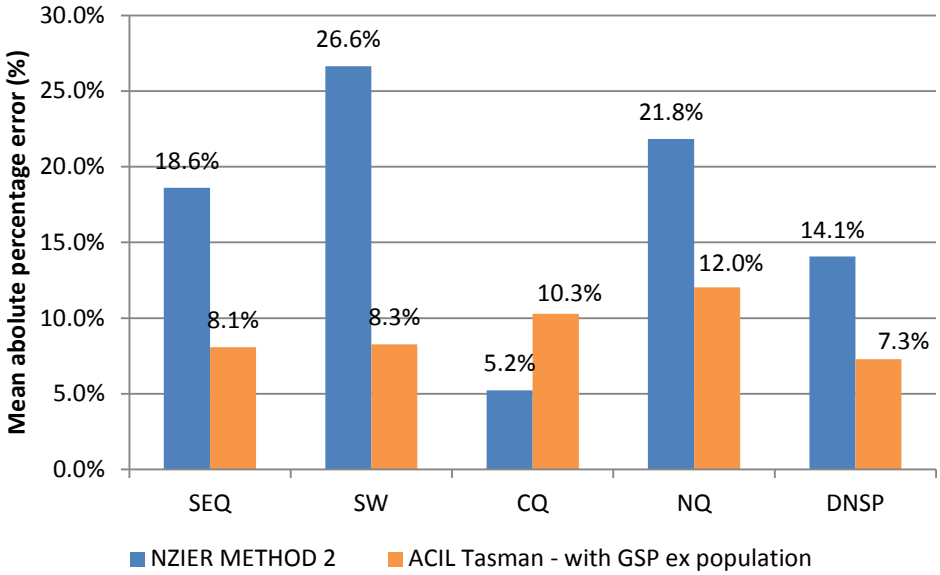
ACIL Tasman also found that regressions of both average daily and maximum temperature exhibited a rising trend over time, demonstrating an increasing temperature sensitivity.

EMCa Method 2 model back-casts poorly

ACIL Tasman has re-estimated EMCa's Method 2 model using a subset of data to conduct an out-of-sample back-cast. The available time series was split so that EMCa's model was calibrated using the first seven years of data. The estimated coefficients from this model were used to calculate peak demand for the remaining four years.

ACIL Tasman also performed the same process using a model which replaced population with GSP as the driving variable. The MAPE of both models for each of Powerlink's four demand areas are shown in Figure 6.9.

Figure 6.9: EMCA versus amended model – 4 year out of sample back-cast, MAPE (%)[152]



Source: ACIL Tasman.

[151] Queensland Household Energy Survey 2010, p.60, Colman Brunton, February 2011.
[152] Assessment of Load Forecast Methodology and Results, p.56, ACIL Tasman, January 2012. Note that ACIL Tasman was not provided with the EMCa/NZIER model.

Figure 6.9 shows that the model with GSP included as an explanatory variable instead of population has greater versatility and is better able to forecast peak demand as it captures economic impacts beyond that of population alone.

Assessment against forecasting principles

EMCa consider it essential that any forecast is developed under a set of design principles, in the same way that a set of principles or policy directs how business strategy and planning are developed. Part of New Zealand Institute of Economic Research's[153] (NZIER) recent review of demand forecasting for Transpower, the TNSP in New Zealand, was to assess whether the following forecast principles were appropriate and whether Transpower's forecasts were consistent with these or other principles, as follows:

- **accurately representing uncertainty** – the forecast must describe the range of possible outcomes, rather than having an unrealistic expectation of pinpoint accuracy;
- **fit for purpose –** the forecast must be prepared and presented in a form that is suitable for grid planning activities;
- **stable** – the forecast should not change unduly from year to year, and should not be excessively sensitive to any one input parameter; and
- **seasonal** – the forecast must accurately represent seasonal trends, to the extent possible given available information**.**

In providing its view on what would constitute best practice forecasting, the AER[154] provided the following points of reference:

- accuracy and unbiasedness;
- transparency and repeatability;
- incorporation of key drivers;
- model validation and testing;
- accuracy and consistency of forecasts at different levels of aggregation;
- use of the most recent input information;
- spatial (bottom-up) forecasts validated by independent system level (top-down) forecasts;
- weather normalisation;
- adjusting for temporary transfers and discrete block loads; and
- incorporation of maturity profile of service area in spatial time series.

Powerlink considers the following in response to the practices and principles identified above.

Accurately representing uncertainty

EMCa considered that the declining growth of energy consumption in the Queensland market represents an increase in risk to Powerlink. Whilst Powerlink is required to provide an energy forecast as part of the APR, it is the summer peak demand forecast that drives capital expenditure in Queensland.

Powerlink considers that future economic growth presents more uncertainty challenges for Queensland. To take into account this uncertainty, Powerlink use a range of forecasts, which

[153] Demand Forecast Review, Report to AER, p.16, EMCa/NZIER, September 2011.
[154] Presentation to ENA Working Group, Energy and Demand Forecasting, AER, 18 March 2011.

take account of likely summer conditions (90% PoE, 50% PoE and 10% PoE) and a range of likely economic outlooks (low, medium and high growth).

Powerlink considers that EMCa has not in fact represented the uncertainty of higher or lower economic growth patterns in providing only a single economic outlook.

Fit for purpose

EMCa stated that the forecast must be prepared and presented in a form that is suitable for grid planning activities. Powerlink considers that the forecasts prepared for and provided with the APR meet these objectives, given that it has been prepared consistent with the Rules and best electricity industry practice.

EMCa also stated that it has concerns that Powerlink has adopted a one size fits all forecasting approach. EMCa noted that Powerlink's demand forecast seems to be used for a variety of purposes, such as annual planning, short and long term grid investment planning, operational planning, tariff determination and long term strategic planning, as well as planning for the purposes of meeting this regulatory requirement[155]. Powerlink is required to provide, and has provided, its demand forecast in the same form as provided to NEMMCO (now AEMO)[156]. Powerlink prepares a single set of demand forecasts annually as part of the APR process and these are indeed used for a variety of purposes. As mentioned previously, Powerlink considers that this is consistent with good electricity industry practice throughout the NEM, and that it would be inappropriate for Powerlink to base its regulatory proposal on any other demand forecast. Powerlink notes that EMCa provided only one demand forecast outlook based on the same modelling principles.

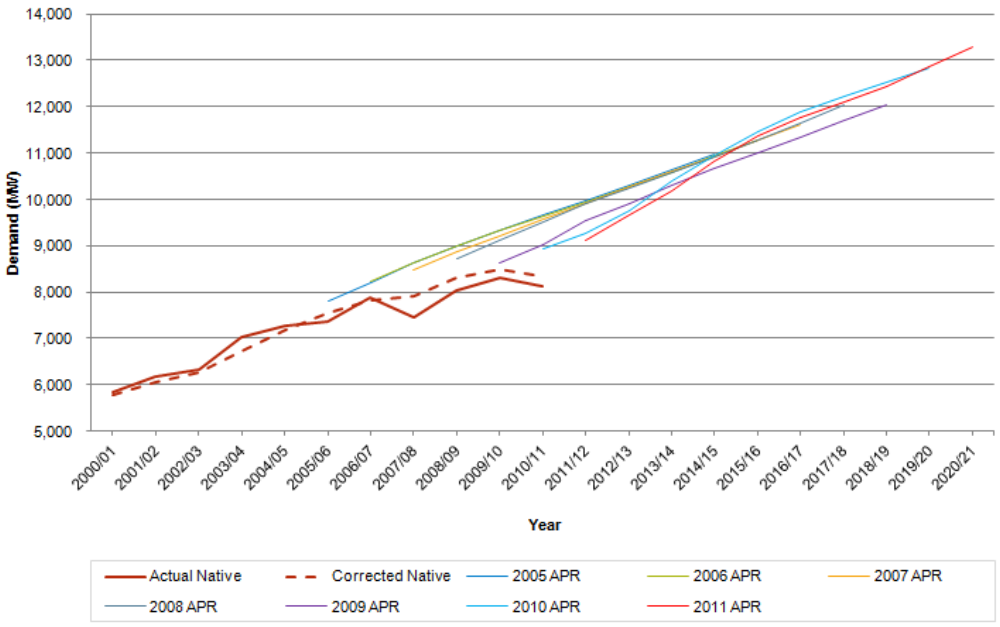
Stability and repeatability

EMCa considers that the validation of demand forecasts is an essential principle when uncertainty and risks are rising[157]. Powerlink issues new demand forecasts annually to take account of changing circumstances. Notwithstanding this Powerlink considers that overall, its demand forecasts are largely stable.

Figure 6.10 below shows that the demand forecasts exhibit stable growth patterns, with recent increases in the overall demand growth a result of increased GSP forecasts as well as the inclusion of the Queensland LNG industry from the 2010 APR. The forecasts take into account the effect of the GFC from 2008, with industry experts forecasting a return to high growth in 2011/12 as was seen after the 1991 recession[158]. It is important to note that LNG, in 2017, is expected to only contribute $3.2b to state GSP, out of a total of over $300b. By contrast, at the end of the 2013-17 regulatory period it is expected to contribute around 6% to peak demand.

[155] Demand Forecast Review, Report to AER, p.17, EMCa/NZIER, September 2011.
[156] Electricity Transmission Network Service Providers Submission Guidelines, Clause 4.3.16, p.19, AER, September 2007.
[157] Demand Forecast Review, Report to AER, p.17, EMCa/NZIER, September 2011.
[158] Assessment of Load Forecasting Methodology and Results, Appendix A, p.A-4, ACIL Tasman, January 2012.

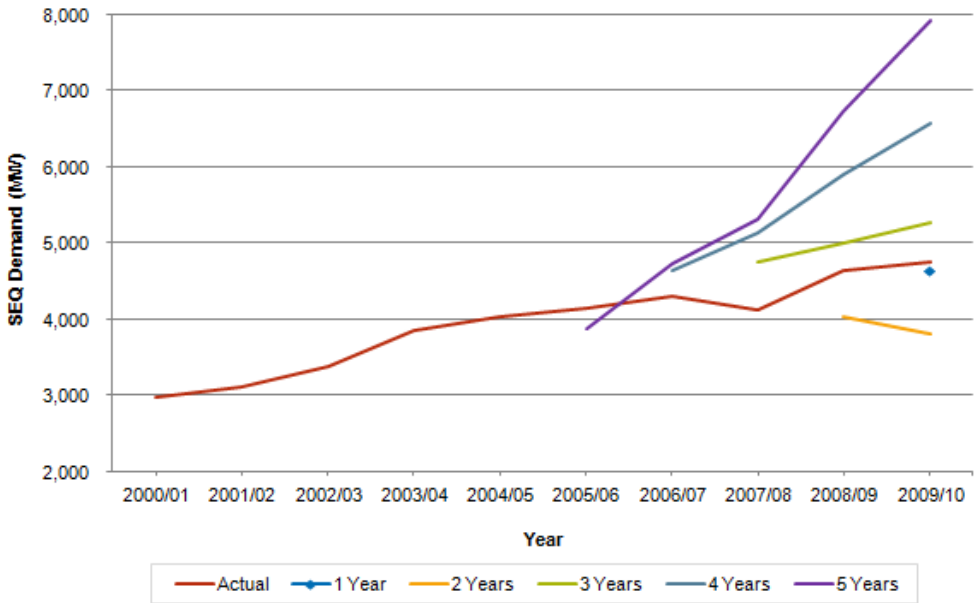
Figure 6.10: Powerlink demand forecasts[159]



Source: Powerlink APR's, 2005 – 2011.

By contrast, EMCa's regression analysis does not present a stable outcome, as can be seen in Figure 6.11 below. To demonstrate this, Powerlink undertook analysis using EMCa's model for South East Queensland, successively removing years from the regressions and using the actual (historical) inputs to produce the back-cast model based on the EMCa model. For instance, the curve "2 years" has had the last two years of actual data removed, and the model developed by the EMCa methodology on the preceding nine years, with actual inputs applied to the last two years.

Figure 6.11: Assessment of EMCa's model stability for SEQ



[159] This graph is a reproduction of Figure 6, p.15 in the Demand Forecast Review by EMCa/NZIER, however in the Demand Forecast Review report the 2008 APR curve appears to be incorrect.

Source: Powerlink analysis of EMCa data.

Figure 6.11 shows the effect that the analysis described above would have on the EMCa demand forecasts for South East Queensland. This shows extreme volatility in what the model forecasts compared to actual.

Seasonality

EMCa noted that Powerlink's forecasting process takes into account seasonal variations, adjusts for temperature variation and allows for uncertain temperature outcomes and their impact. However, EMCa had concerns about the methods used for this adjustment[160].

Powerlink's demand forecast process does take seasonal variations in temperature into account. Powerlink has responded to concerns raised about this approach in preceding sections and consider that its demand forecast appropriately and correctly accounts for seasonality.

While EMCa's demand forecast also adjusts for seasonality, given the short time series of historical data available to EMCa[161], and cooler summers in the latter part of the last 11 years Powerlink does not consider that EMCa's demand forecast adjusts fully for seasonality. In fact, EMCa's failure to account for recent mild summers will further bias the demand forecast downward.

Transparency

The econometric model that provides Powerlink's top-down forecast is the intellectual property of NIEIR. Therefore, Powerlink is not able to release the model. However, Powerlink does provide, by way of the APR, transparency of the bottom-up component of its demand forecast for the DNSP loads. Powerlink also provided the AER, on a confidential basis, the NIEIR report which details a number of key inputs and assumptions used in the development of the demand forecasts for Powerlink.

Powerlink has also provided information to the AER as part of the Revised Revenue Proposal on its own check model of the DNSP demand forecast which is transparent in nature as a reasonableness check against NIEIR's demand forecast.

EMCa has provided its methodology in its report and, provided the input assumptions are available, it should be possible to reproduce the analysis. Whilst EMCa considered that GSP had little explanatory power in the analysis[162], EMCa was not transparent and provided no justification as to why this was the case.

Incorporation of key drivers

Powerlink's top-down demand forecast developed by NIEIR takes account of the key drivers of demand in Queensland. Temperature is a key driver of demand, with the recent mild summers in Queensland in contrast to the "stinking hot and humid" conditions that drive peak demand and are expected to reoccur in the future. Powerlink consider that economic indicators such as GSP, must be included to accurately represent future conditions. In Section 6.4.3, Powerlink has demonstrated that NIEIR's forecasts of GSP are largely consistent with other industry experts.

On the other hand, EMCa considers population as the key economic indicator. Powerlink is of the view that this may only be the case were economic productivity to remain constant, but this is an unrealistic assumption going forward.

[160] Demand Forecast Review, Report to AER, p.18, EMCa/NZIER, September 2011.
[161] Ibid, p.46.
[162] Demand Forecast Review, Report to AER, p47, EMCa/NZIER, September 2011.

Price elasticity and government policies

Powerlink and EMCa have both incorporated the effects of electricity price movements and government policies, into the demand analysis, albeit in very different ways. Powerlink considers that both of these measures will impact significantly on energy consumption, but a lesser effect on the peak demand.

EMCa hypothesise that the effect on peak demand is much larger than other forecasters and industry experts have allowed. Powerlink considers that EMCa has overstated this adjustment. This can be seen in the back-cast in Figure 6.7, where the downturn in recent years is due to applying more sensitivity to price instead of factoring in the GFC. This, in turn, applies a greater down turn to predicted demand into the future and any economic recovery, or past economic activity, is not accounted for.

Model validation and testing

Powerlink is unable to provide details of NIEIR's model due to the proprietary nature of the model. However Powerlink does provide a check model that is transparent and validates well against testing and the NIEIR model forecast.

EMCa's model was made available to Powerlink but, as demonstrated in the sections above, does not validate well. Powerlink considers that this poor validation casts significant doubt on its reasonableness.

Use of most recent input information

Powerlink has considered the effect of the most recent inputs and has sought a revised demand forecast from NIEIR, as well as from the customers and DNSPs in preparing its Revised Revenue Proposal. Powerlink has revised its demand forecast using the same process to produce the APR forecasts in June, and the most up to date information.

EMCa's demand forecast relied upon information provided by Powerlink and publicly available information from 2011. Whilst Powerlink agrees that this is good practice, Powerlink does not agree that EMCa has used the input information appropriately in its analysis.

Bottom-up / top-down validation

Powerlink provides a validated demand forecast by way of comparing the NIEIR top-down economic forecast with the DNSP and customer bottom-up forecast. ENERGEX and Ergon have confirmed that the NIEIR forecast is only used as a check for their demand forecast and not adopted by the DNSPs as the actual forecast. This point should clarify and address EMCa's circularity concerns with the potential for the DNSPs to only use the NIEIR forecast to derive the demand forecast.

EMCa did not undertake any form of bottom-up demand analysis, and in doing so provide a demand forecast that is wholly inconsistent with Ergon and ENERGEX forecasts.

Summary

The AER adopted EMCa's demand forecast in its Draft Decision. Powerlink found that the EMCa demand forecast did not satisfy many of the criteria put forward by EMCa, as well as those considered to be best practice forecasting by the AER. In contrast, Powerlink's demand forecast meets many of these good forecasting principles and as such would be expected to reasonably reflect a reasonable expectation of the demand forecast in the circumstances of Powerlink and Queensland.

Powerlink provides a summary of the assessments against best forecasting practices put forward by the AER, and the principles provided by EMCa in its assessment of Powerlink's demand forecast, in Table 6.6.

Table 6.6: Assessment of demand forecast methodologies against best forecasting practice

Measure	Powerlink	EMCa
Accurately representing uncertainty	Yes	No
Fitness for purpose	Yes	No
Stability	Yes	No
Seasonality	Yes	No
Transparency and repeatability	No*	Yes
Key drivers: weather, major loads, air conditioning and economic growth	Yes	No
Price elasticity and Government policies	Yes	Yes
Model validation and testing	No*	No
Most recent input information	Yes	Yes
Bottom-up / top-down validation	Yes	No

* NIEIR Model: No, Powerlink Check Model: Yes.

6.8 Revised demand forecast

Powerlink sought an updated demand forecast from NIEIR to take into account recent changes in conditions. This was provided to Powerlink in late 2011 and underpins Powerlink's proposed capital expenditure forecast in the Revised Revenue Proposal. The updated forecast from NIEIR has factored in the low economic growth which has occurred since producing the APR 2010 forecast, which was used as the basis for Powerlink's Revenue Proposal.

NIEIR provided a system level forecast for Powerlink in late 2011 by the same process used to develop the APR forecasts. Powerlink has also revised the forecast for its direct connect mining and industrial customers, resulting in a further increase in direct connect demand. For clarification, this component of Powerlink's revised direct connect demand forecast only includes those loads that are already directly connected to Powerlink's transmission network or have executed (or are in the process of executing) a formal connection agreement with Powerlink to commit to such a transmission connection. Powerlink considers that its revised demand forecast provides a realistic expectation of demand, as it:

- takes into account the bottom-up spatial and top-down econometric forecast;
- relies upon reasonable estimates of input information;
- is based upon appropriate use of input information;
- accurately accounts for the effect of temperature on demand;
- includes the impact of policies and price;
- is stable;
- is based upon the most recent input information; and
- incorporates the effects of economic growth.

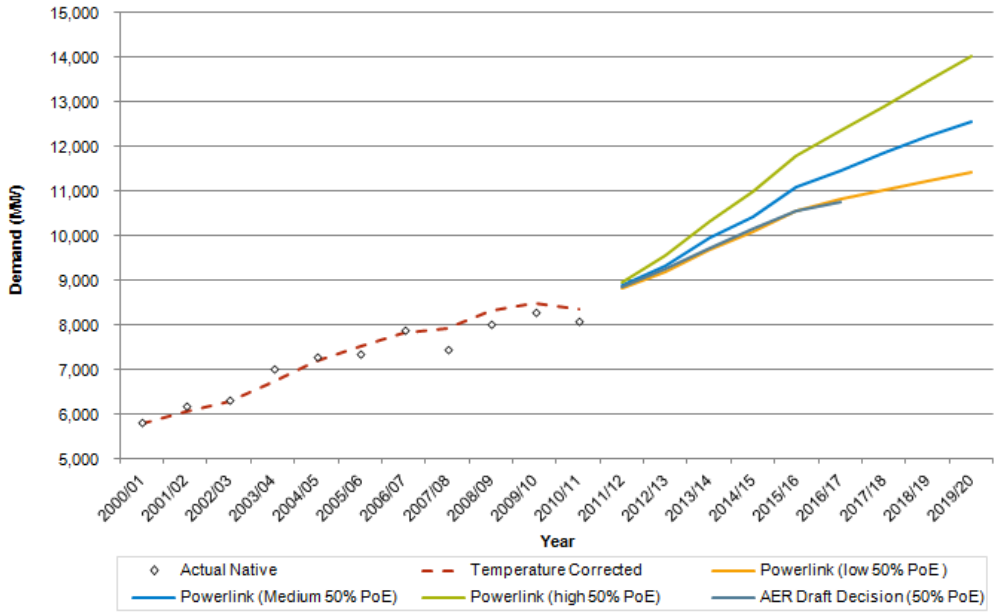
Powerlink's revised 50% PoE demand forecast, for low, medium and high growth scenarios, is detailed in Table 6.7 and shown in Figure 6.12. Powerlink has also provided the AER's demand forecast view for reference.

Table 6.7: Revised 50% PoE demand forecasts (MW)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
AER Draft Decision (Medium)	8,841	9,259	9,711	10,161	10,537	10,746		
Revised Revenue Proposal (Low)	8,826	9,186	9,689	10,072	10,566	10,810	11,010	11,221
Revised Revenue Proposal (Medium)	8,877	9,331	9,962	10,434	11,085	11,464	11,853	12,215
Revised Revenue Proposal (High)	8,960	9,539	10,314	10,973	11,777	12,344	12,900	13,457

Source: Powerlink and AER data.

Figure 6.12: Revised Powerlink 50% PoE demand forecasts



Powerlink does not accept that the AER has provided a "realistic expectation" of demand growth in Queensland, given the significant shortcomings of the EMCa model discussed in Section 6.7.

7 Forecast Capital Expenditure

7.1 Summary

Chapter 8 of Powerlink's Revenue Proposal sets out the methodology followed to determine the capital expenditure forecast for the next regulatory period. This included the key inputs and assumptions used in determining the capital expenditure forecast.

As explained in the Revenue Proposal, in comparison to the current regulatory period, the next regulatory period:

- continues to have high demand growth, growing from an even higher base;
- has a similar ongoing need to replace assets;
- includes extending the transmission network into the Surat Basin; and
- establishes a 500kV transmission network into South East Queensland.

In its Draft Decision, the AER made an assessment of Powerlink's forecast capital expenditure for the next regulatory period and:

- considered Powerlink's capital governance framework is generally consistent with good industry practice. The AER also considers Powerlink generally implements the framework when developing, approving and implementing individual projects. However, the AER identified issues in the way Powerlink applied the framework in relation to the 500kV network (page 53);
- identified issues regarding information flow between the asset owner and the asset management functions. These issues apply particularly to significant strategic capital projects such as the proposed 500kV network (page 56);
- included a $45m ($2011/12) efficiency adjustment to Powerlink's forecast capital expenditure on the basis that Powerlink could improve the efficiency with which it undertakes its investment program (page 56);
- considered Powerlink's probabilistic planning approach is sound, and is a useful tool for establishing a view on Powerlink's risk exposure across a range of scenarios. However, the accuracy of the output of this approach depends on the input assumptions used to construct the scenarios (page 107);
- considered the probabilities Powerlink assigned to the CPT targets are not appropriate because they do not reflect the current and previous Australian Governments' formal carbon reduction commitments to date (page 112);
- considered Powerlink did not provide sufficient evidence to suggest global action on carbon emissions would trigger the Australian Government to adopt the higher targets (page 115);
- was concerned about Powerlink's application of the revised probabilities in the probabilistic model, particularly the probability for the 25% target (page 116);
- rejected Powerlink's proposed three per cent cost estimation risk factor (page 117);
- considered the annual Base Planning Object (BPO) update as appropriate tool for improving Powerlink's base cost estimating procedures (page 119);
- considered EMCa's approach to adjusting load driven capital expenditure (due to the demand adjustment) is reasonable (page 123);

- reduced the expenditure allowance for Powerlink's 500kV projects by $544m ($2011/12) and in particular:
    - identified issues in the way Powerlink applied the governance framework in relation to the 500kV network (page 124);
    - recognised transmission network service providers may have a need for long term strategic acquisition of easements (page 127);
    - accepted that action is required to address the limitations to the 275kV network that have been identified in Powerlink's routine planning studies (page 129);
    - considered there are a number of possible solutions available to Powerlink to address this reliability of supply issue, including non-network solutions (page 129);
    - considered that Powerlink has not demonstrated the need for, and efficient costs of, the incremental cost for all four 500kV projects (page 129);
    - considered that a decision to accept the 500kV incremental cost in proposed forecast capital expenditure should be underpinned by cost-benefit planning studies (page 130);
    - considered that the Regulatory Test undertaken in 2009 for the Halys–Blackwall project did not appropriately demonstrate the economic benefits of the incremental cost of the 500kV build (page 131);
    - considered that the assumption that Powerlink will be unable to acquire 275kV easements for the project in the future this should have been tested rather than assumed (page 131);
    - Powerlink did not consider non-network solutions to the 275kV limitation problem. Rather, Powerlink restricted consideration of non–network solutions to the 500kV network build (page 131);
    - expected that for such a significant project that has widespread impacts on the Queensland transmission network, Powerlink would have undertaken a full strategic analysis demonstrating the need to move to a 500kV network, complete with alternatives (pages 131);
    - considered that Powerlink may be able to include the 500kV incremental costs as a contingent project in its revised revenue proposal (page 131); and
    - accepted Powerlink's response to AEMO's submission and has not re-classified the project expenditure as a contingent project based on the reasons submitted by AEMO (page 132).
- accepted the non–load driven capital expenditure of $1,389.6m ($2011/12) proposed by Powerlink for the next regulatory period (page 133), in particular:
    - was satisfied Powerlink's proposed replacement capital expenditure of $1229.1m ($2011/12) reasonably reflect the capital expenditure criteria (page 137);
    - accepted the security/compliance capital expenditure of $50.7m ($2011/12) proposed by Powerlink for the next regulatory period (page 141); and

  - accepted the other capital expenditure of $109.8m ($2011/12) proposed by Powerlink for the next regulatory period (page 144).

- accepted the non–network capital expenditure of $120.1m ($2011/12) proposed by Powerlink for the next regulatory period (page 144), in particular:
  - accepted the business IT capital expenditure of $78.1m ($2011/12) proposed by Powerlink for the next regulatory period (page 149); and
  - considered the proposed commercial buildings capital expenditure of $18.1m ($2011/12) is in line with historical trends. In conjunction with other findings indicates the proposed commercial building capital expenditure is likely to reasonably reflect the capital expenditure criteria (page 151).
- did not accept Powerlink's proposed allowance for equity raising costs associated with its forecast capital expenditure (page 152); and
- rejected Powerlink's proposal to recover additional equity raising costs for its contingent project application to amend its 2007–2012 revenue decision (page 160).

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

7.2 Probabilistic planning approach

AER Draft Decision

The AER considered Powerlink's probabilistic planning approach is sound, and is a useful tool for establishing a view on Powerlink's risk exposure across a range of scenarios. However, the AER noted that the accuracy of the output of this approach depends on the input assumptions used to construct the scenarios. The AER also identified some concerns with inputs to the model, notably around the demand forecast and carbon reduction trajectory.

The AER also considered that Powerlink should revise its probabilistic planning model to reflect updated information on lower demand forecasts and a low carbon reduction scenario based on carbon reduction targets set by the Australian Government.

Powerlink's response

Powerlink confirms that the inputs and assumptions described in this Revised Revenue Proposal have been reflected in the probabilistic planning approach used to develop Powerlink's updated capital expenditure forecast. In particular, the Revised Revenue Proposal is underpinned by the updated demand forecast described in Chapter 6 and revised carbon price trajectory discussed in Section 7.3.

7.3 Carbon Price Trajectory (CPT)

7.3.1 Possibility of higher CPT targets

AER Draft Decision

The AER considered that the probabilities Powerlink assigned to the CPT targets are not appropriate because they do not reflect the current and previous Australian Governments' formal carbon reduction commitments to date.

The AER considered that only the five per cent target reflects the likely scenario during the next regulatory period. The AER adopted this single theme set outcome in setting Powerlink's capital expenditure in its Draft Decision.

The AER also noted that:

- it is reasonable to at least assign a lower probability to the 25% reduction given it is a more stringent target than the 10-15%;
- it is arguable the higher CPT scenarios should be assigned non-zero probabilities given the Australian Government's conditional commitment at the Cancun Conference[163]. However, such assignments would be arbitrary given the uncertainty regarding other countries' future carbon commitments to the Accord become legally binding; and
- even if the Australian Government commits to the higher CPT scenarios, there is still the question of when in the next regulatory period the commitment would take place and when those commitments manifest into policies and other instruments. In turn, there is the question of when such policies and instruments affect Powerlink's network.

Powerlink's response

Powerlink commissioned leading industry expert ROAM Consulting to provide plausible market development scenarios with their corresponding probabilities. These plausible market scenarios were developed on the basis of likely and influential external drivers affecting the development of Powerlink's transmission network. These were identified as:

- Carbon Price Trajectory (CPT): 5%, 10-15% and 25%;
- Economic Outlook: demand growth corresponding to high, medium and low economic growth outlooks; and
- LNG export industry: moderate and extensive development.

ROAM Consulting ascribed probabilities to the outcomes of each theme set based on its analysis of the political and economic outlook. This work was performed in early 2010 and the probabilities assigned to the CPT outcomes are listed in Table 7.1.

Table 7.1: ROAM's original (May 2010) CPT outcome probabilities

CPT outcome (% reduction from 2000 levels by 2020)	Probability
5%	40%
10-15%	57.5%
25%	2.5%

Source: ROAM Consulting.

In developing its response to the AER's Draft Decision and Revised Revenue Proposal, Powerlink again engaged the assistance of ROAM Consulting to provide an update to the probabilities of the CPT given recent announcements and world events on CPT. ROAM Consulting's response is included in Appendix K.

[163] Factsheet: Australia's Emissions Reduction Targets, Department of Climate Change and Energy Efficiency, Australian Government, 2011.

ROAM Consulting concedes that it is now appropriate that the probability of a 25% CPT outcome be made lower than the more moderate targets of 10-15%, but maintains a position of uncertainty that targets will remain at 5% by 2020.

ROAM Consulting's updated CPT outcome probabilities are provided in Table 7.2.

Table 7.2: Revised CPT outcome probabilities

CPT outcome (% reduction from 2000 levels by 2020)	Probability
5%	80%
10-15%	17.5%
25%	2.5%

Source: ROAM Consulting.

As recognised in ROAM Consulting's letter attached in Appendix K, generation developers and financing companies invest ahead of policy decisions. Therefore impacts are experienced ahead of policy decisions. By assigning 100% probability to the five per cent target scenarios the AER effectively rules out any possibility of higher abatement scenarios impacting Powerlink during the next regulatory period. ROAM Consulting considers that it is unreasonable to be so definite that Australia will target a five per cent reduction in carbon by 2020, given the potential that exists for higher commitments. It is also unreasonable to be so definite that higher targets will not have an impact on Powerlink's capital expenditure, given the reliance of transmission on sources of generation.

Powerlink has adopted ROAM Consulting's latest independent expert advice summarised in Table 7.2 in the capital expenditure forecast in this Revised Revenue Proposal.

7.3.2 Provision of evidence

AER Draft Decision

The AER considered Powerlink did not provide sufficient evidence to suggest global action on carbon emissions would trigger the Australian Government to adopt the higher targets.

In the Draft Decision the AER noted that EMCa considered the Australian Government's commitment is not likely to deliver carbon reductions above five per cent. EMCa went on to say that it is thus pragmatic to simplify Powerlink's modelling by discarding the higher CPT scenarios.

Powerlink's response

As cited in the AER's Draft Decision, the Australian Government submitted its commitments to the United Nations Framework Convention on Climate Change's Copenhagen Accord:

> Consistent with our commitment to do no more and no less than the rest of the world, we are today submitting our existing target range: 5 per cent unconditional, with up to 15 per cent and 25 per cent both conditional on the extent of action by others, as set out in May last year[164].

Powerlink considers that the word of the Australian Government is sufficient evidence that it would adopt higher targets if there was sufficient global action on carbon emissions.

In response to EMCa's observations about the deliverability of the Australian Government's commitment to carbon reduction, Powerlink considers that EMCa had commented upon matters which are outside its area of expertise.

[164] Australia's Submission to Copenhagen Accord, Australian Government, 27 January 2010.

By contrast, ROAM Consulting has proven industry expertise and depth in this field and has provided advice on plausible market development scenarios for the majority of the TNSPs in the NEM for many years. ROAM Consulting's expertise extends to climate policy and is well respected, having provided advice to numerous companies and government organisations including: the Clean Energy Council, Australian Government Treasury and the Australian Energy Market Commission. As such, ROAM Consulting is well placed to develop the CPT probabilities.

7.3.3 Incorporation of revised probabilities into market development scenarios

AER Draft Decision

The AER is also concerned about Powerlink's application of the revised probabilities in the probabilistic model, particularly the probability for the 25% target. The AER go on to note that artificially assigning a 10% probability to scenario 20 appears to produce an upward bias in the probabilistic model and explains some of the disparity between Powerlink's revised capital expenditure adjustment and the AER's reduction. The AER considered that Powerlink's revised CPT probabilities, especially the revised weighting to the 25% target, was not appropriate.

Powerlink's response

Powerlink agree with the AER's concerns regarding the assignment of probabilities to scenario 20. ROAM Consulting's new probability assignment of the 25% CPT addresses these concerns. The revised 25% CPT probability is consistent with the initial probability ascribed in ROAM Consulting's original work (May 2010). Therefore, Powerlink has used the final probability of 1.24% assigned to scenario 20. The remaining probability assigned to the greater than a five per cent CPT targets is distributed amongst the 10-15% target scenarios ensuring that the relative probability ratios are maintained.

7.3.4 CPT summary

The concerns of the AER and its consultants regarding CPT probabilities have been comprehensively addressed in the previous three sections. Revised CPT probabilities have been updated by independent industry experts ROAM Consulting. These updated probabilities have been reflected in the scenario probabilities used to forecast the capital expenditure in the next regulatory period and are a valid and reasonable expectation of Powerlink's capital expenditure needs.

7.4 Cost estimate risk factor

AER Draft Decision

The AER rejected Powerlink's proposed 3% cost estimation risk factor on the grounds that such risks should be accounted for by way of Powerlink's BPO update process.

The AER concluded that Powerlink's annual BPO update accounts for risks faced in the past and that good project management, planning and risk mitigation should minimise risks and cost overruns. Further, that AER considered that a service provider's capital expenditure forecasts must appropriately account for risks likely to be experienced during a regulatory control period. The AER also concluded that the cost estimation risk factor represents a premium above forecasts that already include adjustments based on previous experience, including risk.

Powerlink's response

In its Revenue Proposal, Powerlink applied a cost estimation risk factor of 3% to unapproved, network capital projects only. That is, to relevant projects which have not yet been subjected to Powerlink's detailed, bottom-up scoping and estimating process due to their current, early stage in the project development and implementation cycle. The nature of the estimates to which the

cost estimation risk factor is applied is a concept or BPO-based estimate. The need to develop preliminary scopes and estimates is necessary by virtue of the regulatory process which requires the development of forecast costs for projects that may not commence for a period of several years from the date of those forecasts.

Concept estimates provide a top-down project cost estimate by assembling plant BPOs. Each BPO reflects the cost to establish a unit of plant. These are used to establish the likely cost to implement a project scope taking account of project site conditions and constraints from experience and project implementation plans. These estimates are exclusive of project risks – events which would not ordinarily occur and are not therefore included in the scope of the project.

These concept estimates are prepared up to 7 years ahead of the project trigger. In the interim, the project criteria including details about the route or site selection and the scope of works to be undertaken, will become more certain. However importantly, there is no opportunity for Powerlink to refresh the project costs with estimating data to incorporate the most recent project and market information subsequent to the AER's final revenue cap decision. Given that forecasts by nature are uncertain, it is reasonable that a project's out turn cost will likely differ from an early estimate where there has been no opportunity to revise forecasts of future costs as time passes.

For approved projects Powerlink applies a contingency allowance to account for unforseen changes in scope and cost associated with potential unrealised risks between the time the estimate was developed and project completion. To be clear, no costs associated with contingency allowances have been sought by Powerlink in its capital expenditure forecast. However these risks for which the contingency allowance is designed to cover, do eventuate. As stated by Evans and Peck, there is more opportunity for project cost overruns than cost underruns.

The cost estimation risk factor is established by expanding the project sample using Monte Carlo simulations, and normalising the data to remove the common mode estimating bias in the data. The residual asymmetry identifies the risk factor for each of the project categories exclusive of inherent estimating system biases. The risk factor represents the risk adjustment required to achieve the likely P50 project out turn cost. P50 refers to the probability that there is an equal chance of over and underspend in a project. A portfolio of project costs established at the P50 likely cost is more conservative compared with commercial practice where projects would generally be competitively tendered at or above a P70 risk target. That is commercial practice is to apply a higher risk factor than that proposed by Powerlink.

Evans and Peck has analysed the correlation of the top-down estimates to the project out turn costs and identified a risk factor of 4.5% for lines and 1.5% for substations[165]. The resultant 3% portfolio risk factor, which is established from equal weightings of the combined lines and easement projects (50%), and substation projects (50%), is included in Powerlink's Revenue Proposal and represents the asymmetrical risks inherent in the nature of the projects, demonstrated to be present, and supported by relevant Powerlink historical data.

Powerlink considers that it is unreasonable to expect that a project's cost will not be exceeded due to unforeseen issues or events such as additional rock, and extended periods of inclement weather, for which the risk of their occurrence has not been accounted for in the estimate, i.e. concept estimate. On this basis alone, the removal of the cost estimation risk factor from Powerlink's portfolio of work removes a valid, independently identifiable cost to the organisation as evidenced by the Evans and Peck report[166].

[165] Capital Program Estimating Risk Analysis, Evans and Peck, p.2, 16 May 2011.
[166] Capital Program Estimating Risk Analysis, Evans and Peck, 16 May 2011.

The analysis by Evans and Peck of the project outturn costs against the project costs forecast in Powerlink's 2007-12 Revenue Proposal finds the cost impact of unforeseen events can be significant on individual projects, and to a lesser extent to the portfolio of projects. Given that the risk factor provides for unforseen events only the application of a portfolio risk of 3% is a conservative allowance providing Powerlink the opportunity to recover the costs that an efficient and prudent TNSP will incur.

Powerlink also notes that the AER has agreed to the application of a cost estimation risk factor in previous TNSP decisions, including Powerlink's 2007-08 to 2011-12 revenue cap. In the TransGrid Decision[167], the AER stated:

> However, recognising the reasonableness of providing a risk adjustment for risks outside TransGrid's control, the AER considered that a risk adjustment allowance $11 million ($2007–08) less than that being sought was reflective of the costs that a prudent operator in the circumstances of TransGrid would require to achieve the capex objectives in accordance with the capex criteria.

In the ElectraNet Decision[168], the AER stated:

> However, recognising the reasonableness of providing a cost estimation risk factor for risks outside ElectraNet's control, the AER allowed a 2.6 per cent risk factor. This was based on a more general approach undertaken by Evans and Peck for Powerlink during its revenue reset and accepted by the AER. This was considered reasonable, given ElectraNet's reliance on Powerlink for developing the BPOs and project scope and estimates.
>
> ....Therefore, consistent with the draft decision, the AER considers that a 2.6 per cent risk factor will provide ElectraNet with a total capex allowance that reasonably reflects the efficient costs that a prudent operator in the circumstances of ElectraNet would require to achieve the capex objectives[169].

The cost estimation risk factor represents the costs that will at least be incurred for risks that should not simply be added to Powerlink's underlying and robust BPO estimating process. The risk factor proposed by Powerlink has been calculated by an independent industry expert, Evans and Peck, using Powerlink's historical outturn project costs. This report is included in Appendix L. The inclusion of this risk factor is based on the best evidence available (being Powerlink's internal business records), consistent with previous AER decisions, provides a realistic expectation of costs and reasonably reflects the costs that an efficient and prudent TNSP will incur.

Powerlink's Revised Revenue Proposal includes the application of a cost estimation risk factor of 3% across the unapproved network portfolio of forecast capital expenditure projects. No contingency has been applied to the capital expenditure forecast.

7.5 Efficiency adjustment

AER Draft Decision

In its Draft Decision, the AER applied a $45 million ($2011/12) efficiency adjustment to Powerlink's forecast capital expenditure in the form of a 1% reduction in year two of its regulatory period and 2% reduction each year thereafter.

The adjustment was made on the advice of EMCa, who considered that Powerlink had the potential to improve the efficiency of its capital expenditure costs by formally instituting a performance improvement program[170]. EMCa suggest that efficiencies may include measures

[167] Final Decision, TransGrid Transmission Determination 2009-10 to 2013-14, p.34, AER, 28 April 2009.
[168] Final Decision, ElectraNet Transmission Determination 2008-09 to 2012-13, p.48, AER, 11 April 2008.
[169] Ibid, p.52.
[170] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.106, AER, November 2011.

such as gains from resource smoothing, proactive facilitation of viable non-network solutions, smart grid initiatives and focused identification of synergies between projects. The reasons advanced by EMCa for such an adjustment were:

- based on its experience with past transmission reviews and assessments of network service provider costs in various jurisdictions;
- Powerlink has achieved a reduction in historical expenditure by comparison with its allowance;
- that Powerlink does not appear to have such a program; and
- that Powerlink does not yet appear to be realising these potential gains[171].

Powerlink's response

Powerlink sought clarification from the AER on the inputs, methodology and modelling used to calculate the efficiency adjustment. The AER's response merely reiterated its Draft Decision comments that it was based on EMCa's experience with past transmission reviews and assessments of network service provider costs in various jurisdictions and on the basis Powerlink underspent its capital expenditure allowance in the first four years of the current regulatory period[172].

Powerlink does not consider that the efficiency adjustment to its forecast capital expenditure program is justified or appropriate for a number of reasons, namely:

- the lack of evidence provided by EMCa to justify its assertion that further capital efficiencies can be achieved; and
- that Powerlink has demonstrated that its capital and operating expenditure forecasts already incorporate such efficiencies.

The AER's response to Powerlink's request for further information provided no details or direction as to the underlying basis[173], for example, for the 1-2% reductions applied. However, further investigation by Powerlink indicates that EMCa's figures appear to be founded on what is best described as a 'rule-of-thumb' inference from a European benchmarking study using 2003-2006 data. The relevance of such a study to Australia, let alone Powerlink, is not demonstrated. It is strongly refuted for a range of reasons including:

- the benchmarking study disclaimer states that "The findings, conclusions and recommendations in the report only represent the viewpoint of the authors based on the analyses made in the project and cannot be taken as economic advice on the performance, optimal regulation or feasible policy of any given operator"[174];
- almost no new transmission lines were built in Europe at the time;
- most new European substations utilise more costly GIS technology rather than lower cost AIS technology, utilised by Powerlink; and
- international benchmarking data demonstrates that Powerlink is more efficient than its European counterparts.

[171] Email - RE: Request Powerlink/016 - Source, methodology and model for the calculation of the proposed efficiency scheme, AER, 8 December 2012.
[172] Ibid.
[173] Ibid.
[174] International Benchmarking of Electricity Transmission System Operators, Per Agrell and Peter Bogetoft, 9 March 2009.

EMCa and the AER do not make any attempt to reference or reflect the capital and operating expenditure evidence which Powerlink has already put before it which demonstrates its current level of efficiency and the measures put in place to deliver improvements going forward. The AER has not provided in the Draft Decision as reasoned or logical basis upon which it has determined it appropriate to apply the efficiency adjustment to Powerlink's forecast capital expenditure.

In relation to operating expenditure, independent, external benchmarking shows that Powerlink is more cost efficient than the average European transmission company participating in the ITOMS (International Transmission Operations and Maintenance Study) and operate close to the efficiency frontier (see Section 9.10.3 of Powerlink's Revenue Proposal). For example, ITOMS results have consistently shown over an extended period of time that Powerlink as one of the lower cost transmission companies, with above average reliability. This is also supplemented by information contained in the AER's own TNSP performance report[175], which indicates that Powerlink is one of the NEM's best performers.

Powerlink, wherever practicable, is committed to increasing the efficiency of its operating and capital works, wherever reasonable, and undertakes improvements as part of its normal business activities. Information provided to the AER/EMCa earlier this year shows that many of the items identified by EMCa that may provide additional efficiencies are already in place, or have little relevance to a transmission entity. These include:

- **Resource smoothing** – Powerlink notes that different project types have different levels of expenditure associated with them. For example, lines projects are typically large capital expenditure projects with most of their expenditure associated with the procurement of steel and aluminium from international suppliers, but relatively low levels of local labour. These lines projects can induce a capital expenditure 'spike', but have low impact on contractors' utilisation and their ability to deliver efficiently.

  Powerlink utilises a flexible, competitive based outsourcing arrangement with a number of panels with multiple contractors to deliver the capital works. Powerlink considers that its panel of contractors has been arranged with sufficient capability and flexibility to ensure its capital expenditure forecast can be delivered efficiently.

  In addition, Powerlink's Revenue Proposal is based on its July 2010 Estimating Manual. The costs used to update the estimating manual reflect contracts let during 2009/10 when capital expenditure was below the levels forecast in the next regulatory period.

- **Proactive facilitation of viable non-network solutions –** Powerlink has a long history of proactively seeking and adopting non-network solutions where these have been economically justified under the AER's Regulatory Test. Since 2001/02, Powerlink has acquired more than $150m in network support as efficient alternatives to network augmentation. The pass-through of all such applications for network support were assessed and approved by the AER. Powerlink has again forecast network support requirements for the next regulatory period. However, in its Draft Decision, the AER has rejected Powerlink's proposal. Powerlink's full response to this matter is provided in Section 7.7.4 of this Revised Revenue Proposal. Based on Powerlink's experience with network support, likely potential solutions have been considered and incorporated where appropriate.

  The importance of network support as a potentially efficient means to defer or avoid network augmentation is recognised by the AER[176] and the market. As a result, the Regulatory Investment Test for Transmission (RIT-T) requires that a public and transparent

[175] Transmission Network Service Providers Electricity Performance Report 2008-09, AER, February 2011.
[176] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.200, AER, November 2011.

consultation process be undertaken to seek non-network solutions to an identified network need.

- **Smart grid initiatives –** this technology, which includes off peak control of air conditioning and advanced metering is much more aligned with distribution network service providers and thus use of this technology is far less relevant to Powerlink. This is confirmed by the AER provision of Demand Side Management (DSM) incentives for DNSPs and the lack of similar DSM incentive for Powerlink. To be clear, these peak demand management initiatives are already taken into account in Ergon and ENERGEX's demand forecasts that have been used in the preparation of the Revenue Proposal and the Revised Revenue Proposal.
- **Focused identification of synergies between projects** – Program management has been enhanced by Powerlink during the current regulatory period. The application of program management in the inception and delivery of a program of inter-related projects allows certain efficiencies to be gained. An example of this is through optimising utilisation of project management and construction management resources. Given that program management is already embedded in Powerlink's approach, the cost efficiencies associated with it have been realised and already included in the capital program which Powerlink submitted in its Revenue Proposal. The benefits resulting from the program management approach introduced five years ago have been reflected in the scope and estimates on which the Revenue Proposal and Revised Revenue Proposal expenditure is based.

  An example of this focused identification of synergies between projects is the South Pine program of works. A number of augmentation and replacement project needs (connection, augmentation, replacement works) were very successfully combined. These were planned out prior to approval and arranged to deliver a range of benefits which included a reduction in the overall delivery timeframe when contrasted to individual nominal project delivery timeframes, and the minimisation of outages as well as associated risks to customers.

As outlined in Powerlink's Asset Management Strategy continuous improvement is actively undertaken as part of business as usual activity[177]. Hence Powerlink expects to continue to make incremental efficiency improvements in the next regulatory period through, at this point in time, the key measures identified by Powerlink above and other measures documented in supporting information to the AER/EMCa.

Given the regulatory framework necessitates that Powerlink look out 5-7 years in establishing its proposed capital and operating expenditure forecasts, Powerlink has sought appropriate allowances for what it considers to be the key and material regulatory obligations and requirements foreseen in the next regulatory period and, for which it could develop a reasonable estimate for the purposes of its Revenue Proposal. To be clear, any additional obligations which did not meet these criteria were not incorporated into Powerlink's forecasts. For example, costs associated with the harmonisation of safety legislation and increased input costs for items such as concrete, that are expected from the introduction of the carbon tax were not included.

Having said this, Powerlink expects that there will be other unforseen obligations and requirements to which it will be subjected to over the next regulatory period and, for which Powerlink will have to prudently manage within both its ex-ante capital expenditure allowance and operating expenditure allowance. These additional costs will impact upon Powerlink's future costs, but as they are not able to be specifically identified and estimated have not been included.

Finally, EMCa's assertion that because Powerlink underspent its capital expenditure in the current regulatory period means it can gain further efficiencies in the next regulatory period lacks the regulatory rigour expected in the Rules. Powerlink notes that EMCa's comments:

[177] Asset Management Strategy, Powerlink, April 2011.

- do not consider that while year on year movements relative to forecast have occurred, such variations are to be expected given the inherent uncertainties in forecasting capital expenditure recognised by the probabilistic nature of the forecast upon which the allowance was based;
- do not appear to have had regard to the circumstances facing Powerlink during this regulatory period – Powerlink provided reasons for its expenditure profile during this regulatory period. Key among these reasons was the impact of the GFC on demand, the prudent reprioritisation of workload and unforseen developments into the Surat Basin. Powerlink considers that while past performance may inform future performance, the extent to which this can occur will clearly be dependent upon the circumstances facing the TNSP at the time; and
- disregard the nature of the regulatory framework which is designed to incentivise TNSPs to out-perform expenditure allowances through prudent and efficient means during the regulatory period. In the absence of any solid information to demonstrate otherwise is mere speculation.

To the extent that outturn expenditure is different than forecast does not, in and of itself, suggest anything about potential efficiency gains that may be achievable over the next period.

Furthermore, as discussed in Section 5.2, Powerlink does not agree with the labour productivity adjustment proposed by the AER. Powerlink has already incorporated improvements in labour productivity in its capital and operating costs. Powerlink considers that there is considerable overlap with the labour productivity adjustment applied to capital expenditure and the capital efficiency adjustment applied by the AER. Powerlink considers that the efficiency adjustment amounts to double-dipping by the AER. Neither adjustment is considered appropriate for the reasons outlined in this section and in Section 5.2. Powerlink recommends that the AER review both sections to inform its Final Decision.

For the purposes of its Revised Revenue Proposal, Powerlink has not applied the AER's efficiency adjustment in preparing its revised capital expenditure forecasts.

7.6 Capital expenditure adjustments due to alternative demand forecast

AER Draft Decision

EMCa produced an alternative load driven capital expenditure forecast by applying the alternative demand forecast to Powerlink's methods and models. EMCa's alternative demand forecast lies between Powerlink's APR 2010 medium economic and low economic demand growth forecasts (closer to Powerlink's low economic growth outlook forecast in the earlier part of the period). EMCa assigned different weights to load growths in Powerlink's models proportionate to the demand adjustment. In its Draft Decision, the AER noted EMCa's advice that it had assigned a 70% weighting to Powerlink's low load growth and 30% to the medium growth. EMCa then ran Powerlink's models using these weightings to derive the alternative load driven capital expenditure.

Powerlink's response

Upon receipt of additional detail surrounding EMCa's methodology to adjust the capital expenditure forecast, Powerlink discovered that the weighting factors actually used by EMCa were not constant as described in the Draft Decision. Instead, EMCa's factors varied on a yearly basis starting in 2012/13 with 93% assigned to the low economic growth scenarios and 7% to the medium scenarios and ending at 72% assigned to the low growth scenarios and 28% to the medium growth scenarios in 2016/17. Powerlink is concerned that this methodology is a

convenient but unrealistic way of establishing a capital expenditure forecast for an alternative demand outlook. Importantly:

- Weighting factors are not unique: EMCa's weighting factors have been based on proportions of Powerlink's 10% PoE low and medium economic forecast required to obtain EMCa's 10% PoE alternative demand forecast. There are a multitude of possible weighting factors which could be calculated by using different proportions of the high, medium and low economic outlooks all leading to different capital expenditure forecasts. The actual traces used to adjust scenario probabilities are one arbitrary combination of many possible combinations. Furthermore, the weighting factors are significantly different from those which would be calculated by comparing the 50% PoE demand forecasts which Powerlink used to trigger transmission projects within a zone. If the 10% PoE trace was selected due to the use of 10% PoE for triggering main transmission system projects then the EMCa capital expenditure adjustment does not recognise triggers for regional transmission projects based on 50% PoE demands[178].
- Unrealistic outcomes: EMCa's capital expenditure adjustment methodology implicitly ignores 'real world' practicalities of constructing the infrastructure before it can be relied upon. The application of different weightings to a scenario as it progresses in time results in varying degrees of expenditure being captured for projects as the scenario (and project) progresses. By way of example, a project spanning a number of years may have little to no expenditure allowed in its early design phase and a larger amount in the middle construction phase. Alternatively, if the weightings change from favouring the low economic growth forecast to one favouring the medium economic growth forecast, the historical expenditure in the medium economic scenario is relied upon but not accounted for. In other words, EMCa's methodology relies upon certain network projects being built, without providing for the requisite projects to be built in terms of the capital expenditure allowance.
- One central demand scenario: EMCa's capital expenditure adjustment methodology attempts to estimate the capital expenditure requirement for a single demand outlook, rather than establishing the expected capital expenditure forecast requirements based on a range of demand outlooks. This is a significant departure from the theoretical basis of the probabilistic planning approach, which ascribes probabilities based on the likelihood of proceeding rather than to capture the capital expenditure of the central scenario. A practical implication of such an approach is that, in net terms, the capital expenditure allowance resulting from a single demand outlook will be less than what would be the case using a range of outlooks. This is because the former does not adequately capture the costs associated with projects required for a high demand growth scenario.

As recommended by the AER[179], Powerlink has revised its probabilistic planning model to reflect updated inputs. In preparing this Revised Revenue Proposal, Powerlink has reassessed the trigger timings for all augmentations under all scenarios using Powerlink's revised demand forecast and has updated scenario probabilities to address concerns raised by the AER in its Draft Decision.

Updating forecast capital expenditure for a demand forecast change is a detailed exercise that requires particular care and then review to ensure it has been done correctly. Powerlink understands that this is technically challenging, and that the AER attempted to use a simplified approach. It is not clear whether the method used by the AER to update forecast capital expenditure in the Draft Decision in light of the AER's revised demand forecast was intended to be a departure from the theoretical basis of the probabilistic planning approach or not. Powerlink submits that to the extent the AER performs any updating of forecast capital

[178] Powerlink Planning Criteria, p.7, Powerlink, June 2010.
[179] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.107, AER, November 2011.

expenditure in light of a revised demand forecast for the purposes of the Final Decision, this must be undertaken in a manner consistent with the theoretical basis of the probabilistic approach upon which Powerlink's capital expenditure forecast was based.

Further, Powerlink must be afforded a reasonable opportunity to review any such updating of forecast capital expenditure so that it can test and comment upon the accuracy of any updating. This should assist in ensuring that issues and potential errors that may be introduced as a consequence of the capital expenditure forecast are addressed prior to the AER's Final Decision.

7.7 Load driven capital expenditure review

AER Draft Decision

The AER was not satisfied that Powerlink's proposed capital expenditure on the 500kV capable projects reasonably reflects the capital expenditure criteria. The AER's key reasons for its 500kV capital expenditure reduction are as follows:

- the projects are deferred under the AER's revised demand forecast. Some projects are deferred into subsequent regulatory periods;
- Powerlink has not sufficiently explained or provided sufficient evidence to support the economic justification for the 500kV capable incremental cost for any of the projects; and
- AEMO raised that it considered such projects were driven by generation and hence were not prescribed services.

Powerlink's response

Powerlink strongly disagrees with the AER's position and EMCa's advice in a number of areas. Each of these key areas will be addressed in turn, in the sections which follow.

However, to give further context to interested stakeholders, Powerlink provides additional background information below.

7.7.1 500kV background information

Powerlink included four 500kV augmentation projects in its Revenue Proposal. These projects were:

- CP.01875 Halys to Blackwall 500kV operating at 275kV;
- CP.01477.2 Western Downs to Halys 500kV DCST operating at 275kV (circuits 3 and 4);
- CP.01470 Halys to Greenbank 500kV DCST operating at 275kV; and
- CP.02477.3 Western Downs to Halys 500kV DCST operating at 275kV (circuits 5 and 6).

This section provides relevant background information including a high level technical explanation of benefits of operation at higher voltages, the prudent practice of strategically constructing transmission lines with the capability of higher voltage operation at a later date and a brief history of 500kV in the NEM.

For clarity, the projects described as 500kV projects in Powerlink's Revenue Proposal and Revised Revenue Proposal are for the construction of new transmission lines (towers, insulators, conductor, etc) capable of being operated at 500kV. These towers are necessarily larger than 275kV towers to satisfy the larger clearances and design requirements of operation at the higher voltages. However, like in many countries and other Australian states, these assets initially operate at a lower voltage until demand operation at the higher 500kV voltage. This is the approach a prudent TNSP should adopt in seeking to develop its network at efficient long run cost. This is tested and reinforced by the economic option analysis presented in Appendix M.

Technical

Electrical power transfer is expressed in terms of voltage level and current flow. Simplistically, the voltage is largely maintained at a fixed value (determined by the design of the interconnected plant) and it is the current which follows the demand fluctuations of the day. The same power is transferred with a significantly lower current flow at 500kV compared to 275kV. Current flow impacts conductor temperature (active losses) and magnetic field strength (reactive losses). Either of these parameters can set the maximum power transfer capability of the transmission network.

Higher operating voltages necessitate the use of a greater number of conductors per phase bundle due to design standards required to manage corona effects[180]. Current flow is shared amongst the conductors in a phase bundle, and a larger number of conductors will result in a lower magnetic field strength for the same current flow. The higher voltage and increased current limits results in each 500kV circuit being equivalent to three 275kV circuits. As such, higher voltages are more effective at transmitting large quantities of power over long distances.

Strategic network development

As the overall electricity demand to be supplied by the transmission network grows, economics start to favour the introduction of higher transmission voltages. Queensland introduced the 275kV network over 40 years ago (in 1970) and now has 8,387 kilometres of 275kV circuits. In the 1980s, Powerlink acquired 500kV easements into SEQ in recognition of the long term future power needs of the State. After a lengthy process of strategic planning and assessment, Queensland has now reached the point where it is considered prudent and efficient to build at 500kV due to:

- ongoing demand growth in SEQ which accounts for approximately 60% of the State load;
- increased generation in SWQ – the nearest major generation centre to the SEQ load; and
- Sustainable Planning Act which requires Powerlink to make best use of existing easements coupled with limitations in obtaining new easements for overhead transmission in SEQ.

Powerlink proposes to build 500kV transmission lines and initially operate them at 275kV, deferring the costs associated with operating at 500kV until warranted. Both the incremental upfront cost of constructing at 500kV and deferral of the expense associated with operating at the higher voltage are contemporary, common practice and an economically prudent approach to minimising the long run cost to electricity consumers. Examples of this approach being adopted by TNSPs in other states and overseas are provided below.

History of networks initially operated at lower voltages

500kV transmission is certainly not new technology to Australia. Victoria currently has a similar maximum demand to Queensland (but shorter distances), and has had a 500kV network for approximately 40 years. At this time, Victoria has over 1,500km of 500kV circuits. The last 500kV line to be built in Victoria, between Hazelwood and South Morang, was commissioned in 1985 and operated at 220kV until it was upgraded to 500kV operation in 2005.

In NSW, the first 500kV capable line was built in 1983 and was operated at 330kV for a single year. However, the second 500kV line was built in 1986 and operated at 330kV for 23 years before being upgraded to 500kV. TransGrid has recently upgraded a 500kV built transmission line between Mt Piper and Marulan to 500kV operation after operation at 330kV for 18 years.

[180] Corona is the term given to the phenomena of the electric discharge which occurs when the electric field intensity is sufficiently large to ionise the surrounding air molecules. Corona is associated with active power losses, audible noise, and radio and television interference. Accordingly, the designs of transmission lines need to consider and contain maximum electric field intensity.

Transpower in New Zealand are currently in the process of constructing a 400kV capable transmission line which will be operated at 220kV until such time as demand requires upgrade to the higher voltage. This is not expected to occur until beyond 2022[181].

7.7.2 500kV governance

AER Draft Decision

The AER expected that for such a significant project that has widespread impacts on the Queensland transmission network, Powerlink would have undertaken a full strategic analysis demonstrating the need to move to a 500kV network, complete with alternatives[182].

EMCa was of the view that Powerlink's supporting documentation suggests the costs of 500kV capable construction are uncertain, and Powerlink did not sufficiently articulate the cost uncertainty and associated risks in accordance with good capital governance.

Powerlink's response

For over 30 years Powerlink, and its predecessor organisations, have been planning and preparing for development of the transmission network beyond the existing 275kV backbone network. Table 7.3 sets out a brief chronology of the key milestones over the last 30 years of planning work and site and easement acquisitions which demonstrate the strategic development of, and need for, Queensland's 500kV network.

Table 7.3: Chronology of 500kV key milestones

Period	Actions
1980 and before	Acquisition of Blackwall Substation site as a future 500/275kV (or 750/275kV) site. Board approval for easements for 3 x 500kV (or 2 x 750kV) single circuits for approximately 8.5km west of Blackwall Substation site.
1983	Board approval for acquisition of Greenbank Substation site as a future 500/275kV (or 750/275kV) site. Board approval for easements for 3 x 500kV (or 2 x 750kV) single circuits for approximately 13km west of Greenbank Substation site.
1984	Close acreage subdivision is already occurring in the Blackwall area. Consultants recommended that to safeguard the routes for future lines easements should be acquired as far west as State Forest land (approximately 58km). Anticipation of small acreage land development west of Greenbank that may limit future easement options. Planning reconfirms the need for the already approved site and easement acquisitions to support future 500kV (or 750kV) development. Noted that the 750kV option could be abandoned at a small risk because: • 500kV is established in Australia in NSW and Victoria; and • Possible locations of future power stations are widely dispersed which tends to favour a lower voltage.
1985	Planning recommendations for: • Acquisition of Springdale 500kV switching stations site as a common point for 500kV supply to Blackwall and Greenbank 500kV substation; • Acquisition of 500kV easements from Blackwall and Greenbank to the Springdale site; • Acquisition of a 500kV easement between Blackwall and Greenbank; and • Acquisition of a 500kV easement between Blackwall and a future 500/275kV substation north west of Caboolture.

[181] 2011 Annual Planning Report, p.46, Transpower New Zealand Limited, March 2011.
[182] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.131, AER, November 2011.

Period	Actions
1994	Planning recommendation for acquisition of 500kV DCST easement between Springdale and Tarong.
1999	Board approval for: • Acquisition of a 500/275kV switching station site near Tarong (Halys); and • Acquisition of easements for 2 x 500kV DCST lines between Springdale and Halys.
2002	Planning recommendation to build 275kV DCST line between Blackwall and Greenbank (instead of 500kV SCST) on part of the 500kV easements between the two sites, as part of a broader reinforcement to southern Brisbane. Board approval received for above recommendation. Board Memorandum notes longer term plans to establish a 500kV backbone with injection points into the 275kV grid at Blackwall and Greenbank.
2005-2008	Annual Planning Reports inform the market of the emerging limitation and the possible network solution. Various Regulatory Test consultations include the estimated costs of future 500kV developments as part of the financial analysis.
2008	September – Powerlink Board briefed on the 500kV development plan in preparation for commencement of the Regulatory Test consultation process (presentation previously provided to AER). October – Request for Information (RFI) released.
2009	March – Application Notice recommending 500kV construction (275kV initial operation) published. Board advised of recommendations (previously provided to AER). April – Board briefed on the 500kV development plan, including financial analysis of the full suite of 500kV developments contained in the Regulatory Test assessment. May – Board notes Halys – Blackwall 500kV line to be recommended in Regulatory Test Final Report. June – Final Report recommending 500kV construction (275kV initial operation) published September – Board approves Halys – Blackwall 500kV lines (275kV initial operation), subject to Shareholding Minister approval. December – Approval received from Shareholding Ministers – project fully approved.

The above chronology clearly demonstrates that the introduction of a 500kV network to SEQ has been a conscious strategy which the Powerlink Board has been well informed of, and approved, its development. In recent years, as projects have been approved the frequency of Board reporting has increased. The Board was fully informed about the decision to move to 500kV and the claims of improper governance are unfounded. Powerlink provided evidence in relation to the strategic planning and analysis associated with these developments in both written and verbal form to the AER and EMCa during its on-site visits and, subsequently in written form several days afterward. This evidence included approval of strategic easement acquisitions and briefings to Powerlink's Board.

In recognition of the fact that Powerlink had not previously constructed 500kV assets, Powerlink considered it would be prudent to adopt additional oversight of the design scope by an executive led steering committee. Consistent with its normal estimating processes, estimates were developed on a detailed bottom-up basis for the purposes of assessing the efficiency of the potential developments against other options under the Regulatory Test and, at the appropriate time, for seeking Board approval. However, for the remaining three projects that were not at such an advanced stage (uncommitted) in the project life cycle, Powerlink estimated its cost on the same basis used to establish its other load-driven projects for the purposes of the Revenue Proposal. This basis is described in Section 8.6.7 (Project scope and cost estimates) of Powerlink's Revenue Proposal.

Powerlink has provided the AER and EMCa with key governance documentation which demonstrates that it follows good electricity industry practice planning, consultation and project implementation. Whilst there will inevitably be some uncertainty and risk associated with all infrastructure projects (hence the requirement for a cost estimation risk factor), Powerlink considers that its systems and processes are robust and manage these accordingly as an efficient and prudent TNSP.

7.7.3 Impact of reduced demand forecast

AER Draft Decision

The AER considered that two of the four 500kV capable projects proposed by Powerlink are unlikely to be required in the next regulatory period given the reduced demand forecast substituted by the AER. These projects are Halys-Greenbank ($157.1m, $2011/12) and Halys-Western Downs 5th and 6th circuits ($69.1m, $2011/12).

Powerlink's response

Powerlink's full response to the AER's reduction in the demand forecast is discussed in Chapter 6 of the Revised Revenue Proposal. Based upon Powerlink's revised capital expenditure forecast advanced herein, the commissioning of these two 500kV projects, Halys-Greenbank and Halys-Western Downs 5th and 6th circuits, has been deferred into subsequent regulatory periods under all scenarios. This revised forecast includes the expected expenditure in the 2013-17 regulatory period of projects commissioned in the early parts of the 2018-22 regulatory period, which includes initial expenditure of the CP.01470 Halys to Greenbank 500kV DCST operating at 275kV project.

7.7.4 Economic justification

As identified earlier in this chapter, one of the key reasons cited by the AER for reducing Powerlink's proposed capital expenditure forecast was that it considered Powerlink had not sufficiently explained or provided sufficient evidence to support the economic justification for the 500kV capable incremental cost for any of the projects. Powerlink does not agree with this position. The sections below respond to the AER and/or EMCa's specific concerns and highlights the significance and relevance of the information Powerlink has provided to date.

Non-network alternatives

AER Draft Decision

The AER recognised there are a number of possible solutions available to Powerlink to address the reliability of supply issue being addressed by the 500kV projects, including non-network solutions.

In relation to the committed project, the AER considered that Powerlink did not consider non-network solutions to the 275kV limitation problem but rather restricted consideration of non-network solutions to the 500kV network build. The AER considered that it must have regard to the extent to which a TNSP has considered and made provision for efficient and prudent non-network alternatives. The AER considered that Powerlink had not sufficiently addressed these requirements.

Powerlink's response

Powerlink has provided forward notification of the limitations in the transfer capability in its Annual Planning Reports from 2006. In 2009, Powerlink undertook the AER's Regulatory Test assessment, in compliance with the requirements of the Rules. During this process, Powerlink explicitly invited offers from non-network participants for alternative solutions to the network

option through the Request for Information (RFI) document[183]. The following are extracts from the RFI.

> The forecast limitations in transfer capability have been previously identified in Powerlink's 2006, 2007 and 2008 *Annual Planning Reports*. Powerlink has received no information regarding proposals to address the limitations from prospective solution providers in the normal course of business or in response to the *Annual Planning Reports*.
>
> This Request for Information paper, and subsequent consultation, provides a further opportunity for providers of feasible solutions to submit details of their proposals for consideration. The information provided in this document on forecast requirements in transfer capability out of Bulli and South West zones is intended to enable interested parties to formulate and propose genuine and practicable non-network solutions (as defined in the AER Regulatory Test), such as local generation and Demand Side Management (DSM) initiatives[184].

As a consequence of the RFI, Powerlink was advised of two proposed generation projects, including Braemar 3 Power Station (expected from late 2011) and Coopers Gap wind farm. NEMMCO's information on future generation proposals identified Swanbank F Power Station with a proposed commissioning date of 2012. None of these proposed generators were committed at that time and Powerlink did not include them in the base case under its Regulatory Test assessment. However, Powerlink accounted for them in the 'Scenarios considered' to test the economic robustness of the options. In the intervening period only Braemar 3 has committed to construction, and is not expected to be generating before January 2014.

Through the Regulatory Test process, Powerlink optimised the solution from the Application Notice to the Final Decision, making use of existing infrastructure between Kogan Creek PS and Braemar which resulted in an overall lower cost to consumers.

The RFI did not identify whether potential network solutions involved 275kV or 500kV construction, or some combination of both. Such information was considered irrelevant as the level of non-network support required is independent of the network solution. Suggestions from the AER that consideration of non-network solutions against a 275kV alternative should have been included appear to not appreciate the economics associated with the use of non-network support in overcoming network limitations. Under an economic option analysis, there is less chance for non-network alternatives to be economical when competing against a lower upfront cost network solution than a higher upfront cost network alternative. That is, a given non-network solution is more likely to be successful against a 500kV network option, with its higher upfront costs, than against a 275kV option.

All the relevant Regulatory Test documentation which explains how Powerlink sought information from non-network solution providers was submitted to the AER and EMCa shortly after commencement of its review of Powerlink's Revenue Proposal.

Furthermore, Powerlink has provided the AER with a detailed and robust economic analysis attached in Appendix M. The analysis included scenarios with up to 1,500MW of non-network support. In all scenarios a 500kV capable network was identified as the most economic option.

It is important to note that Powerlink has a strong track record in sourcing non-network alternatives and is the largest procurer of non-network services since the start of the NEM. This is demonstrated by its actual incurrence of network support of more than $150m since 2001/02. The AER is well aware of this fact given that Powerlink has been subject to pass-through arrangements for such costs during this time, which the AER has approved every year. Powerlink has clearly demonstrated that it actively sought non-network solutions to meet the need and

[183] Request for Information, Maintaining a Reliable Electricity Supply to Southern (South West and South East) Queensland, p.12, Powerlink, October 2008.
[184] Ibid.

none were identified through the public consultation process. As a result, Powerlink considers that the AER's claims that Powerlink has not considered non-network solutions are unfounded and do not provide reasonable grounds for reducing the capital expenditure allowance for the suite of 500kV projects.

Easements

AER Draft Decision

The AER stated that Powerlink has assumed it will be unable to acquire 275kV easements for projects in SEQ in the future and therefore needed to build on existing easements[185]. The AER considered this should have been tested rather than assumed.

Powerlink's response

Increasing power transfer requirements between South West Queensland and South East Queensland will necessitate further augmentation in the next 10 years. At that time (assuming the transmission lines discussed are built for 500kV), transfer capacity can be released by operating the nominated transmission lines at 500kV. Each 500kV circuit will be comparable in power transfer capacity to three 275kV circuits. Figure 7.1, illustrates the easement and visual impact differences between 500kV and 275kV for equivalent power transfer capability. For example, two 500kV double circuit transmission lines would typically require a 120 metre easement compared to six 275kV double circuit transmission lines that would require a 260 metre easement.

Figure 7.1: Visual impact dual line (top) and six line (bottom)

Note: These images have been digitally created for comparative purposes, and do not represent proposed configurations.

[185] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.131, AER, November 2011.

Powerlink's site and easement acquisitions are predominantly governed by the Acquisition of Land Act 1967, and the Sustainable Planning Act 2009 (SPA)[186]. This legislation requires that Powerlink consider a broad range of matters throughout the easement acquisition and permitting process. For example, Powerlink must demonstrate adequate consideration of more than 18 pieces of legislation and a range of other statutory and policy instruments to gain approval under the SPA. These include the Vegetation Management Act 1999, Nature Conservation Act 1992 and Aboriginal Cultural Heritage Act 2003. State Planning Policies relating to matters such as the protection of koala habitat, wetlands, agricultural land as well as specific policies addressing flood and bushfire risk, soil and erosion management and extractive resources and local government town planning schemes must also be addressed by Powerlink in acquiring easements. These legislative obligations add further layers of complexity to the route selection and environmental impact assessment processes.

The purpose of the SPA is to seek to achieve ecological sustainability. Section 5 of SPA requires entities with approval powers (i.e. State and local governments) to take account of short and long-term environmental effects of development at local, regional, State and wider levels. It further requires assessment entities to ensure the prudent use of non-renewable natural resources (i.e. land), the minimisation of adverse environmental effects of development, and the application of standards of amenity, conservation, energy, health and safety in the built environment that are cost-effective and for the public benefit.

Provisions of the SPA requires that the approving entity be satisfied that the infrastructure will satisfy community expectations for the efficient and timely supply of infrastructure, and that adequate environmental assessment has been carried out, including adequate account of issues raised in the public consultation process.

A number of social impacts and issues are commonly raised during public consultation for transmission line projects. Powerlink therefore considers these matters throughout the early phases of a project including corridor selection and preliminary line layouts. Specific measures to mitigate and manage potential social impacts are described in the Environmental Impact Statement (EIS) for individual projects, so they can be considered during the approval process. The EIS documents are published on Powerlink's website during the easement consultation process.

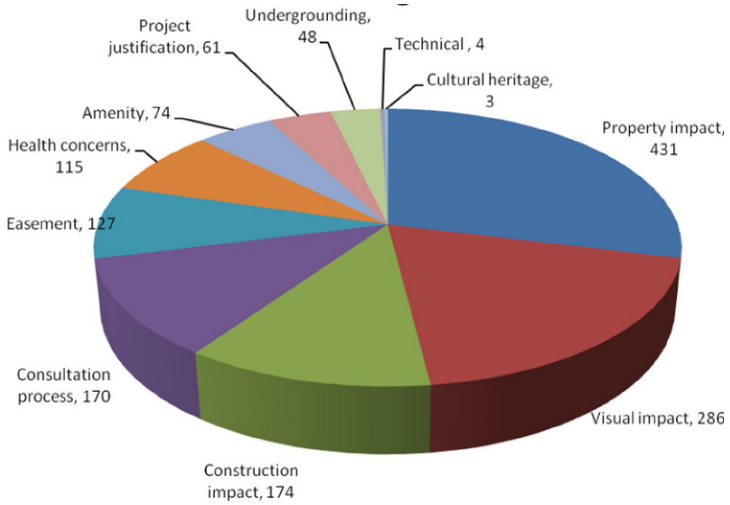
As an example of the types of social issues incorporated in the 500kV project planning, Figure 7.2 shows the categories of issues raised during the public consultation process for the recent Springdale-Blackwall 500kV environmental impact assessment. The top four issues were:

- visual impact – tower location, tower height, visual amenity and location of line within easement;
- property impact – property value, property compensation, proximity to home and current planned land use;
- construction impact – vegetation removal, fauna, dust, weed, pests and traffic; and
- the consultation process itself.

A total of 1,493 issues were raised, all of which must be considered and appropriately addressed by Powerlink in seeking planning approval under SPA.

[186] Sustainable Planning Act 2009, Queensland Government, September 2009.

Figure 7.2: Issues raised during consultation period of the recent Springdale-Blackwall EIS



The Department of Local Government and Planning is responsible for coordinating land use planning within Queensland to ensure the state can support a growing population and economy. This is achieved by working closely with agencies to ensure competing interests remain sustainable. The Queensland Government released the Queensland Infrastructure Plan (QIP)[187] in November 2011. The QIP links infrastructure delivery with population growth and economic development priorities. The QIP introduces five underlying principles as a guide to Queensland's approach to infrastructure planning, management and investment into the future. These principles are:

- make smarter use of existing infrastructure;
- focus on whole of network solutions which support long-term planning;
- manage the impacts of climate change and achieve sustainability;
- make bold, large-scale infrastructure investment decisions based on sound evidence; and
- strengthen partnerships.

Powerlink's construction of a double circuit 500kV transmission line between Halys and Blackwall Substations is aligned with the QIP principles and appears on page 111 of the Queensland Government's plan itself.

Powerlink's significant knowledge of, and vast experience in, acquiring easements in accordance with these various legislative obligations and in the economic, social and environmental circumstances of Queensland make it very well-placed to reasonably assess the likelihood or otherwise of being able to acquire an easement in a certain area. To the extent that Powerlink might make any such assumptions, its detailed and practical understanding of these matters demonstrates that such assumptions would indeed be well-founded.

However, to address the AER's comment about testing for further 275kV easements, Powerlink has commissioned the assistance of IDM Partners. IDM Partners are independent industry experts who have been engaged to provide evidence on the viability of obtaining easements from SWQ to SEQ. IDM Partners' advice, provided to the AER on a confidential basis, confirms that transmission easements into SEQ are very difficult to acquire particularly for overhead transmission lines. IDM identified minimum lengths of undergrounding which would be required

[187] Queensland Infrastructure Plan – Building Tomorrow's Queensland, Queensland Government, November 2011.

to address visual amenities issues. Notwithstanding this, IDM state that whilst undergrounding of cables may minimise visual impacts of the towers and wires, the ecological impact of undergrounding sections of the 275kV option is still significant.

Powerlink also sought advice from Norton Rose of the likelihood of designation for 275kV easements showing regard to the Sustainable Planning Act. This advice has been provided to the AER on a confidential basis. Norton Rose advise that it is highly unlikely Powerlink would be able to obtain designation for a 275kV option instead of 500kV. Powerlink conclude from the IDM Partners and Norton Rose advice that it would be unrealistic and unreasonable to expect that Powerlink would be able to secure the necessary approvals to build 275kV on the existing 500kV easements and acquire additional easements to preserve the necessary further development at 275kV. These consultant reports address the AER's specific concern about demonstration of testing easements.

500kV option analysis

AER Draft Decision

The AER considered that Powerlink has not demonstrated the need for, and efficient costs of, the incremental cost for all four of the projects, i.e. one committed project and three uncommitted projects. The AER notes that a large component of these project costs relates to the incremental ('strategic') cost of building the network to be capable of operating at 500kV, while the intention is to operate at 275kV for an indefinite period (beyond 2022).

In the AER's view, Powerlink did not include analysis of scenarios involving a continuation of 275kV network until the 500kV is needed and implementing non-network solutions such as contracting with new generators.

Further, the AER considers that the Regulatory Test undertaken in 2009 for the Halys-Blackwall project did not appropriately demonstrate the economic benefits of the incremental cost of the 500kV build.

Powerlink's response

Powerlink's transmission network plays an essential part in reliably supporting Queensland's economic growth. The combination of high peak SEQ demand growth, and new generation development in South West Queensland, which is expected to continue, necessitates a significant increase in the transfer capability between the two zones.

The Regulatory Test process requires that Powerlink present credible and feasible network solutions when applying a Regulatory Test[188]. Based on Powerlink's easement advice (discussed in the "Easement" section above) and the cost implications of pursuing a lower capacity 275kV alternative, Powerlink did not include this alternative in the Regulatory Test.

Powerlink, with knowledge of the easement constraints in supplying SEQ, did not include 275kV alternatives in its 2009 Regulatory Test since these were considered to be less relevant than the alternatives presented due to the higher cost and impracticality of technically feasible alternatives. In this circumstance, Powerlink considered that the inclusion of a 275kV alternative in the Regulatory Test was not warranted. Powerlink also considers that had it done so, the option would not have satisfied the Regulatory Test as being the most efficient. In saying this, Powerlink notes that the AER's Regulatory Test consultation process is a lengthy public process which provides adequate opportunity for market participants, to identify and put its concerns on the public record. Powerlink confirms that no such issue surrounding a 275kV alternative was raised during its Regulatory Test consultation. The analysis presented in the Regulatory Test demonstrated that the suite of 500kV projects satisfied the Regulatory Test as the most efficient

[188] Final Decision – Regulatory Test version 3 & Application Guidelines, Clause (15)(b), p.56, AER, November 2007.

credible option to implement. Project CP.01875 Halys to Blackwall 500kV operated at 275kV was subsequently approved by the Powerlink Board for implementation.

In developing and recommending implementation of the 500kV network development, Powerlink has duly considered and met its obligations under its Transmission Authority, relevant State planning acts and associated legislation, the Rules, the Electricity Act 1994 (Queensland) and the AER's own Regulatory Test.

For the uncommitted projects, Powerlink compiled and provided detailed planning reports to the AER and EMCa which include Net Present Value (NPV) option analysis. The optimum options are included in Powerlink's revised capital expenditure forecast with triggers reassessed on the basis of its revised demand forecast in this Revised Revenue Proposal.

Powerlink has provided the AER with a detailed and robust economic analysis showing that the suite of 500kV projects provide the lowest net present value option to address the reliability of supply to Southern Queensland over the long term. Appendix M provides a summary of the economic analysis of both 275kV and 500kV network alternatives.

The analysis presented in Appendix M clearly demonstrates the efficiency and prudency of continuing with the strategy of building Powerlink's transmission network from South West to the South East Queensland region with provision for 500kV towers and conductor. It has been shown that it is not efficient and prudent to adopt a strategy of 275kV to supply SEQ. The economic analysis shows that the preferred option is to build a 500kV network and to initially operate that network at 275kV.

Operation of these assets at 500kV is expected to occur in 2022 but does depend, amongst other things, on demand growth and generation developments. There are significant loss savings from these 500kV projects even before full operation at 500kV.

Powerlink notes that, 275kV alternatives are:

- expensive due to easement constraints; and
- less economic relative to the other network alternatives assessed.

In its Revised Revenue Proposal, Powerlink has therefore included the relevant cost of the 500kV projects with expenditure in the 2013-17 regulatory period using the probabilistic planning approach and revised demand forecasts discussed in Chapter 6.

7.7.5 AEMO submission

AER Draft Decision

The AER noted AEMO's suggestion that the Halys-Western Downs 500kV DCST project, operated at 275kV is driven by generation and should not be included in the ex-ante allowance. Having regard to Powerlink's response on this matter prior to release of the Draft Decision, the AER has not re-classified the project expenditure as a contingent project.

Powerlink's response

Powerlink notes and accepts the AER's decision on this matter.

7.7.6 Load driven capital expenditure summary

All concerns raised by the AER and its consultants regarding the load driven capital expenditure have been comprehensively addressed in the previous sections. In particular:

- deferral of projects as a result of the revised demand forecast;

- provision of evidence to support the economic justification for the 500kV capable incremental costs including seeking non-network solutions, easement availability and detailed option analysis; and
- AEMO's submission that it considered non-prescribed projects had been included in the Revenue Proposal.

It is clear that the incremental cost for the 500kV suite of projects is both efficient and prudent in ensuring the long term supply of electricity to SEQ.

In the event that the AER is not convinced by the evidence provided in this Revised Revenue Proposal, and supporting documentation, and wish to include the incremental costs as a contingent project, Powerlink requests that it be consulted first prior to the decision being made. In addition, Powerlink provides information on a number of items that need to be considered including the contingent project triggers, the adjustment of project costs and costs for the additional 275kV strategic easements in Appendix N.

7.8 Statement of consistency with the 2011 NTNDP

The Rules[189] requires that the Revised Revenue Proposal include a statement of whether it is consistent with the most recent NTNDP and, if not, to identify reasons for the inconsistency. Section 8.8.2 of Powerlink's Revenue Proposal includes a statement of consistency with the 2010 NTNDP including commentary of the purpose, scope and the major points of consistency of both analyses.

The 2011 NTNDP contains, for the first time, a comparison of its findings with those of relevant and most recent TNSP Annual Planning Reports (APR). Section 2.2.1 of the 2011 NTNDP states that:

> the status and timing of projects listed in the 2011 APR generally correspond with developments identified by the 2010 NTNDP as occurring in the first 10 years[190].

Powerlink agrees with AEMO's assessment. This Revised Revenue Proposal is largely consistent with Powerlink's 2011 APR, and therefore with the 2011 NTNDP, with the exception of revised timings as a result of the revised demand forecast as discussed in Chapter 6.

Powerlink considers that this Revised Revenue Proposal is consistent with the 2011 NTNDP to the extent reasonable and practicable.

7.9 Revised forecast capital expenditure

This section presents Powerlink's revised capital expenditure forecast for the next regulatory period. Powerlink has incorporated the proposed changes from the AER's Draft Decision with the exception of:

- labour and material real cost escalators (Chapter 5);
- demand forecast (Chapter 6) and subsequent capital expenditure adjustment (Section 7.6);
- efficiency adjustment (Section 7.2);
- Carbon Price Trajectory probability (Section 7.4);
- Cost Estimate Risk Factor (Section 7.5); and
- incremental costs associated with the 500kV projects (Section 7.7).

[189] National Electricity Rules, Chapter 6A, Clause 6A.10.1(f), AEMC.
[190] 2011 National Transmission Network Development Plan, p.2-4, AEMO, December 2011.

Powerlink's revised capital expenditure forecast is shown by category in Table 7.4. Details of the individual projects can be found in the capital expenditure pro forma statements 4.1, 4.2, 4.3 and 4.4 which accompany the Revised Revenue Proposal.

Table 7.4: Revised capital expenditure forecast by category ($m, 2011/12)

Project Category		2012/13	2013/14	2014/15	2015/16	2016/17	Total
NETWORK							
Load driven	Augmentation	325.2	325.1	323.4	221.7	337.5	1,532.9
	Easements	17.3	21.9	30.1	34.5	41.3	145.0
	Connections	19.3	11.9	4.5	7.1	11.6	54.4
Non-load driven	Replacements	310.4	277.8	260.3	230.7	207.8	1,287.0
	Security/ compliance	25.5	20.5	9.0	2.8	1.7	59.4
	Other	33.1	30.8	20.0	21.8	12.8	118.5
	Total network	**730.8**	**687.9**	**647.2**	**518.6**	**612.8**	**3,197.1**
NON-NETWORK							
Business IT	Information technology	15.8	15.0	16.2	15.7	15.8	78.3
Support the business	Commercial buildings	5.7	3.3	3.1	2.9	3.1	18.2
	Motor vehicles	3.4	2.7	3.4	2.7	3.7	15.8
	Moveable plant	1.9	1.8	1.7	1.8	1.9	9.2
	Total non-network	**26.8**	**22.7**	**24.5**	**23.1**	**24.4**	**121.5**
Total capital expenditure		**757.6**	**710.6**	**671.6**	**541.6**	**637.2**	**3,318.6**

*Numbers may not add due to rounding.
This table is net of disposals.

Table 7.5 compares the revised capital expenditure forecast with the AER's Draft Decision.

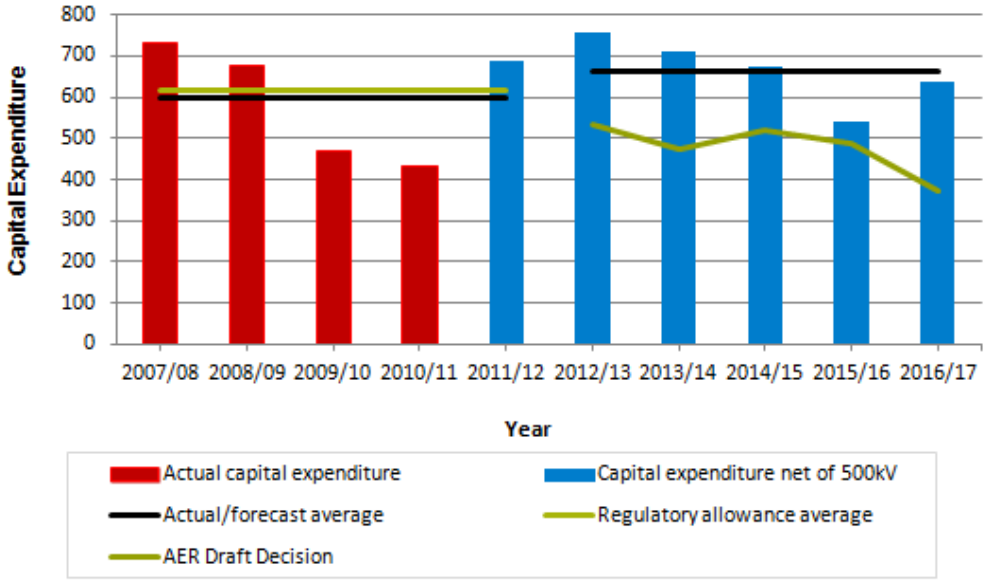
Table 7.5: Revised capital expenditure forecast comparison ($m, 2011/12)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	529	468	513	479	368	2,356
Revised Revenue Proposal	758	711	672	542	637	3,319

*Numbers may not add due to rounding.
This table is net of disposals.

Figure 7.3 depicts Powerlink's current and forecast capital expenditure compared to the AER's Draft Decision.

Figure 7.3: Current and revised forecast capital expenditure comparison ($m, 2011/12)



It can be seen in Figure 7.3 that the actual capital expenditure in the current regulatory period is very similar to the allowance and to the capital expenditure forecast by Powerlink for the next regulatory period. By comparison, the AER's Draft Decision capital expenditure allowance for the next regulatory period is clearly inadequate.

7.10 Equity raising costs

AER Draft Decision

The AER does not accept Powerlink's proposed allowance for equity raising costs associated with its forecast capital expenditure. Specifically, the AER does not consider that the following elements of Powerlink's proposed method for estimating equity raising costs are appropriate:

- use of a dividend yield approach to estimate the value of dividends under the cash flow analysis; and
- adoption of a cap of 18% for dividend reinvestment plans.

To determine Powerlink's equity raising cost allowance set out in the Draft Decision, the AER relied on an approach based on the Allen Consulting Group (ACG) report commissioned by the Australian Competition and Consumer Commission in 2004. In essence, the AER's method is to:

- calculate retained earnings as internal cash flows less dividends;
- deduct the equity portion of forecast capital expenditure to determine the external equity requirement;
- assume the dividend payment is sufficient to distribute 100% of imputation credits in the PTRM;
- assume that 30% of dividends paid will be returned to the business through a dividend reinvestment plan at a cost of 1% of the proceeds raised; and
- assume that the seasoned equity offer will cost 3% of proceeds.

The AER also rejected Powerlink's proposed recovery of $363,000 in additional equity raising costs that was not compensated for in the AER's South Pine to Sandgate contingent project decision of July 2008[191].

Powerlink's response

Powerlink's Revenue Proposal was based on, and supported by, an independent expert report from PwC. In preparing its Revised Revenue Proposal and response to the AER's Draft Decision, Powerlink again sought the assistance of subject matter experts, PwC. PwC's report in relation to the debt risk premium and equity raising costs is attached at Appendix B. The key findings of PwC's report in relation to equity raising costs are provided below. Overall, PwC:

- agree with the AER's assumptions with respect to the benchmark cost of implementing a dividend reinvestment plan (30%) and a seasoned equity offering (3% of proceeds); and
- remain of the view that the AER's assumption about the quantum of dividend payments (i.e. just sufficient are paid to exhaust the franking account) is inappropriate and that PwC's assumption to derive a benchmark yield on the basis of comparable entities is superior.

First, PwC notes that consistency with the AER's assumption for gamma only requires that a minimum payment of dividends be paid out (that is, so that the franking account is fully exhausted). It does not require the additional assumption that no further dividends be paid. For completeness, PwC note that businesses are not constrained to payout only franked dividends.

Second, PwC considers that the effect of the AER's assumption is to assume that a benchmark entity in Powerlink's position would pay a very low dividend yield, which would be commercially unsustainable for an infrastructure entity. As argued previously, PwC advise that investors in infrastructure businesses constitute a clientele that demands much higher dividend payouts than shareholders in the average firm listed on the Australian stock exchange.

Third, PwC's view is that a proper examination of the evidence implies that the most robust method for deriving the benchmark assumption about the quantum of dividend payments is to set those payments such that a benchmark dividend yield is achieved. It is noted that the dividend yield across listed infrastructure firms is stable over time (once the effect of unusual market events that pose challenges for measuring dividend yield are eliminated) and that dividend yield is the measure of dividends that is of most relevance to investors.

Therefore, PwC continues to recommend the assumption of a dividend policy that is informed by the long term dividend yield observed in the market for infrastructure businesses.

The AER criticised PwC's approach of determining the benchmark dividend payment based on the assumption of an empirically derived observation that the dividend yield for infrastructure businesses is 8.4%. Instead, the AER's proposal is to assume a dividend payout only sufficient to payout 100% of franking credits. PwC continue to disagree with the AER on this point.

Applying the methodology in its report appended to Powerlink's Revenue Proposal but accepting the AER's valid criticism about how the proportion of dividends is reinvested, PwC adopted the following inputs to derive a revised equity raising cost allowance for Powerlink's Revised Revenue Proposal:

- a dividend yield of 8.06%, which takes account of updated financial market information (which is slightly lower than PwC's previous estimate of 8.4%);
- a 30% return of dividends through a dividend reinvestment plan;
- a seasoned equity issue cost of 3% of the proceeds raised; and

[191] Revocation and Substitution of Powerlink 2007/08 to 2011/12 Revenue Cap – Amendment for South Pine to Sandgate Contingent Project, AER, 8 July 2008.

- a dividend reinvestment plan cost of 1% of the proceeds raised.

Using these inputs, and based on indicative capital expenditure values provided by Powerlink closer to the time of lodging its Revised Revenue Proposal, PwC estimate a total seasoned equity issue requirement of $29.4m over the 2013-17 regulatory period. This implies a total discounted cost of new equity funding of $23.8m.

Further independent advice

Powerlink also engaged SFG Consulting to comment upon the AER's method for calculating benchmark equity raising costs in its Draft Decision. This report is provided at Appendix D to the Revised Revenue Proposal. SFG Consulting's conclusions are reproduced below. SFG Consulting:

- agree with the AER that the participation rate for dividend reinvestment plans should be set to 30%;
- agree with Powerlink that dividend policy should be modelled on the basis of dividend yield rather than the minimum payout rate required to distribute imputation tax credits (as advanced by the AER);
- identified an error in the AER's calculation of equity raising costs – the calculation should not include negative external equity raising costs in any years; and
- consider that an appropriate estimate of equity raising costs, consistent with the conclusions set out above, and otherwise adopting the values set out in the AER's Draft Decision PTRM is $17.28m[192] over the five year regulatory period.

AER consultation

The AER[193] points out that its use of the dividend yield approach was considered at Powerlink's last revenue reset determination process. Further, the AER identifies that, most recently, it examined this issue in detail in the AER's NSW distribution determination.

To put the AER's timeframes into perspective, Powerlink's last revenue reset process occurred in 2006/07. The NSW distribution determination process occurred in 2007/08. Powerlink does not consider such timeframes to be recent. Nor does Powerlink consider it appropriate for the AER to establish firm positions and methodologies for transmission, as a result of a consultation process pertaining to an individual distribution or transmission determination. Where such methodologies are intended to have broader application across distribution and transmission businesses, Powerlink considers that such issues should be subjected to an industry wide consultation process. For example, as part of, or similar to, the AER's industry wide WACC Review.

Having said this, Powerlink notes that at commencement of its first WACC Review in 2008, the AER[194] considered there was merit in reviewing the methods for determining forecast inflation and debt and equity raising costs. The AER also specifically noted that:

> the outcome of this review in relation to debt and equity raising costs will not prevent a service provider from proposing alternative methods in its regulatory proposal, nor does it bind the AER in the method that will be adopted in a particular determination .... The inclusion of these matters in this review is intended to allow all stakeholders to comment on the issues associated with these matters in one forum, with the outcome providing guidance only as to how the AER may approach these matters in future determinations[195].

[192] Note – SFG's calculation applied PwC's original estimated dividend yield of 8.4% and is presented in nominal dollars.
[193] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.157, AER, November 2011.
[194] Issues Paper, Review of the Weighted Average Cost of Capital (WACC) Parameters for Electricity Transmission and Distribution, p.1, AER, August 2008.
[195] Ibid, p.104.

Powerlink acknowledges that the AER subsequently ceased consideration of forecast inflation and debt and equity raising transactions costs as part of the WACC Review[196]. Notwithstanding this, Powerlink maintains that contrary to its claims at that time, while service providers are not prevented from proposing alternative methods, in relation to equity raising costs the AER's actions in relation to Powerlink's Draft Decision indicate that:

- it has chosen to bind itself to methods adopted in a particular determination;
- consultation on such matters in one (broader) forum has not taken place; and
- rather than providing guidance only in future determinations (which Powerlink considers suggests flexibility), the AER has adopted a mandatory stance on such matters.

In light of the further information provided herein, Powerlink considers that the AER should reconsider its Draft Decision approach on this matter.

Contingent project

The AER has rejected Powerlink's proposal to claim equity raising costs associated with a contingent project on the basis that Powerlink cannot rely on Clause 11.6.12(f) of the Rules to recover additional equity raising costs in the next (2013-17) regulatory period for costs relating to its contingent project from the current (2008-12) regulatory period.

Powerlink accepts the AER's position above, given that the determination relates to cost allowances for the 2013-17 regulatory period. Therefore, no additional allowance has been incorporated into the total equity raising cost allowance provided in the Revised Revenue Proposal.

7.11 Revised equity raising costs

Powerlink notes that both its independent experts considered that Powerlink's equity raising cost allowance should be established on the basis of a dividend yield approach. Further, both advisers estimated required equity raising cost estimates of a similar order of magnitude. For the purposes of its Revised Revenue Proposal, Powerlink has not accepted or applied the AER's Draft Decision methodology. Consistent with the supporting expert reports identified above, Powerlink has incorporated PwC's forecast into the PTRM supporting its Revised Revenue Proposal. These equity raising costs are presented in Table 7.6 below, which have been discounted back to $2011/12 for inclusion in the opening RAB for the 2013-17 regulatory period, consistent with the AER's approach.

Table 7.6: Revised equity raising costs comparison ($m, 2011/12, end)

Equity Raising Costs	Total
AER Draft Decision	0.9
Revised Revenue Proposal	23.8

7.12 Directors' responsibility statement

In accordance with the Rules[197], this Revised Revenue Proposal must contain a certification of the reasonableness of the key assumptions that underlie the capital expenditure forecast by the Directors of Powerlink. The Directors' responsibility statement is included in Appendix O.

[196] Explanatory Statement, Electricity Transmission and Distribution Network Service Providers, Review of the Weighted Average Cost of Capital (WACC) Parameters, p.19, AER, December 2008.
[197] National Electricity Rules, Chapter 6A, Schedule S6A.1.1(5), AEMC.

8 Revised contingent projects

8.1 Summary

In the context of transmission regulation, contingent projects provide an appropriate balance between incentives for investment and efficiency[198]. Powerlink's proposed contingent projects were included in Section 8.9 and Appendix N of the Revenue Proposal. The identified contingent projects' indicative costs is not otherwise provided for in the capital expenditure forecast in Chapter 7.

In its Draft Decision, of the 13 proposed contingent projects, the AER:

- Was not satisfied that six of the proposed contingent projects met the contingent project criteria. In particular, that:
    - two of these projects were driven by a potential increase to the mandated security of supply standards. The AER did not accept that such changes to the mandated security of supply were probable in the next regulatory period (page 314);
    - the NEMLink project was not probable in the next regulatory period (page 315); and
    - the shared network projects of CopperString to Mt Isa and two projects associated with the Surat Basin were not probable in the next regulatory period (page 310).
- Accepted the need for seven of Powerlink's proposed contingent projects, but revised the project trigger event definitions for these projects (page 317)[199].

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary. Further details on each of the contingent projects are available in Appendix P of the Revised Revenue Proposal.

8.2 Change in reliability standards

AER Draft Decision

Table 8.1 summarises the AER's Draft Decision regarding the proposed contingent projects that are associated with the change in reliability standards.

[198] Rule Determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006, no. 18, p.54, AEMC, November 2006.
[199] The AER stated that it accepted eight contingent projects. However, only seven projects were accepted.

Table 8.1: Contingent projects associated with change in reliability standards

Project (Powerlink reference)	Proposed cost ($m, 2010/11)	Trigger event proposed by Powerlink	AER Draft Decision	Indicative costs ($m, 2010/11)
N-2 security to essential loads (CBD)	114.9	Change in reliability standard for supply to essential load	The AER did not accept this as a contingent project.	-
FNQ 275kV energisation	87.9	Change in reliability standard for supply to FNQ	The AER did not accept this as a contingent project.	-
Total	**202.8**			**-**

Source: AER data.

In relation to the two identified projects above, the AER was not satisfied that the trigger events are appropriate, or that the proposed contingent capital expenditure meets the capital expenditure criteria[200] .

The AER was concerned that the trigger event, as described by Powerlink, could cover unilateral decisions by Powerlink to its planning policy[201]. The AER considered that the Queensland Transmission Authority allows Powerlink a degree of discretion in the planning policy criteria Powerlink adopts[202]. The AER had also stated that it was unaware of any intention to change this Authority, and does not expect any changes in the next regulatory period. In addition, the AER considered that should any relevant changes to the reliability standard be made, Powerlink could apply for the additional capital expenditure via the regulatory pass-through provisions in the Rules[203].

Powerlink's response

Powerlink disagrees with the AER's grounds for rejecting the two contingent projects in Table 8.1. In particular, Powerlink considers that the AER's Draft Decision in this regard is based on an incorrect interpretation of Powerlink's Transmission Authority in the context of its jurisdictional legislative obligations.

For clarification, Powerlink's Transmission Authority T01/98 requires that its network be planned to 'N-1'. This criterion is explicit, and not assumed, in Clause 6.2 of its Transmission Authority:

> ...the transmission entity must plan and develop its transmission grid in accordance with good electricity industry practice such that:
>
> (a) if the power quality standards specify different obligations during normal and other operating conditions – the power quality standards will be met by the transmission entity;
>
> (b) if the power quality standards do not specify different obligations during normal and other operating conditions – the power quality standards will also be met by the transmission entity even during the most critical single network element outage; and
>
> (c) the power transfer available through the power system will be adequate to supply the forecast peak demand during the most critical single network element outage.

Powerlink's Transmission Authority is a legislative instrument under the Electricity Act (Qld) 1994 and is a mandated obligation which Powerlink must meet in developing its network. In light of

[200] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.314, AER, November 2011.
[201] Ibid.
[202] Ibid.
[203] Ibid, p.315.

this explicit legislative requirement, it is clear that Powerlink does not have discretion in planning its network to anything other than "N-1" for prescribed services. That is, unless specifically agreed otherwise with the affected DNSP or directly connected customer, there will be no loss of load other than load that is interruptible or dispatchable following a single credible contingent event.

The AER also noted that, as described, the trigger event could cover unilateral decisions by Powerlink to its planning policy[204] and that changes in standards should be dealt with via formal processes. Powerlink accepts that such an interpretation could have been drawn from its originally proposed trigger and agrees that changes to planning standards should occur through appropriate processes. However, this was not the intent.

Powerlink is concerned that in making its assessment, the AER appears to have not taken proper account of information submitted in its Revenue Proposal[205] relating to the AEMC's national review of reliability standards. The AEMC's national review of transmission reliability standards explicitly recommends that:

> The national framework would make allowance for reliability standards to differ between connection points or on the basis of some other readily understandable categorisation (e.g. by geographic area, such as CBD, metro or rural areas), depending on the criticality of load or an explicit CVR (Customer Value of Reliability)[206].

This formal consultation process has been underway for some years. Powerlink notes that at its June 2011 meeting, the Ministerial Council on Energy (now the Standing Council on Energy and Resources (SCER)) indicated that it was finalising its policy position in relation to the AEMC's Transmission Reliability Standards Review[207]. To the extent that this and any other recommendations are accepted by the SCER and applied by the Queensland Government, the obligations on Powerlink will similarly be applied through formal means consistent with jurisdictional legislative requirements. The AER is aware of the status of this review as noted in its publication State of the Energy Market 2011[208]. As such, a change in reliability standards is a real probability in the next regulatory period.

To address the AER's concern in this regard, Powerlink proposes that the wording of the trigger for both projects in Table 8.1 be amended to clarify its intent. The revised proposed trigger for both projects is:

- A change in the reliability standards for supply to specific regions or areas as specified in Powerlink's Transmission Authority or other legislative and/or regulatory instruments.

Powerlink considers that such an outcome should provide the AER with confidence that the trigger event is not one that is within Powerlink's unilateral power to trigger. Rather, what would be required is a change to Powerlink's Transmission Authority or a legislative and/or regulatory instrument. For completeness, Powerlink does not consider that its Transmission Authority permits Powerlink to select the reliability standards it will apply.

In addition, Powerlink notes the AER's view that given it is unlikely an increase in the reliability standard would become effective in the next regulatory period, Powerlink may apply to have the expenditure recognised via the regulatory pass-through provisions in the Rules. In its overarching comments, the AER also concluded that the proposed contingent projects did not meet the capital expenditure criteria. However, Powerlink notes that the AER has not provided any

[204] Ibid, p.314.
[205] Appendix N Powerlink Proposed Contingent Projects, 1 July 2012 to 30 June 2017, p.24, May 2011.
[206] Updated Final Report, Transmission Reliability Standards Review, p.11, November 2010.
[207] Energy and Resources Ministers' Meeting Communiqué, p.3, 10 June 2011.
[208] State of the Energy Market 2011, p.65, AER, 2011.

specific explanation or justification as to which criteria it considers the proposed contingent projects have not met.

Regarding the AER's inference about use of the pass-through provisions to recoup these costs, Powerlink considers such an approach to be inconsistent with the contingent project provisions of the Rules. In particular, Clause 6A.8.1 of the Rules requires that the AER must accept a proposed contingent project if it is satisfied the project meets certain conditions. Powerlink considers that its revised trigger addresses the specific concerns raised by the AER. Powerlink also maintains its Revenue Proposal position that the projects in Table 8.1 meet the contingent project criteria, noting the absence of any explanation from the AER in its Draft Decision as to which specific capital expenditure criteria it considers these projects do not meet. Prior to making its Final Decision, Powerlink would like the opportunity to respond to the AER's specific capital expenditure criteria concerns when identified.

Therefore, Powerlink considers that the AER should accept the two proposed reliability standard contingent projects with the amended trigger.

8.3 National transmission network developments and interconnectors

AER Draft Decision

Table 8.2 summarises the AER's Draft Decision regarding the proposed contingent projects associated with the national transmission network developments and interconnectors.

Table 8.2: Contingent projects associated with national transmission network developments

Project (Powerlink reference)	Proposed cost ($m, 2010/11)	Trigger event proposed by Powerlink	AER Draft Decision	Indicative costs ($m, 2010/11)
NEMLink – Queensland component	788.0	Successful application of the Regulatory Test leading to the recommendation of NEMLink with expenditure during the next regulatory period	The AER did not accept this as a contingent project	-
QNI upgrade – Queensland component	60.6	Successful application of the Regulatory Test leading to the recommendation of QNI during the next regulatory period	The AER invited Powerlink to nominate an alternative trigger event	60.6
Total	**848.6**			**60.6**

Source: AER data.

The AER did not accept NEMLink as a contingent project as it considered that the project was not probable in the next regulatory period[209]. However, the AER accepted that there is a possibility that the Queensland – New South Wales Interconnector (QNI) upgrade, unlike NEMLink, may occur in the next regulatory period and confirmed its agreement that the project be treated as a contingent project[210].

[209] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.315, AER, November 2011.
[210] Ibid.

The AER also stated that it no longer considered the completion of a RIT-T to be a suitable contingent project trigger event. The AER considered that Powerlink should develop further triggers for the QNI upgrade contingent project consistent with the Rules.

Powerlink's response

NEMLink – Queensland component

Powerlink accepts the AER's Draft Decision not to include NEMLink as a contingent project given AEMO has, in the 2011 NTNDP, advised that it is unlikely to be required in Powerlink's next regulatory period[211].

QNI upgrade – Queensland component

Powerlink acknowledges the AER's acceptance of QNI upgrade – Queensland component as a contingent project. In light of the AER's stated concerns regarding the difficulty in imposing a trigger event that meets the contingent project criteria and the capital expenditure objectives[212], and the subsequent recommendation that Powerlink describe a trigger that better meets the Rules criteria[213], Powerlink proposes the following revised triggers for the QNI upgrade contingent project:

- the publication by AEMO of advice (through the NTNDP or otherwise) to the effect that in its view potential market benefits further QNI augmentation studies (jointly by TransGrid and Powerlink) would be warranted. Any augmentation works would require capital expenditure within the 2013-17 regulatory period; and
- the successful joint application of the RIT-T by Powerlink and TransGrid concluding that a network solution maximises the net economic benefit under the RIT-T, compared to all other credible options across a range of reasonable scenarios is viable based on the principles and methodology of the RIT-T; and
- the financial commitment by the Powerlink and TransGrid Boards to undertake the project; and
- that Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and
- that where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.

8.4 Commitment of specific load or generation at a specific location

AER Draft Decision

Table 8.3 summarises the AER's Draft Decision regarding the proposed contingent projects relating to the commitment of specific load or generation at a specific location.

[211] 2011 National Transmission Network Development Plan, Conclusions Section 6.5, p.6-12, AEMO, 2011.
[212] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.317, AER, November 2011.
[213] Ibid.

Table 8.3: Contingent projects associated with commitment of specific load or generator

Project (Powerlink reference)	Proposed cost ($m, 2010/11)	Trigger event proposed by Powerlink	AER Draft Decision	Indicative costs ($m, 2010/11)
Western Downs to Columboola 275kV 3rd circuit	59.5	Commitment for net demand in the Surat area to exceed 850MW, or net generation export from the Surat area to exceed 850MW	The AER did not accept this as a contingent project.	-
Columboola to Wandoan South 3rd 275kV circuit	63.3	Commitment for net demand supplied from Wandoan South to exceed 850MW, or net generation export from the Wandoan South area to exceed 850MW	The AER did not accept this as a contingent project.	-
Mt Isa connection shared network works	74.4	Commitment of load in excess of 200MW to be connected to Woodstock 275kV Substation	The AER did not accept this as a contingent project.	-
Galilee Basin connection shared network works	88.4	Commitment of additional load in excess of 175MW to be connected to Lilyvale 275kV Substation	The AER has amended the trigger event	88.4
Moranbah area	54.9	Commitment of additional Northern Bowen Basin increasing peak demand in the North zone to in excess of 870MW	The AER has amended the trigger event	54.9
Bowen industrial estate	78.7	Commitment for additional load increasing demand supplied from the Strathmore-Bowen North 132kV feeders to in excess of 215MW	The AER has amended the trigger event	78.7
Callide to Moura transmission line and Calvale transformer	50.8	Commitment of additional load increasing demand supplied from the 132kV network to Moura in excess of 80MW	The AER has amended the trigger event	50.8
Gladstone State Development Area (GSDA)	115.7	Commitment of additional load in excess of 575MW within the GSDA and/or Curtis Island	The AER has amended the trigger event	115.7
Ebenezer 330/275/110kV establishment	62.7	Commitment of load in excess of 125MW around the Ebenezer area	The AER has amended the trigger event	62.7
Total	**648.4**			**451.2**

Source: AER data.

The AER accepted that six projects relating to the commitment of specific load or generation at a specific location, met the contingent project criteria. For each of these projects the AER provided amended triggers.

The AER did not accept three projects because it did not consider these as probable within the next regulatory period. These were:

- the Mt Isa project – which is no longer considered viable due to Xstrata entering into a new generation contract with the Diamantina Power Station for long term electricity supply to Mt Isa; and
- two Surat Basin projects – which have been collectively referred to by the AER as the "Surat Basin contingent project", namely the Columboola to Wandoan South 3rd 275kV circuit project and Western Downs to Columboola 275kV 3rd circuit project. The AER considered these were unlikely due to the effects of 'netting off', the amount of 'headroom' and no reliability requirement for more than the as-identified 850MW.

The AER accepted Powerlink's clarification that the contingent projects are for prescribed transmission services.

Powerlink's response

Mt Isa connection shared network works

Powerlink accepts the AER's decision that, in light of the October 2011 announcement from Xstrata, Powerlink's Mt Isa contingent project is no longer required.

Western Downs – Columboola 275kV 3rd circuit / Wandoan South – Columboola 275kV 3rd circuit

Powerlink disagrees with EMCa's characterisation of the above projects and the AER's decision to treat these separate needs as a single contingent project. From its Draft Decision, Powerlink considers that the AER and EMCa appear to have misunderstood the nature and form of network developments that must occur from a practical perspective in order to meet the identified needs.

Powerlink proposed two separate contingent projects given its views of the probable developments that could occur in the region that could trigger either network development, independent of the other. For clarification:

- should additional load seek to connect in the Columboola area, this could trigger the need for the Western Downs to Columboola contingent project only, net of any additional generation that may be sourced from Columboola or Wandoan South; and
- should additional load seek to connect in the Wandoan South area, this could trigger the need for reinforcement of the Columboola to Wandoan South section of the network and/or the Western Downs to Columboola section of the network, net of any additional generation servicing the area.

In any of the circumstances above, Powerlink will conduct a RIT-T prior to making the investment decision to determine the most efficient option to address the identified need, including an assessment of non-network options.

Powerlink's[214] consideration of generation was also made explicit in its response to AEMO's submission to the AER, in that the generation aspect of the trigger occurs when the amount of generation that must be exported from the Surat area for Powerlink to meet its mandated supply obligations exceeds 850MW.

[214] Response to AEMO's Submission on Powerlink's 2013-17 Revenue Proposal, Powerlink, 29 September 2011.

The AER's key reason for rejecting the Surat contingent projects is that it considered the projects are unlikely[215] in the next regulatory period. Consistent with its Revenue Proposal, Powerlink has highlighted the significance, magnitude and speed at which mining and gas exploration developments have been occurring in Queensland and in particular, in the Surat and Galilee Basins. To further substantiate Powerlink's position for the Surat Basin, in the six months since May 2011, Powerlink has managed the following customer activity:

[redacted]

Figure 8.1 and Figure 8.2 illustrates the customer activity in the last six months.

Figure 8.1: Surat Basin levels of as-submitted customer connections May 2011

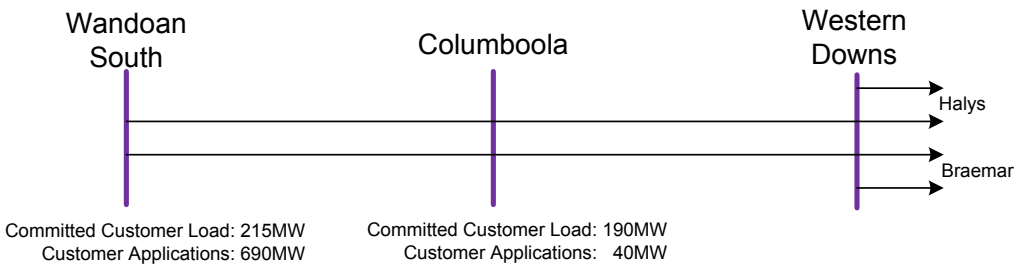
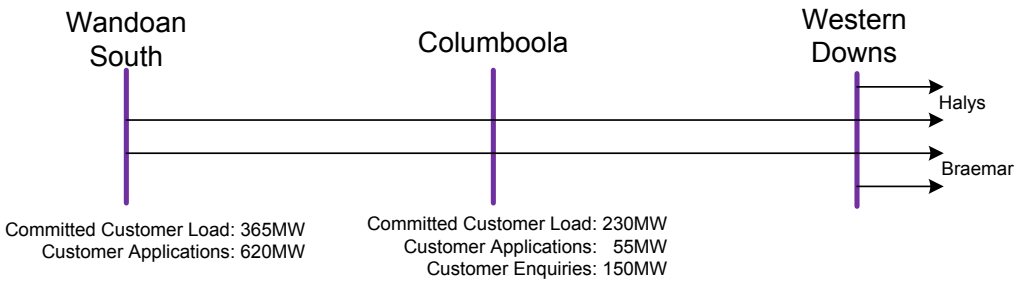


Figure 8.2: Surat Basin levels of current customer connections December 2011



Given the level of customer activity in this area, Powerlink considers it probable that the trigger for either or both these contingent projects will occur in the next regulatory period. If required, Powerlink can provide additional supporting connection information on a confidential basis to the AER.

Therefore, Powerlink considers that the AER should accept the two Surat Basin contingent projects discussed above as individual contingent projects in its Final Decision. The amended

[215] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.318, AER, November 2011.

triggers for these projects and the other six proposed contingent projects in Table 8.3 are described in the following section.

8.5 Changed triggers

AER Draft Decision

The AER accepted seven[216] of Powerlink's 13 proposed contingent projects. For all of the accepted contingent projects, the AER amended the triggers. Specifically, the AER has proposed the following additional triggers:

- the connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and
- that the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and
- that Powerlink has completed a RIT-T assessment finding that the works are the preferred option; and
- that Powerlink provides evidence that:
    - Powerlink has made a reasonable endeavour (as permitted by Clause 6.3 of the Transmission Authority) to negotiate a reduction in the obligations imposed on Powerlink by Clause 6.2 of the Transmission Authority; and
    - where efficient to do so, Powerlink made a reasonable offer of compensation to those persons who receive, or wish to receive, transmission services; and
    - an insufficient number of those persons are willing to accept a negotiated outcome to amend an existing or establish a new agreement sufficient to offset the need for this project[217].

Powerlink's response

Powerlink acknowledges the AER's acceptance of the seven contingent projects identified in its Draft Decision. Powerlink's Revised Revenue Proposal incorporates these projects accordingly. However, Powerlink notes that while the AER requires the amended triggers to be reflected in Powerlink's revised contingent project triggers, its Draft Decision did not provide any reasons why Powerlink's proposed triggers are not considered appropriate and why its own amendments should be substituted. This is in contrast to the AER's reasons for rejecting other contingent projects. However, noting the triggers the AER has proposed, Powerlink has refined its triggers accordingly.

Negotiated outcomes

The AER has included additional sub-triggers in a number of contingent projects relating to negotiated connection outcomes. Powerlink considers that the existing regulatory safeguards that are in place will provide the level of security the AER is seeking. Consequently, the AER's proposed trigger conditions are not necessary.

As described in Clause 6.3 of its Transmission Authority, Powerlink may only vary its obligations under Clause 6.2 by way of a negotiation with the variation being recorded in a connection agreement made between Powerlink and the person who receives or wishes to receive transmission services.

[216] The AER stated that it accepted eight contingent projects. However, only seven projects were accepted.
[217] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, pp.321-324, AER, November 2011.

In addition, Powerlink must comply with:

- the RIT-T process set out in Section 5.6.6 of the Rules. This process also provides a mechanism through which non-network options such as voluntary load curtailment can be negotiated, agreed with the customer, and implemented as an alternative to network solutions;
- network connection obligations set out in Section 5.4A of the Rules;
- the Pricing Methodology (once approved by the AER) set out in Chapter 6A, which relates to the regulation of prescribed transmission service prices; and
- the Negotiating Framework (once approved by the AER) set out in Chapter 6A. This sets out the interactions between Powerlink and any service applicant in relation to the provision of Negotiated Transmission Services.

Given these relevant safeguards and obligations, Powerlink does not agree that the additional contingent project trigger conditions are necessary and does not consider that the need for the additional requirements is justified.

Non-network solutions

Powerlink notes that any grid support relevant to a contingent project will not be incorporated into the Maximum Allowable Revenue (MAR) for Powerlink's 2013-17 revenue cap. However, from a practical perspective, such costs may be required as a substitute for, or in addition to, the capital expenditure that may be required for the contingent project. Powerlink also notes that the contingent project provisions in the Rules provide for incremental operating expenditure to be sought by the TNSP in the event a contingent project trigger is activated. It is unclear in the Rules however, as to whether such costs can also include network support.

To this end, Powerlink seeks confirmation from the AER in its Final Decision that any network support costs relevant to an approved contingent project can be treated as a pass-through by Powerlink in its 2013-17 regulatory period. Powerlink notes that such a requirement is necessary in relation to all of its proposed contingent projects.

Absolute versus relative triggers

In relation to the Callide to Moura transmission line and Calvale transformer, Moranbah Area, and Bowen Industrial Estate contingent projects, Powerlink notes that the AER had specified the triggers as being relative. That is, the total amount of load required to trigger a project has been referenced to a specific year as opposed to a standalone value. For example, the AER has stated the triggers as being stated "in excess of XXX MW above the 2010 capacity"[218] as opposed to "in excess of XXX MW" (i.e. absolute), and not relative to any particular capacity in a year.

Table 8.4 outlines the AER's as-stated relative triggers and the proposed Powerlink triggers.

[218] Ibid, pp.321-323.

Table 8.4: Absolute versus relative triggers summary

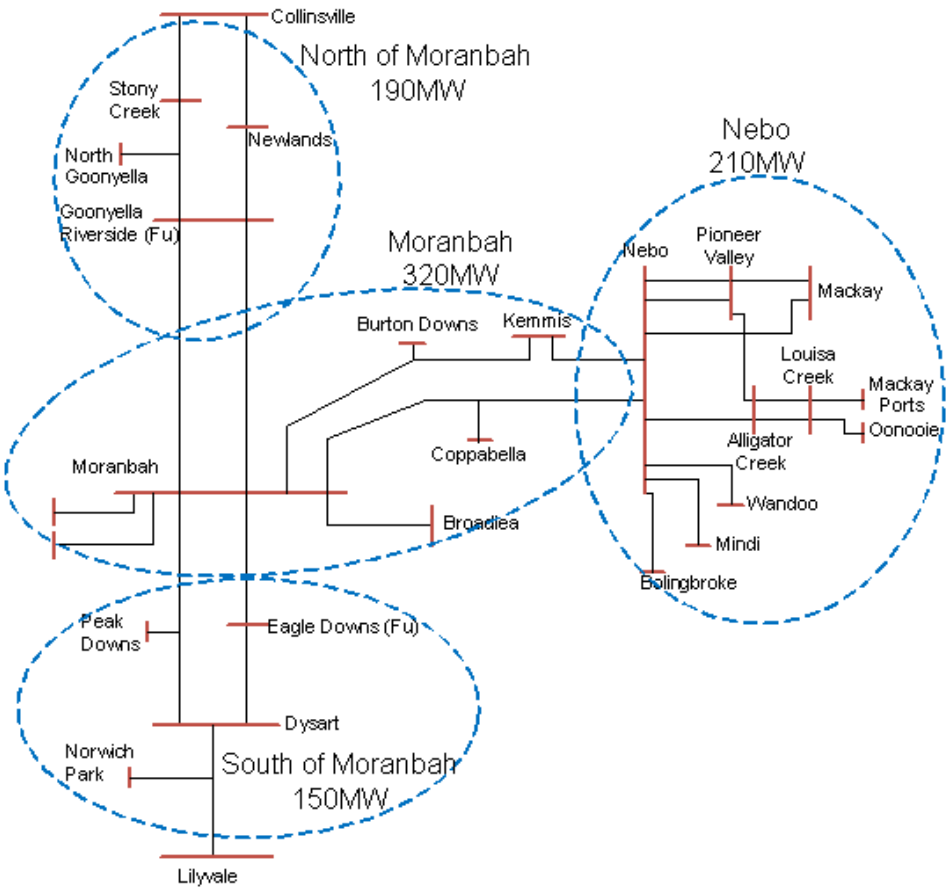
Contingent project	AER as-stated trigger	Powerlink proposed trigger
Callide to Moura transmission line	Commitment of net load in excess of 80MW above 2010 capacity, to be connected on the 132kV network supplying Moura substation; and...	Commitment of additional load increasing demand supplied from the 132kV network to Moura in excess of 80MW.
Bowen Industrial Estate	Commitment of net load in excess of 215MW above 2010 capacity, to be connected to the 132kV switching station in the Abbot Point State Development Area; and...	Commitment for additional load increasing demand supplied from the Strathmore-Bowen North 132kV feeders to in excess of 215MW.
Moranbah Area	Commitment of net load in excess of 870MW above 2010 capacity, to be connected to in the Northern Bowen Basin at the Peak Downs North 132kV substation; and...	Note: please refer to Updated proposed contingent projects – Section 8.6.

8.6 Updated proposed contingent projects

Since lodging its Revenue Proposal in May 2011, Powerlink has continued to receive enquiries and applications to connect in relation to load in the Moranbah Area. The number and size of connection enquiries have been most significant in the areas to the north and south of Moranbah. The four areas that are representative of the Moranbah area are shown in Figure 8.3:

- North of Moranbah;
- South of Moranbah;
- Moranbah; and
- Nebo.

Figure 8.3: Moranbah region associated areas



A shift in customer focus in the Moranbah area has led Powerlink to reassess the requirements for augmentation in the area. This, along with the corresponding change in planning studies, has resulted in Powerlink proposing the following changes to the proposed contingent project outlined below.

Powerlink considers that the Moranbah area contingent project put forward in its Revenue Proposal should now be considered as two separate contingent projects as follows:

1. South of Moranbah contingent project:
    - This is triggered by additional load connecting to the 132kV network between Moranbah and Lilyvale increasing the peak demand to in excess of 150MW, resulting in an overload of the 132kV network between Lilyvale and Moranbah.
    - To address this limitation, Powerlink proposes to establish a 132kV transmission line between Lilyvale and Dysart at a cost of approximately $51.1m.
2. North of Moranbah contingent project:
    - This is triggered by additional load connecting to the 132kV network between Moranbah and Collinsville increasing the peak demand to in excess of 190MW, resulting in an overload of the 132kV network between Moranbah and Collinsville.
    - To address this limitation, Powerlink proposes to establish a new substation between Moranbah and Newlands, and subsequently to establish a 132kV

transmission line between Moranbah and the proposed new substation, at a total cost of $43.6m.

Powerlink has provided further details on these contingent projects in Appendix P.

8.7 Additional proposed contingent project

Since the submission of the Revenue Proposal, Powerlink has also identified a significant new contingent project. However, Powerlink claims that this contingent project should remain confidential, as the information identifies preliminary network planning scenarios.

For more details on this project, please refer to Appendix P.

8.8 Revised contingent project summary

A summary of Powerlink's revised contingent projects triggers and indicative costs as well as further detail is contained in Table 8.5 and Appendix P of the Revised Revenue Proposal.

Table 8.5: Summary of contingent projects and indicative costs

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
N-2 security to essential loads (CBD)	The revised triggers are: • A change in the reliability standards for supply to specific regions or areas as specified in Powerlink's Transmission Authority or other legislative and/or regulatory instruments. The identified critical loads include the Brisbane CBD, Brisbane airport, Brisbane Port and Australia TradeCoast precinct; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	112.0
FNQ 275kV energisation	The revised triggers are: • A change in the reliability standards for supply to specific regions or areas as specified in Powerlink's Transmission Authority or other legislative and/or regulatory instruments. The identified critical loads are in the Far North Queensland area including Woree; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	85.7
QNI upgrade – Queensland component	The revised triggers are: • The publication by AEMO of advice (through the NTNDP or otherwise) to the effect that in its view potential market benefits further QNI augmentation studies (jointly by TransGrid and Powerlink) would be warranted. Any augmentation works would require capital expenditure within the 2013-17 regulatory period; and • The successful joint application of the RIT-T by Powerlink and TransGrid concluding that a network solution maximises the net economic benefit under the RIT-T, compared to all other credible options across a range of reasonable scenarios is viable based on the principles and methodology of the RIT-T; and • The financial commitment by the Powerlink and TransGrid Boards to undertake the project; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	59.1

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
Western Downs to Columboola 275kV 3rd circuit	The revised triggers are: • Commitment for net demand in the Surat area to exceed 850MW, or net generation export from the Surat area to exceed 850MW; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	58.0
Columboola to Wandoan South 3rd 275kV circuit	The revised triggers are: • Commitment for net demand supplied from Wandoan South to exceed 850MW, or net generation export from the Wandoan South area to exceed 850MW; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	61.7

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
Galilee Basin connection shared network works	The revised triggers are: • Commitment of additional load in excess of 175MW to be connected to Lilyvale 275kV Substation; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	103.8
Bowen industrial estate	The revised triggers are: • Commitment for additional load increasing demand supplied from the Strathmore – Bowen North 132kV feeders to in excess of 215MW; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	78.7

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
Callide to Moura transmission line and Calvale transformer	The revised triggers are: • Commitment of additional load increasing demand supplied from the 132kV network to Moura to in excess of 80MW; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	49.5
Gladstone State Development Area (GSDA)	The revised triggers are: • Commitment of additional load in excess of 575MW (above 2010 APR medium outlook forecast levels in summer 2016/17) within the GSDA and/or Curtis Island; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	112.8

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
Ebenezer 330/275/110kV establishment	The revised triggers are: • Commitment of load in excess of 125MW around the Ebenezer area; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	61.1
South of Moranbah	The revised triggers are: • Triggered by additional load connecting to the 132kV network between Moranbah and Lilyvale increasing the peak demand to in excess of 150MW, resulting in an overload of the 132kV network between Lilyvale and Moranbah; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	51.1

Contingent project title	Revised triggers	Revised indicative costs ($m, 2010/11)
North of Moranbah	The revised triggers are: • Triggered by additional load connecting to the 132kV network between Moranbah and Collinsville increasing the peak demand to in excess of 190MW, resulting in an overload of the 132kV network between Moranbah and Collinsville; and • That the additional load will lead to an N-1 overload, or a reduction in transfer capacity resulting in an N-1 overload condition; and • That Powerlink has completed a RIT-T assessment recommending that augmentation of the shared network be undertaken to address the N-1 overload conditions identified above; and • That Powerlink has, as required under the RIT-T assessment, considered available network and non-network solutions capable of meeting the identified limitation set out in the Project Assessment Draft Report; and • The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point(s); and • That any connection is consistent with Section 5.4A of the Rules; and • That where Powerlink is successful in finding non-network solutions requiring compensation, Powerlink can seek pass-through of such cost in accordance with Clause 6A.7.2 of the Rules.	43.6
[redacted]		
Total		**919.3**

Note: Where identified, Powerlink's contingent projects are expected to be subject, notionally, to the RIT-T. As a result, they will be conducted either solely by Powerlink or jointly by Powerlink and the relevant DNSP/TNSP. For clarification, to the extent that one of the Queensland DNSPs conducts the Regulatory Test/Regulatory Investment Test which recommends that works be undertaken by Powerlink to meet the identified limitation, Powerlink will adopt the relevant published DNSP Regulatory Test outcome for the purposes of demonstrating the proposed triggers identified herein.

9 Forecast Operating Expenditure

9.1 Summary

Chapter 9 of Powerlink's Revenue Proposal sets out the methodology to determine the operating expenditure forecast for the next regulatory period and included the key inputs and assumptions used in determining the operating expenditure forecast. As explained in the Revenue Proposal, Powerlink's operating expenditure components have remained unchanged since 1999, as the underlying concepts behind them continue to consistently deliver both cost efficient and effective operational outcomes.

In its Draft Decision, the AER made an assessment of Powerlink's forecast operating expenditure for the next regulatory period and:

- was satisfied that the operating expenditure model was a reasonable method of forecasting controllable operating expenditure (page 39);
- accepted Powerlink's actual costs are reflective of its recurrent costs (page 176);
- did not accept Powerlink's 2009/10 base year and substituted the 2010/11 year (page 175);
- removed provisions from the 2010/11 base year to reflect Powerlink's non-recurrent costs (page 177);
- did not accept Powerlink's network growth escalators and substituted a revised estimate removing real-cost escalation (page 180);
- did not accept Powerlink's proposed labour escalators (page 52) and substituted an estimate based on the labour price index, adjusted for productivity improvements (page 186);
- accepted Powerlink's economies of scale factors (page 189);
- reduced Powerlink's step change requirements and in particular:
    - did not accept Powerlink's land tax forecast and substituted a revised forecast for the next regulatory period (page 188);
    - accepted all of Powerlink's Tower Painting new requirement (page 188);
    - accepted the leasing and relocation costs for Powerlink's new accommodation requirements, but did not accept the building maintenance and outlay costs (page 189);
    - did not accept Powerlink's proposed climate change investigations (page 190);
    - did not accept Powerlink's additional building maintenance, carpet and painting costs (page 191); and
    - accepted the depot leasing for Powerlink's South West Queensland maintenance costs, but did not accept the vehicle leasing, security or increased helicopter support (page 192).
- accepted Powerlink's insurance premium forecast (page 196);
- did not accept Powerlink's self insurance allowance (page 193);
- did not accept Powerlink's network support costs (page 199); and
- did not accept Powerlink's debt raising costs (page 204).

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also

provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

9.2 Historical operating expenditure – controllable and total

As outlined in Section 5.3 of Powerlink's Revenue Proposal, the Rules requires that certain information be provided in relation to historical and forecast operating expenditure. This Section updates Powerlink's historical controllable and total operating expenditure and analyses Powerlink's performance against the AER allowance.

Controllable operating expenditure

Figure 4.2 of the AER's Draft Decision[219] and similarly Table 5.3[220] and Table 5.4[221] of Powerlink's Revenue Proposal outlines Powerlink's actual controllable operating expenditure performance against the forecast controllable operating expenditure allowance. The figure and tables show that Powerlink's actual controllable operating expenditure was close to the controllable operating expenditure allowance over the current regulatory period. Table 9.1 below updates Table 5.3 of the Revenue Proposal to reflect actual 2010/11 data. The 2011/12 estimate is expected to remain as stated in the Revenue Proposal.

Table 9.1: Operating expenditure (2007/08 to 2011/12) by category ($m, nominal)

	2007/08	2008/09	2009/10	2010/11	2011/12 (estimate)	Total
Field Maintenance	37.0	41.7	44.7	47.9	53.5	224.9
Operational Refurbishment	18.6	20.2	22.2	24.4	27.0	112.4
Maintenance Support	10.3	10.3	11.0	11.7	12.4	55.6
Network Operations	10.4	11.5	12.2	13.0	13.6	60.7
Asset Management Support	25.9	28.2	29.6	31.1	32.6	147.4
Corporate Support	9.0	9.7	12.7	15.2	13.8	60.4
Actual/estimated controllable operating expenditure*	**111.2**	**121.6**	**132.4**	**143.3**	**152.9**	**661.4**
Insurances	5.4	5.9	6.7	7.3	8.0	33.3
Network Support	27.3	15.1	12.7	0	0.4	55.7
Debt Raising	0.2	0.2	0.3	0.2	0.3	1.2
Actual/estimated total operating expenditure*	**144.1**	**142.8**	**152.1**	**150.8**	**161.5**	**751.6**

*Numbers may not add due to rounding.

The 2011/12 figures reported in Table 9.1 are Powerlink's best estimate of actual operating expenditure costs. Powerlink notes that the 2010/11 and 2011/12 operating expenditure values in Powerlink's pro-forma statements will vary slightly to Table 9.1 as they are derived from the operating expenditure model.

Powerlink noted in its Revenue Proposal that there were no material year on year variations between Powerlink's actual/estimated controllable operating expenditure and the AER allowance[222]. A comparison of the estimated 2010/11 controllable operating expenditure

[219] Ibid, p.168.
[220] 2013-2017 Powerlink Queensland Revenue Proposal, p.37, Powerlink, May 2011.
[221] Ibid, p.38.
[222] 2013-2017 Powerlink Queensland Revenue Proposal, p.38, Powerlink, May 2011.

allowance[223] to the actual 2010/11 controllable operating expenditure reinforces that there is not a material difference between the 2010/11 actual and forecast.

In relation to the immaterial difference and the interaction with the Efficiency Benefit Sharing Scheme, the AER suggested that Powerlink had not responded to the incentives in the regime and has not actively sought efficiency savings[224]. Powerlink refutes this notion and highlights the aggressive economy of scale factors, which have been accepted by the AER, which are included in its operating expenditure forecasts. The economies of scale reduce the operating expenditure allowance and incentivise Powerlink to actively seek savings. After a review of Powerlink's historical operating expenditure and a detailed benchmarking analysis, the AER concluded that Powerlink's actual costs were reflective of its recurrent costs[225]. Powerlink considers that this would indicate that the AER set Powerlink's current regulatory period controllable operating expenditure allowance at an appropriate level.

Further details of operating expenditure are provided in the pro forma statements 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 and 5.2 in relation to historical operating expenditure.

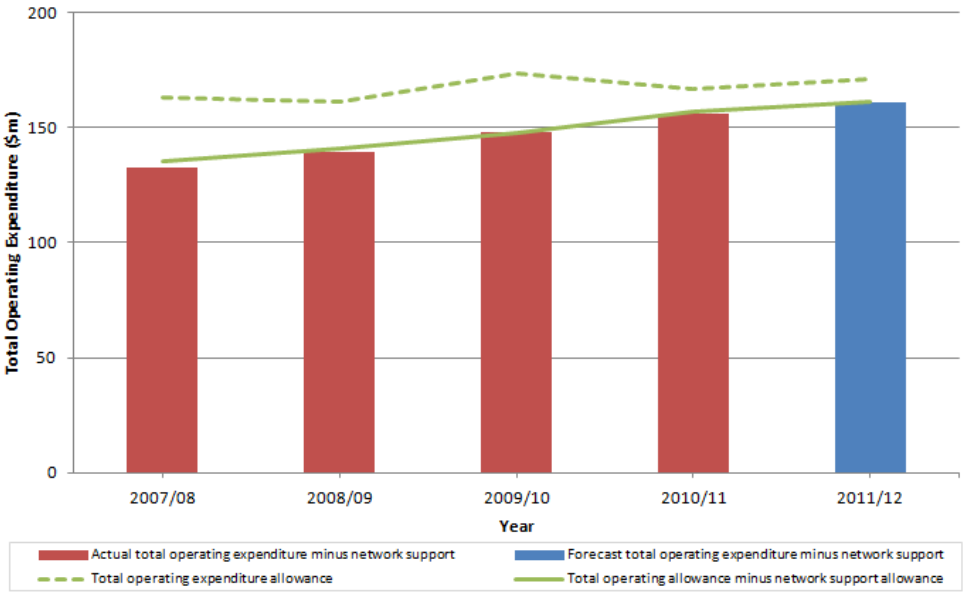
Total operating expenditure

Figure 7.1 of the AER's Draft Decision[226] outlines Powerlink's total operating expenditure performance against the AER's allowance. It takes into account the impact of network support on the total operating expenditure forecast. The AER also makes note that under Clause 6A.7.2 of the Rules, any differences between actual and forecast network support payments is passed through to network users. That is, any network support allowance not used by Powerlink is required to be returned to customers.

Powerlink does not agree with the AER's reporting of the total operating expenditure allowance and the total operating expenditure forecast in Figure 7.1 of the AER's Draft Decision. In Figure 9.1, Powerlink has replicated the graph, removing the respective forecast and actual network support from the total operating expenditure.

[223] Ibid, p.38.
[224] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.166, AER, November 2011.
[225] Ibid, p.176
[226] Ibid, p.37.

Figure 9.1: Total operating expenditure allowance and actual/forecast ($m, 2011/12)



Source: Powerlink data.

In comparison to the AER's Draft Decision Figure 7.1, Figure 9.1 shows that Powerlink's actual total operating expenditure (when the impact of network support is removed) is more closely aligned with the allowance. Consistent with Powerlink's controllable operating expenditure, Powerlink considers that there is no material year on year variations between Powerlink's actual/estimated total operating expenditure and the AER allowance when the impacts of network support are taken into account.

9.3 Operating expenditure base year

AER Draft Decision

The AER substituted its own view of what it considered to be an efficient base year. That is, it adopted 2010/11 (or year 4 of the current regulatory period) as opposed to Powerlink's proposed 2009/10 (or year 3). In essence, the AER considered[227] that the use of 2009-10 actual data was not appropriate as the base year as it:

- was not the most recent full year of actual data for the Final Decision; and
- was inconsistent with the assumptions in the transmission EBSS.

Powerlink's response

From an overarching perspective and consistent with the regulatory framework established in the Rules for transmission, Powerlink considers that the AER is required to assess Powerlink's proposal against the operating expenditure objectives, criteria and factors in the Rules. Most importantly, this requires that the AER commence its assessment with Powerlink's Revenue Proposal. In the case of operating expenditure, if the AER is satisfied that Powerlink's proposal reasonably reflects efficient costs or costs that a prudent operator in the circumstances of Powerlink would require to meet the operating expenditure objectives, it must accept Powerlink's forecast. This includes Powerlink's proposed base year. To the extent that the AER is

[227] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.175, AER, November 2011.

not satisfied, it must provide reasons which are expected to be consistent with the objectives, criteria and factors in the Rules.

Powerlink disagrees with the AER's decision to substitute 2010/11 as the base year from which to forecast future operating expenditure requirements for a number of reasons outlined below.

Powerlink proposed that 2009/10 be the base reference year from which to forecast future operating expenditure for the 2013-17 regulatory period. In developing its proposal, Powerlink made its own detailed assessment to identify and ensure that any non-recurrent items or items outside the normal scope of operating expenditure were excluded from its proposed base year costs. With the exception of costs associated with development of its 2013-17 Revenue Proposal, Powerlink considers that all works captured in its 2009/10 operating expenditure are normal operating and maintenance costs and therefore comprise an efficient base year. As in previous regulatory reset processes, Powerlink was required to explain and demonstrate its approach to the AER and, where appropriate, to the AER's consultants.

Powerlink considers that it is then up to the AER to assess its proposed base year to determine whether or not it represents an efficient base year, consistent with the Rules.

In making its Draft Decision assessment, the AER had regard to a number of matters, including:

- historical expenditure – the AER concluded that Powerlink forecasts to spend close to its controllable operating expenditure allowance during this regulatory period and it is not clear whether this indicates whether Powerlink's operating expenditure is efficient. Powerlink notes that at the time of lodging its Revenue Proposal in May 2011 it had forecast actual operating expenditure to be within 1% of the AER's allowance;
- benchmarking[228] – the AER concluded that:
    - Powerlink's comparison to TransGrid and SP AusNet indicates differences between it and those TNSPs could largely be explained by the difference in load density;
    - Powerlink performed better on every measure compared to Transend;
    - Powerlink is generally consistent across the benchmark ratios compared to ElectraNet; and
    - Powerlink's current operating expenditure is in the average range when compared to other TNSPs;
- choice of base year[229] – the AER commented that:
    - where a TNSP has been subject to an EBSS, the AER has typically adopted year four of the current regulatory period as representing the base operating expenditure, and that this is consistent with the transmission EBSS assumptions; and
    - the last year of actual costs is most likely to represent the recurrent costs in the next regulatory period.

Based on its analysis, the AER concluded that 2009/10 actual data is not an appropriate base year as it:

- will not be the most recent full year of actual data for the Final Decision; and
- is inconsistent with the assumptions in the transmission EBSS.

[228] Ibid, p.174.
[229] Ibid, pp.174-175.

Having reached this view, the AER goes on to present its analysis on base year operating expenditure by category, which looked at actual operating expenditure from 2002/03 to 2009/10 and forecast operating expenditure for 2010/11 and 2011/12. The AER also concluded that:

- Powerlink's historical controllable operating expenditure, although exhibiting an upward trend does not contain any material increases in particular categories of operating expenditure during the current regulatory period; and
- on the basis of its analysis, the AER has accepted Powerlink's actual costs are reflective of its recurrent costs.

Therefore, based upon the AER's own analysis, Powerlink sees no reason to demonstrate that its base year operating expenditure (2009/10) does not reasonably reflect efficient costs.

Most recent full year

Powerlink considers that the AER's hypothetical view of the likelihood of one year being more representative of efficient costs does not constitute reasonable grounds for rejecting 2009/10 as an efficient base year.

The Rules[230] require that Powerlink provides a fully developed and well-supported Revenue Proposal to the AER. One of the key drivers for this was to ensure that the risk of regulatory error was substantially reduced. Further, while the AEMC acknowledged that informed opinions might differ on what represents efficient costs, the Rules were specifically designed such that these matters could be tested by reference to, for example:

- objective evidence drawn from history;
- the performance and experience of comparable businesses; and
- the assessments of electricity industry experts.

In the context of the Rules framework, Powerlink considers that the AER's obligation is to assess Powerlink's proposal to adopt 2009/10 as the base year on its own merits, having regard to objective measures and Powerlink's comparative performance to the extent reasonable. Given that Powerlink considers it has lodged sufficient evidence to demonstrate that 2009/10 represents an efficient base year, the onus is on the AER to demonstrate that 2009/10 is not efficient before adopting an alternative year.

To this end, the AER reviewed and questioned Powerlink on individual line items, inputs and assumptions which underpinned Powerlink's operating expenditure forecasting model, of which 2009/10 actual costs were a fundamental component. As summarised above, the AER's own assessment of Powerlink's historical expenditure, benchmarking analysis and actual expenditure by category (including 2009/10) provides clear, objective, evidence which indicates that Powerlink's 2009/10 expenditure is both efficient and reasonable.

Powerlink considers that, in the absence of the AER's demonstration that 2009/10 is not efficient, there is no basis for substituting its own base year.

Further, Powerlink considers that the fact that its proposed base year is not the most recent full year of actual data for the Final Decision is not a legitimate reason to reject it. Powerlink notes that the AER has used a similar argument in other sections of its Draft Decision to reject Powerlink's proposals.

By virtue of the regulatory reset process and timeframes established in the Rules, the AER will always be in the position to have access to the most recent data compared to what was available

[230] AEMC Rule Determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006, No. 18, pp.50-53, 16 November 2006. AEMC analysis and reasoning.

to the TNSP at the time of lodging its Revenue Proposal. Therefore, it should not be used by the AER as a basis for rejecting forecasts put forward by Powerlink.

Transmission EBSS

Powerlink strongly disagrees with the AER's assertion that use of 2009/10 as the base year is inconsistent with the transmission EBSS. This matter was discussed at length with the AER prior to Powerlink lodging its Revenue Proposal. The AER appears to have incorrectly formed the view that since the EBSS scheme for distribution makes explicit that the AER will place significant weight on actual expenditure for the penultimate year of the regulatory period, such a view equally applies to transmission.

For clarification, the EBSS Guidelines for transmission were finalised in September 2007 after a period of consultation with TNSPs and other stakeholders. The EBSS Guidelines for distribution were finalised in June 2008 after a period of consultation with DNSPs and other stakeholders.

Powerlink is concerned that in this specific area, the AER does not appear to have assessed Powerlink's operating expenditure proposal in the context of the regulatory framework (including EBSS Guidelines) applicable to transmission. Powerlink considers that the EBSS Guidelines for transmission do not require Powerlink to adopt the penultimate year (i.e. 2010/11) as its base year from which to forecast its operating expenditure requirements for the 2013/17 regulatory period. The AER's own decision on the EBSS for DNSPs recognises this difference between the two schemes[231]. As a result, Powerlink considers that the AER's position to reject its proposal to forecast future operating expenditure from 2009-10 as the base year is unreasonable. For the purposes of its Revised Revenue Proposal, Powerlink maintains its Revenue Proposal position that 2009/10 provides an appropriate and efficient base year from which to forecast future operating expenditure requirements.

In the event that the AER can reasonably demonstrate that the 2009/10 is not an efficient base year and hence adopts 2010/11 as the base year, Powerlink requests that it be consulted prior to the Final Decision being made to ensure that the AER's operating expenditure is modelled correctly.

9.4 Non-recurrent items – provisions

AER Draft Decision

In the Draft Decision, the AER considered that:

- Powerlink's operating expenditure includes provisions;
- a provision is a liability of uncertain timing or amount[232]; and
- a movement in provisions occurs when the annual amount set aside differs to the annual amount paid out.

As a result, the AER removed the movement in provisions from the base year operating expenditure as they did not consider them to be reflective of the level of ongoing recurrent operating expenditure costs.

Since publication of the Draft Decision, the AER advised Powerlink that it had made an error in its operating expenditure forecast for the 2013-17 regulatory period associated with movements in provisions. Specifically, the AER had not actually removed them from the published controllable operating expenditure figures. The impact of this change, was a further reduction in total

[231] Final Decision, Electricity Distribution Network Service Providers Efficiency Benefit Sharing Scheme, June 2008.
[232] The AER relied on the Australian Accounting Standard Board Standard, 137, Provisions, contingent liabilities and contingent assets.

controllable operating expenditure for the 2013/17 period of approximately $14.5m from $852.5m ($2011/12) to $838.0m ($2011/12).

Powerlink's response

Powerlink strongly disagrees with the AER's reduction of base year operating expenditure by the movement in provisions amounts.

Firstly, Powerlink considers that the AER has incorrectly interpreted 'Provisions' within Powerlink's financial accounts. Powerlink's financial reports categorise both liabilities and provisions under the general heading of 'Provisions'. Powerlink previously advised the AER[233] that the report heading 'Provisions' incorporates:

- employee benefits liabilities; and
- an environmental restoration provision.

The underlying characteristics of these items need to be interpreted with an understanding of the financial accounting standards.

Secondly, Powerlink notes that in its analysis of Powerlink's historical operating expenditure, the AER accepted that Powerlink's actual costs are reflective of it recurrent costs[234]. Powerlink considers that if the AER is satisfied that actual costs are reflective of base year recurrent costs, there will be no need to subsequently adjust the base year operating expenditure.

In assessing base year operating expenditure for instances of non-recurrent expenditure, Powerlink is aware of the importance of addressing provisions. Powerlink considers that provisions are used when a future obligation exists and there is the intention that goods or services will be consumed in the future to settle the obligation. Whereas accrued liabilities arise when the goods or services have been received or supplied and that payment will occur in a subsequent period. Powerlink's position is explained further below.

Applicable Australian Accounting Standard

Powerlink obtained independent expert advice from KPMG regarding the applicable Australian Accounting Standards in relation to the employee benefits liability and the environmental restoration provision. KPMG's advice is provided to the AER on a confidential basis.

[233] Response to Request AER/035 - Summary of Provisions Disaggregated of 7 September 2011, Powerlink, received 8 September 2011.
[234] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.176, AER, November 2011.

Employee Benefits Liabilities

Employee benefits liabilities capture the unpaid liabilities for employee entitlements including long service leave and annual leave. Expenses of this nature would be treated in accordance with Powerlink's Cost Allocation Methodology with relevant expenses charged either to controllable operating expenditure or capital expenditure.

An important characteristic of the Australian Accounting Standard Board (AASB) 119 Employee Benefits standard is that an employee must have worked in order to accrue leave. The employee-employer relationship is contractually recognised and is not discretionary, i.e. Powerlink is required to accrue a liability for unpaid employee benefits. This is consistent with paragraph 11 of AASB 119 which states (emphasis added):

> When an employee has rendered service to an entity during an accounting period, the entity shall recognise the undiscounted amount of short –term employee benefits expected to be paid for that service:
>
> (a) As a liability (accrued expense), after deducting any amount already paid. If the amount already paid exceeds the undiscounted amount of the benefits, an entity shall recognise that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund.

The standard recognises that such entitlements are a liability. Employee leave entitlements accrue progressively according to an employee's ordinary hours of work and is cumulative from year to year. This is consistent with paragraph 16 of AASB 119 which states (emphasis added):

> An entity shall measure the expected cost of accumulating paid absences as the additional amount the entity expects to pay as a result of the unused entitlement that has accumulated at the end of the reporting period.

As such, these liabilities represent accruals under general accounting principles and accounting standards, and are not provisions. It is appropriate that the costs are recognised in the year in which they are incurred even though the cash settlement may occur in a subsequent period. Failure to recognise the accrued costs would be indicative of a move toward a cash accounting system.

As employees continue to be retained by Powerlink, these liabilities will continue to accrue on a recurring basis. Powerlink notes that the annual increase in employee benefit liabilities has resulted from an increase in the number of employees and is not as a result of reporting differently.

In its Draft Decision, the AER is effectively reducing the base year operating expenditure (and subsequent periods) by the change in Powerlink's employee benefit liability from one year to the next. Powerlink considers that the AER has misinterpreted Powerlink's audited financial statements. Movement in these liabilities are not provisions and should not be used as indicators of non-recurrent expenditure. In light of this, Powerlink does not consider that the AER's reduction in operating expenditure for the year on year movement in the employee benefit liability is appropriate or required.

Environmental restoration provision

An important characteristic of provisions is that there is an underlying obligation for an activity or work that is likely to be undertaken in the future, e.g. a provision charged to maintenance expenditure for work to be performed in the future. Powerlink has accounted for the environmental restoration costs in this manner.

Powerlink's environmental restoration provision was established in 1996 before Powerlink was subject to economic regulation by the Australian Competition and Consumer Commission and subsequently the AER. Under the accounting standards, the environmental restoration provision

recognised a liability that arose from legislation, i.e. to allow for the future removal of PCB contaminated oil from network equipment. Relevant costs of this nature are considered controllable operating expenditure. Each year the costs incurred in removal of the oil were charged directly to the provision. To ensure the adequacy of the remaining provision, an annual adjustment was charged to expenses to reflect changes in the cost of disposal and the estimates of the amount of unrecovered oil. This adjustment was either debited or credited to operating expenditure.

Given that the original expense was charged to the accounts in 1996 when the provision was established, Powerlink considers that a further charge to the base year operating expenditure for the movement in this provision would be double counting. Accordingly, Powerlink did not include the environmental restoration expenses in the operating expenditure for the 2009/10 base year. Powerlink notes that the provision was resolved in the financial year ended June 2011. For the avoidance of doubt, Powerlink did not increase operating expenditure to recognise the cost expense charged to the provision in 2010/11. Thus while it is incorporated in the 'Provisions' category for financial reporting, it is not an appropriate adjustment to the base year operating expenditure.

Overall, Powerlink has demonstrated that:

- employee benefits liability are not in the nature of a provision; and
- the environmental provision is not included in base year operating expenditure as it was established in 1996 and expenses have been incurred outside the regulatory framework.

As such, Powerlink considers that the AER's Draft Decision adjustment for the movement in provisions from its controllable operating expenditure is incorrect. For its Revised Revenue Proposal, Powerlink has made no adjustment for movements in provisions from either its future or historical operating expenditure. This approach has also been maintained for the purposes of the EBSS calculation in Chapter 12. As outlined in Section 9.3, Powerlink will revert to the 2009/10 base year for the purposes of forecasting future operating expenditure. In line with this, Powerlink's Revised Revenue Proposal will not contain an adjustment for provisions for the 2009/10 year for the purposes of forecasting operating expenditure.

9.5 Real cost escalators

AER Draft Decision

The AER did not accept the annual wage increases proposed in Powerlink's collective agreement, the EGW AWOTE for specialist labour, the Queensland Business Services AWOTE for general labour or Powerlink's allowance for the Superannuation Guarantee. Instead, the AER substituted the annual wage increases adjusted for 0.5 per cent productivity payment and the Labour Price Index adjusted for productivity.

Powerlink's response

For clarification, Powerlink's operating expenditure forecast included escalators to model the real cost impacts to labour and materials. Powerlink does not agree with the AER's decision on labour costs escalators. Powerlink's full response to the AER's Draft Decision is addressed in Section 5.2 of this Revised Revenue Proposal.

In relation to operating expenditure, Powerlink's Revised Revenue Proposal escalates labour as follows:

- the annual wage increases in its collective agreement for year four and five of the current regulatory period; and
- the Queensland EGW sector AWOTE for the next regulatory control.

9.6 New requirements

Powerlink's Revenue Proposal[235] operating expenditure forecast included costs for new requirements to ensure that Powerlink can meet its anticipated future network needs. This is to ensure that Powerlink is not unduly penalised for prudent changes to its scope and/or methods of operation and maintenance or additional responsibilities associated with compliance or other regulatory and statutory obligations. In its Draft Decision, the AER referred to and assessed Powerlink's new requirements as step changes[236]. For the purposes of this Revised Revenue Proposal, Powerlink will continue to refer to these items as new requirements.

9.6.1 Land tax

AER Draft Decision

In its Draft Decision, the AER agreed that the change in the Land Tax Act (2010) and Land Valuation Act (2010) will increase Powerlink's land tax liability in the next regulatory period and was therefore reasonable. However, it did not agree with the land value escalators proposed by Powerlink to calculate the land tax liability. As a result, the AER substituted its own land forecast of land value escalators to forecast Powerlink's land tax liability for the next regulatory period.

Powerlink's response

Powerlink does not accept the AER's Draft Decision position on Powerlink's forecast land value escalators. As discussed in Section 5.5 of the Revised Revenue Proposal, Powerlink has obtained an updated forecast for urban and rural land value escalators from Urbis. As the updated forecast takes into consideration historical performance and economic variables, Powerlink considers that the Urbis updated forecast land value escalators are an appropriate forecast of future land values.

Consistent with the escalation approach in Section 5.5, Powerlink has substituted the updated Urbis land escalator forecast to calculate Powerlink's future land tax costs for the Revised Revenue Proposal.

9.6.2 New office accommodation

AER Draft Decision

The AER accepted the leasing and relocation costs associated with the new office accommodation noting that Powerlink's base year operating expenditure did not include office lease costs. However, the AER did not accept the building maintenance and outgoing expenditure as it considered these costs would be in the base year operating expenditure and were covered by network growth escalation.

Powerlink's response

Powerlink disagrees with the AER's Draft Decision that forecast maintenance costs and outgoings should be removed from Powerlink's new office accommodation costs. Maintenance and outgoing expenditure is included for the Virginia site in base year operating expenditure in the

[235] 2013-2017 Powerlink Queensland Revenue Proposal, pp.89-90, Powerlink, May 2011.
[236] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.186, AER, November 2011.

corporate support line item. As outlined in the Revenue Proposal[237] , corporate support has a substantial economy of scale (10%) applied to the network growth factor. Powerlink considers this an appropriate methodology to forecast Virginia based maintenance and outgoing costs.

However, Powerlink does not consider the corporate support economy of scale factor and network growth escalation will reasonably forecast future maintenance and outgoing expenditure for the new office accommodation. Powerlink considers that while the marginal increase for maintenance and outgoing costs at the Virginia site may not be materially different to the marginal cost increase for the new office accommodation, base level costs relevant to the new office accommodation are not captured in the network growth escalator. For example, each site will have a minimum or base electricity and air conditioning requirement regardless of the extent of site utilisation.

The maintenance and outgoing costs included in Powerlink's Revenue Proposal accounted for the base level maintenance associated with the new office accommodation. As such, Powerlink considers that the AER's rejection of these costs associated with maintenance and outgoings is unreasonable. For the purposes of Powerlink's Revised Revenue Proposal, Powerlink maintains that its maintenance and outgoing costs represent an appropriate and efficient forecast of new accommodation costs.

9.6.3 Climate change investigations

AER Draft Decision

The AER did not accept Powerlink's proposed climate change Investigations. The AER considered that climate change is not a new concept and that Powerlink would have routinely conducted investigations into the impact of various drivers. The AER also noted that a similar step change for the Victorian distribution determination was also not accepted.

Powerlink's response

Powerlink does not accept the AER's position in relation to climate change investigations. Powerlink has previously advised the AER, that it undertook internal workshops with a climate change specialist to review and understand the impacts of climate change on the development, operation and maintenance of Powerlink's transmission network and to provide advice on priority areas for further investigation.[238] Powerlink considered that these internal workshops and initial investigations are in line with prudent industry practice.

Using the output of these workshops and the associated research and science of climate change, climate change experts, RPS, produced a report[239] which recommended that further detailed investigation be undertaken into five main impact areas[240] as they are unique challenges for power transmission in Queensland.

As a prudent TNSP, Powerlink considers that further detailed investigation in these areas is essential to improve the resilience of its transmission network to extreme weather events. It is intended that these will guide future asset design as well as operational and investment decisions.

The key point which the AER does not appear to have recognised is that Powerlink has now reached the point where it considers that much more detailed investigations are required, as a prudent TNSP. Given their nature and order of magnitude, these detailed investigations

[237] 2013-2017 Powerlink Queensland Revenue Proposal, p.92, Powerlink, May 2011.
[238] Powerlink, Powerlink Operating Expenditure - New Requirements, 1 August 2010.
[239] The Impact of Climate Change on the Resilience of Queensland's Electricity Transmission Network Infrastructure, p.67, RPS, 14 March 2011.
[240] The five main areas are line and equipment ratings, dust modelling and monitoring, high wind events impacts, lighting and bushfire.

constitute new requirements that Powerlink must include in its operational refurbishment costs. As a result, Powerlink considers that its circumstances will be different in the next regulatory period and an allowance is required to conduct these investigations.

As a final point, the AER notes that it rejected similar requirements in relation to the Victorian DNSPs. Powerlink considers that the mere fact that the AER has rejected similar costs for another service provider does not necessarily mean that it should reject Powerlink's proposed investigations. The AER is required to assess Powerlink's on its own merits in the circumstances of Queensland – not Victoria.

In its Revised Revenue Proposal, Powerlink maintains it Revenue Proposal view that such costs represent a step change for Powerlink and it is therefore prudent to incorporate into its operating expenditure forecasts.

9.6.4 Additional building maintenance

AER Draft Decision

The AER did not accept either the step change costs for the additional maintenance at the disaster recovery site or the painting and recarpeting works at its Virginia site. The AER considered that:

- the additional maintenance costs were covered by network growth escalation; and
- not undertaking a specific maintenance activity in the base year does not indicate that base year operating expenditure is insufficient to undertake that activity in the next regulatory period[241].

Specifically, the AER[242] noted that Powerlink will have undertaken various activities in the base year. Not all of them will be undertaken in every year of the next regulatory period. Not all of these costs have been identified and removed from the base year. Consequently, to provide an additional operating expenditure allowance for all operating expenditure activities that were not undertaken in the base year would overstate Powerlink's efficient operating expenditure.

Powerlink's response

Powerlink disagrees with the AER's Draft Decision that either the additional maintenance costs or the painting and recarpeting cost should be removed.

Similar to the discussion on maintenance and outgoings costs in the new office accommodation section, Powerlink considers that while the existing Virginia site and disaster recovery site may have similar marginal cost increases for building maintenance activities, there is a base level maintenance requirement for the new site that is not captured in the network growth escalator. Powerlink's forecast for the building maintenance and outgoings captures this base level requirement.

With regard to the painting and recarpeting costs, consistent with Powerlink's Operating Expenditure Methodology, Powerlink removes one-off and non-recurrent items as part of developing its operating expenditure forecast. As such, it does not agree with the AER that these (or similar) costs would not have previously been removed from the base year. Powerlink included the painting and recarpeting new requirement as part of its Revenue Proposal to appropriately capture the impact of these costs in the next regulatory period.

The AER also noted that its proposed shift to a 2010/11 base year operating expenditure would remove the need for this new requirement as Powerlink would have existing costs in the 2010/11

[241] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.191, AER, November 2011.
[242] Ibid, p.191.

year. Consistent with Section 9.3 of the Revised Revenue Proposal, Powerlink has adopted 2009/10 as its base year forecast for which building maintenance costs were not included.

For this reason, Powerlink considers that its forecasts for building maintenance, painting and recarpeting do represent an appropriate and efficient forecast. Powerlink has therefore reinstated these costs as part of its Revised Revenue Proposal.

9.6.5 South West Queensland maintenance

AER Draft Decision

The AER reduced Powerlink's total proposed South West Queensland maintenance strategy costs by 85%. In doing so, the AER accepted Powerlink's regional depot lease costs. However, the AER did not accept the step changes for Powerlink's security requirements, vehicle lease costs and increased helicopter support. It considered these cost were included in the base year operating expenditure and were addressed by the network growth escalation in the next regulatory period.

Powerlink's response

Powerlink does not accept the AER's decision that its future incremental helicopter support costs for South West Queensland are captured in Powerlink's network growth escalator. Powerlink has previously advised the AER that to adequately meet the requirements of South West Queensland, Powerlink is required to change its existing maintenance delivery strategy[243]. With specific regard to helicopter support, this can be quantified through two significant changes to costs, namely:

- a greater number of flying hours; and
- a larger helicopter.

Powerlink considers that if it was in a position to adequately service the region under a contractual arrangement with a similar amount of flying time and the same sized helicopter, the helicopter support forecast from the network growth escalator would be reasonable. However, the size of the region necessitates the need for a contractual arrangement with a significantly greater number of flying hours and a larger helicopter. This additional requirement was clearly demonstrated to the AER in previous correspondence[244]. Consequently, Powerlink does not consider the network growth escalation will reasonably forecast its future helicopter support requirements. Powerlink's helicopter support forecast in the Revenue Proposal took into account the additional support service cost differences between the contractual arrangements.

Powerlink considers that its forecasts for additional helicopter support costs for South West Queensland maintenance is an appropriate and efficient forecast and consistent with the operating expenditure objectives[245]. Powerlink has therefore reinstated these costs as part of the Revised Revenue Proposal.

9.6.6 New requirement summary

Powerlink outlined in its Operating Expenditure Methodology that the purpose of the network growth factor was to represent an annual rate of growth in operating expenditure resulting from the increase in the size of the transmission network, i.e. its fundamental purpose is to capture the incremental cost increases (as opposed to step changes) resulting from growth in the transmission network.

As outlined in Sections 9.6.2, 9.6.4 and 9.6.5, the AER did not accept these specific new requirements on the basis that it considered these costs would be accounted for by the network

[243] Response to AER/006, Powerlink Operating Expenditure - New Requirements, p.10, Powerlink, 1 August 2010.
[244] Ibid, p.12.
[245] National Electricity Rules, Chapter 6A, Clause 6A.6.6(a), AEMC.

growth escalator. For each of these areas, Powerlink does not agree with the AER's decision. Fundamentally, Powerlink is of the view that in order for the network growth factor to capture the new requirements described in the sections identified above, it would need to be recalibrated to reflect the base year step change due to these requirements. In the absence of this, the network growth factor will underestimate the additional costs of the new requirements.

As such, Powerlink considers that the AER has applied a broad brush approach which is contrary to the fundamental purpose of the network growth factor.

9.7 Network support

Network support refers to costs for non-network solutions used by a TNSP as an efficient alternative to network augmentation. Network support costs incurred within a regulatory period can be passed through to consumers. This is because the amount of network support required by a TNSP in a given year is dependent on factors outside the control of the TNSP such as weather conditions, demand levels, and electricity usage patterns[246].

AER Draft Decision

In its Draft Decision the AER concluded that:

- Powerlink did not provide sufficient evidence for the AER to be satisfied that its proposed network support complies with NER requirements. In particular:
    - Powerlink did not carry out a Regulatory Investment Test for Transmission (RIT-T) in regard to the underlying capital expenditure projects that create the need for the proposed network support; and
    - Powerlink has not entered into any contractual agreements for the provision of network support services in the next regulatory period;
- the proposed network support relates to five network augmentation projects, two are committed in the current regulatory period with a combined contribution of $76.6m ($2011/12) to the proposed forecast capital expenditure;
- it had limited information before it to be satisfied that the proposed network support reasonably reflects a realistic expectation of the demand forecast and the efficient cost inputs to achieve the operating expenditure objectives; and
- in forecasting the proposed network support costs, Powerlink assumed specific energy costs which account for the Australian Government's proposed carbon tax. However, Powerlink did not provide sufficient details to the AER on how it estimated these proposed energy costs. Given this lack of information, the AER cannot be satisfied that the proposed network support allowance reasonably reflects the efficient and prudent costs.

Powerlink's response

The AER's assessment framework presented in the Draft Decision[247] suggests that relevant considerations for the AER to be satisfied that Powerlink's proposed network support costs comply with the Rules include:

- completion of a RIT-T (which may lead to an open tender process to award the necessary contracts); and/or
- whether contractual arrangements are in place for the provision of those services.

[246] Procedural Guideline for Preparing a Transmission Network Support Pass Through Application, p.1, AER, June 2011.
[247] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.201, AER, November 2011.

Regulatory Process

Powerlink does not accept that such stringent evidentiary requirements for network support are reasonable for a number of reasons. These are outlined below.

The AER appears to have ignored the fundamental basis upon which the forecasts were developed in the context of the regulatory process. That is, where a Revenue Proposal is required to be submitted to the AER 13-months prior to commencement of the regulatory period to which the forecasts relate. As such, it is unreasonable for the AER to expect that for all relevant network limitations, Powerlink would have conducted the RIT-T and, consequently, have put the requisite network support contracts in place.

As a matter of good industry practice and, consistent with the Rules, Powerlink does not commence its RIT-T consultation process until closer to the time of making the investment decision to address the identified network need. From a practical perspective and, in terms of Powerlink's Revenue Proposal, such an undertaking will simply not have occurred for limitations forecast between 2-7 years out from the time in which Powerlink is required to lodge its Revenue Proposal. While the AER appears to have recognised the nature of Powerlink's forecasts in this context in the capital expenditure chapter, it has not similarly appreciated this point in relation to Powerlink's network support forecasts.

Further, the AER's Draft Decision position on the RIT-T and contractual requirements is also at odds with the AER's own procedural guideline[248] for network support pass-throughs. In particular, the guideline discussion on information requirements (Section 2.4), assessment procedures (Section 2.5) and determining whether a network support event has occurred (Section 3.1) contemplates that the TNSP may not have carried out these requirements at the time of the revenue cap determination.

Pass-through provisions

In one section of its Draft Decision[249], the AER definitively points out that Powerlink 'can' submit a network support pass-through application to the AER under Clause 6A.7.2 of the Rules if it enters into contractual agreements after commencement of the next regulatory period. In the same section of its Draft Decision[250] which deals with network support, the AER notes that Powerlink 'may' qualify for pass-through of such costs under the same provision of the Rules.

Powerlink also notes that the AER's procedural guidelines[251] provide that the AER will review all applications for network support pass-through where the definition of a network support event is met, including where a new network support arrangement is introduced within the regulatory period.

Powerlink is aware that the Rules provides for the pass-through of costs associated with network support events. However, noting the AER's conflicting interpretations above, Powerlink understands that consistent with the definition of a network support event in the Rules[252], the relevant pass-through provisions only apply where a network support allowance has been made in its revenue cap decision for that year. In other words, where the AER has not provided any building-block revenue allowance for network support in that regulatory year, Powerlink cannot

[248] Procedural Guideline for Preparing a Transmission Network Support Pass Through Application, pp.4-8, AER, June 2011.
[249] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.200, AER, November 2011.
[250] Ibid, p.203.
[251] Procedural Guideline for Preparing a Transmission Network Support Pass Through Application, p.7, AER, June 2011.
[252] Network support event (a) If, at the end of a regulatory year of a regulatory control period, the amount of network support payments made by a Transmission Network Service Provider for that previous regulatory year is higher or lower than the amount of network support payments (if any) that is provided for in the annual building-block revenue requirement for the Transmission Network Service Provider for that regulatory year, this constitutes a network support event (National Electricity Rules, Chapter 10, AEMC).

access the pass-through provisions in the Rules. This is irrespective of whether or not a RIT-T has demonstrated the efficiency of such costs, whether associated support contracts have been established, or other relevant considerations.

Therefore, in order to seek pass-through of efficient network support costs within its next regulatory period, Powerlink considers that the AER must provide an appropriate network support allowance in each year identified in advance by Powerlink as potentially requiring network support. Powerlink's view is supported by the AER in its procedural guideline, which states that:

> ...the AER expects TNSPs will generally be able to identify their network support needs well in advance of the need arising, even if the exact amount or cost of network support cannot be specified[253].

North Queensland projects

The AER's Draft Decision has incorrectly identified two north Queensland network augmentations as committed. At the time of lodging its Revised Revenue Proposal, this was not the case. However, for the avoidance of doubt, Powerlink expects to commence a RIT-T consultation in 2012 to identify the most efficient option to address limitations of supply to north Queensland. Powerlink anticipates that the preferred option will involve a non-network solution (as forecast in Table 9.2).

Information

Powerlink provided a network support forecast compliant with the AER's Submissions Guidelines and the Rules. The relevant documentation comprised a high level summary in the Revenue Proposal and a Network Support Forecast Methodology detailing how the network support forecast was derived.

The AER requested further clarification through two information requests. Through these, Powerlink was able to disclose the sensitive details which were not made publically available in the Network Support Forecast Methodology.

Powerlink used the 2010 NTNDP database as the basis of the NEM model in deriving the North Queensland network support requirements. The market simulation software used by AEMO is Intelligent Energy Systems' (IES) Prophet. Powerlink provided the AER with auxiliary inputs to the database and a spreadsheet with the derivation of the network support forecast.

While Powerlink recognises the considerable uncertainty in influential variables behind the forecast, Powerlink considers its network support forecast provides a realistic expectation of its future requirements as required by the Rules[254], in this Revised Revenue Proposal.

Kogan Creek fault level management

Subsequent to submission of Powerlink's Revenue Proposal in May 2011, Powerlink identified an oversight in its Revenue Proposal relating to the Kogan Creek Power Station. A requirement for network support was identified in a Regulatory Test completed in June 2009[255]. The Final Recommendation report identified that the preferred option results in higher fault levels at Kogan Creek Power Station and includes the replacement of underrated plant when necessitated by system fault levels.

In relation to this specific Regulatory Test and works associated with fault levels at Kogan Creek Power Station, the AER's consultant, CHC Associates, noted the following:

[253] Procedural Guideline for Preparing a Transmission Network Support Pass Through Application, p.7, AER, June 2011.
[254] National Electricity Rules, Chapter 6A, Clause 6A.6.6(c), AEMC.
[255] Final Report, Maintaining a Reliable Electricity Supply to Southern (South West and South East) Queensland, Powerlink, June 2009.

> CHC understands that there is precedent for such costs to be recovered under the cost pass-through provisions of the Rules, based on audited actual expenditure. It is therefore considered reasonable to anticipate such payments in scenarios that require them, if this is relevant to the revenue proposal[256].

The timing of this requirement is dependent largely on the location, characteristics and timing of new generation in the area. Powerlink has used the ROAM Consulting scenarios and expected network development based on the revised demand forecast to establish the expected timing for the network support associated with these power station equipment replacements. This additional requirement has been incorporated into Powerlink's revised network support forecast below.

North Queensland network support forecast

As one of the largest procurers of network support in the NEM, Powerlink has acquired substantial levels (in excess of $150m) of network support over 10 years, which were demonstrated as being efficient under the Regulatory Test. All pass-through applications subsequently lodged with the AER (both positive and negative) associated with actual network support costs incurred by Powerlink over the years have also been assessed and determined by the AER as meeting the relevant Rules requirements and were approved.

With this depth of experience behind it, Powerlink has developed techniques for forecasting network support needs and have applied these to optimise the capital expenditure requirements for north Queensland. While Powerlink recognises that there is considerable uncertainty in developing its forecasts given that a number of assumptions are required to do so (e.g. contract structure, fuel costs, energy requirements, etc), the forecast nonetheless constitutes Powerlink's best estimate of potential north Queensland network support requirements. Table 9.2 presents Powerlink's updated network support forecast based on the revised demand forecast set out in Chapter 6 and revised scenario probabilities described in Section 7.3.3.

Based on Powerlink's extensive experience in estimating network support and the regulatory requirements necessitating network support estimates up to seven years ahead of time, Powerlink considers that its revised network support forecasts meet the Rules requirements and reasonably reflect prudent and efficient costs.

Table 9.2 presents Powerlink's expected network support requirements over the next regulatory period.

Table 9.2: Revised network support allowance ($m, 2011/12)

Adjustment	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Kogan Creek PS fault level management	1.6	2.7	3.0	3.2	0.2	10.6
North Queensland	0.3	3.1	1.4	1.6	2.3	8.7
Total network support allowance	**1.9**	**5.8**	**4.3**	**4.7**	**2.5**	**19.3**

*Numbers may not add due to rounding.

Table 9.3 presents Powerlink's revised network support forecast relative to the AER Draft Decision allowance.

[256] Review of Conversion of Braemar – Kogan Creek Line Assets, p.9, CHC Associates Pty Ltd, 16 September 2011.

Table 9.3: Revised network support allowance difference ($m, 2011/12)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	0	0	0	0	0	0
Revised Revenue Proposal	1.9	5.8	4.3	4.7	2.5	19.3

*Numbers may not add due to rounding.

9.8 Debt raising costs

AER Draft Decision

The AER did not accept Powerlink's proposed debt raising cost allowance of $20.3m ($2011/12). Fundamentally, the AER accepted PWC's approach as being largely consistent with the AER's preferred method. However, the AER considered that the inclusion of establishment fees for a company credit rating is not appropriate and that PwC's conversion of annual credit rating fees and annual registry fees was incorrect.

The AER will update the debt raising cost allowance in its Final Decision based upon the debt component of the RAB and WACC determined at the time.

Powerlink's response

Powerlink notes the AER's rejection of credit rating establishment fees and its amendment to conversion of the annual credit rating fee developed by PwC. On balance, Powerlink accepts the AER's Draft Decision methodology and application of a benchmark debt raising cost allowance of 9.2 bppa.

When applied to Powerlink's Revised Revenue Proposal PTRM, the AER's benchmark allowance of 9.2 bppa equates to a total debt raising cost allowance of $19.7m over the next regulatory period, as provided in Table 9.4.

Table 9.4: Revised Debt Raising Costs ($m, 2011/12)

Adjustment	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	3.5	3.7	3.8	3.9	4.1	18.9
Revised Revenue Proposal	3.4	3.7	4.0	4.2	4.3	19.7

*Numbers may not add due to rounding.

9.9 Insurances

AER Draft Decision

The AER accepted Powerlink's proposed insurance premiums as meeting the requirements of the Rules.

The AER accepted the broad approach used by Finity to estimate Powerlink's proposed self-insurance forecast. However, the AER made a number of adjustments to the proposed calculations, namely:

- in escalating past losses for growth in asset values, the below-deductible losses were capped at the fixed deductible amount;
- the frequency of certain events has been adjusted and is based on the value of the network in real terms rather than its monetary value; and

- the number of years CPI escalation applied to past losses on certain property has been corrected.

The AER also noted that, in relation to the additional risk exposures identified by Powerlink in its Revenue Proposal, the AER would assess any future application for cost pass-through in the context of the Rules pass-through criteria applicable at the time.

Powerlink's response

Powerlink has reviewed the AER's Draft Decision and considers that, on balance, the AER has taken a reasonable approach in its assessment of Powerlink's proposed insurance costs and loss recovery framework for unforseen, low probability, high cost events. Therefore, Powerlink has incorporated the AER's Draft Decision insurance cost allowances in its Revised Revenue Proposal.

9.10 Revised forecast operating expenditure

This section presents Powerlink's revised operating expenditure forecast for the next regulatory period. The revised forecast is the result of applying the adjustments described earlier in this chapter to the AER's Draft Decision.

Powerlink has incorporated all the proposed changes from the AER's Draft Decision with the exception of:

- the 2010/11 operating expenditure base year (Section 9.3);
- the removal of provisions as non-recurrent items (Section 9.4);
- the AER's labour escalators (Section 9.5);
- the AER's network growth escalator;
- the AER's land tax forecast (Section 9.6.1);
- maintenance and outgoing costs as part of the new office accommodation new requirement (Section 9.6.3);
- climate change investigations new requirement (Section 9.6.4);
- additional building maintenance new requirement (Section 9.6.5);
- helicopter support new requirement in relation to the South West Queensland maintenance strategy (Section 9.6.6);
- the AER's network support forecast (Section 9.7); and
- the AER's debt raising forecast (Section 9.8).

Powerlink's revised operating expenditure forecast is shown by category in Table 9.5.

Table 9.5: Revised forecast operating expenditure by category ($m, 2011/12)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Field Maintenance	56.2	60.4	64.1	68.3	71.8	320.8
Operational Refurbishment	34.7	35.5	33.9	35.2	39.5	178.8
Maintenance Support	12.9	13.5	14.0	14.6	15.1	70.0
Network Operations	14.4	15.1	15.8	16.7	17.3	79.4
Asset Management Support	34.2	35.7	37.1	38.7	40.0	185.6
Corporate Support	14.8	15.6	18.0	20.7	18.7	87.8
Total controllable operating expenditure*	**167.1**	**175.9**	**182.9**	**194.2**	**202.4**	**922.5**
Insurances	8.5	9.1	9.8	10.3	11.0	48.8
Network Support	1.9	5.8	4.3	4.7	2.5	19.3
Debt raising costs	3.4	3.7	4.0	4.2	4.4	19.7
Total operating expenditure*	**181.0**	**194.5**	**201.0**	**213.5**	**220.3**	**1,010.3**

*Numbers may not add due to rounding.

Further details of operating expenditure are provided in the pro forma statements 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, and 5.3 in relation to forecast operating expenditure.

The operating expenditure in each of the controllable operating expenditure categories is dependent on the level of augmentation capital expenditure, and this dependency is represented in the operating expenditure forecast modelling. In preparing the revised operating expenditure forecast, Powerlink has updated the operating expenditure model to take into account changes in capital expenditure detailed in Chapter 7.

The comparison of the operating expenditure between the AER's Draft Decision and Powerlink's Revised Revenue Proposal is provided in Table 9.6.

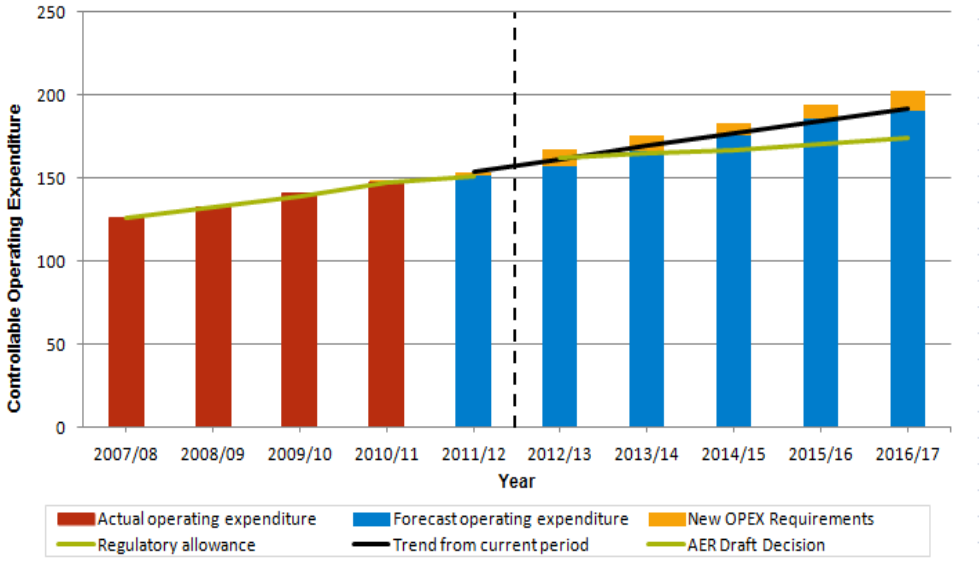
Table 9.6: Revised total operating expenditure ($m, 2011/12)

Adjustment	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	174.0	177.5	180.2	184.5	189.2	905.5
Revised Revenue Proposal	181.0	194.5	201.0	213.5	220.3	1,010.3

*Numbers may not add due to rounding.

Figure 9.2 depicts Powerlink's current and forecast operating expenditure compared to the AER's Draft Decision.

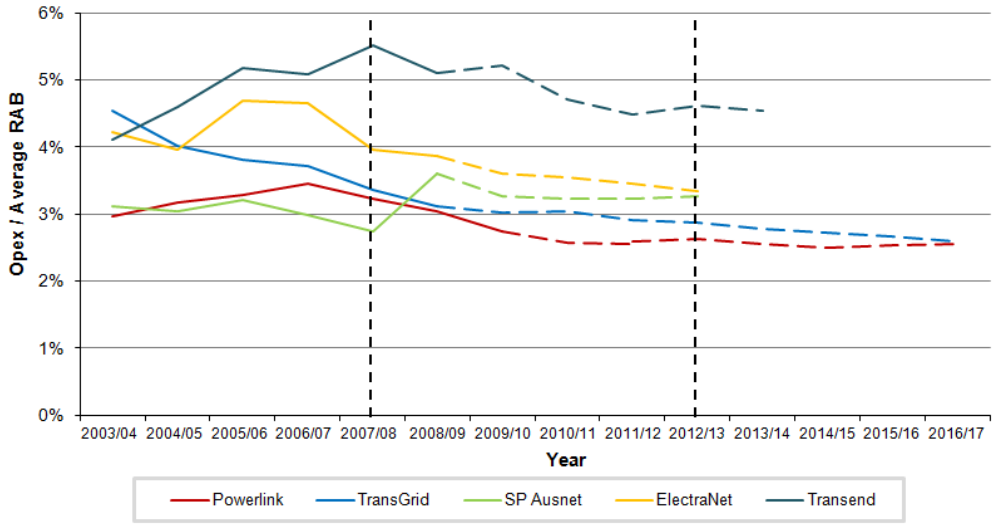
Figure 9.2: Current and revised forecast operating expenditure comparison ($m, 2011/12)



It can be seen in Figure 9.2 that the actual operating expenditure in the current regulatory period is very similar to the allowance. The trend in operating expenditure forecast by Powerlink for the next regulatory period, after new requirements have been taken into account, is also similar. In comparison the AER's Draft Decision operating expenditure allowance for the next regulatory period is clearly inadequate.

Figure 9.3 below provides a comparison of Australian TNSPs in terms of operating costs as a proportion of the RAB. This graph demonstrates that, with this Revised Revenue Proposal, Powerlink is forecast to continue to be one of the most efficient TNSPs in Australia.

Figure 9.3: Operating expenditure as portion of average RAB



9.11 Directors' responsibility statement

In accordance with the Rules[257], this Revised Revenue Proposal must contain a certification of the reasonableness of the key assumptions that underlie the operating expenditure forecast by the Directors of Powerlink. The Directors' responsibility statement is included in Appendix O.

[257] National Electricity Rules, Chapter 6A, Schedule S6A.1.2(6), AEMC.

10 Depreciation

10.1 Summary

Chapter 10 of Powerlink's Revenue Proposal presented Powerlink's methodology and assessment of the allowable depreciation on prescribed service assets during the next regulatory period.

Powerlink notes that the Rules[258] requires that the AER accept Powerlink's proposed depreciation schedules for each asset or category of assets provided that they conform to the requirements set out in Clause 6A.6.3. Powerlink considers that its revised depreciation schedules as set out in this Revised Revenue Proposal meet the relevant Rules requirements.

In its Draft Decision, the AER:

- did not accept Powerlink's proposed regulatory depreciation allowance for the next regulatory period (page 254);
- accepted Powerlink's proposed standard asset lives for asset classes which are consistent with those used in the current regulatory period (page 254);
- accepted Powerlink's proposed standard asset life of 15 years assigned to a new asset class of "transmission line refit" for life extension or refit works. However, the AER considered that the standard asset life was only appropriate for capital expenditure associated with surface preparation and painting works allocated to the new asset class (page 254);
- did not accept Powerlink's proposed remaining asset lives. The AER considered that the proposed calculation of remaining asset lives using financial accounting data did not depreciate assets over their economic lives consistent with Powerlink's RAB (page 254); and
- accepted Powerlink's proposal to use the straight-line method to calculate the regulatory depreciation allowance as set out in the PTRM (page 257).

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

10.2 Allocation of capital expenditure to "transmission line refit" asset class

AER Draft Decision

The AER considered that the standard asset life for the "transmission line refit" asset class is only appropriate for capital expenditure associated with surface preparation and painting works allocated to the new asset class. The AER considered that capital expenditure that results in a significant proportion of assets that have longer lives should be reallocated to the existing asset class of "transmission lines overhead".

The AER considered that in general an asset class is comprised of a number of different asset components. The standard asset life of an asset class is also comprised of the average expected asset life of the different asset components. Information provided by Powerlink showed that approximately 20 per cent of the value of Powerlink's proposed capital expenditure for the "transmission line refit" asset class was related to surface preparation and painting. The remaining 80 per cent of the value of expenditure associated with the refit works is comprised of other structural components of overhead transmission lines that the AER considered to have much longer lives.

[258] National Electricity Rules, Chapter 6A, Clause 6A.6.3(a)(2), AEMC.

Powerlink's response

Historically, capital expenditure to improve or enhance an aged transmission line asset would have been captured in the 50 year "transmission lines overhead" asset class for regulatory reporting and would be applied to an existing asset and depreciated over the expected remaining life of the existing asset in financial reporting. This approach was reasonable as costs were infrequent and insignificant. However, the forecast of transmission line refit works is now of a magnitude that it will become material in the next regulatory period. Consequently, Powerlink recognised that in the regulatory framework it would be inappropriate to capitalise an asset to an asset class that significantly overstated the asset lives.

Powerlink does not consider that the other structural parts of a transmission line refit capital expenditure should be separated from surface preparation and tower painting for depreciation purposes. When assessing the life of any part of an asset, the remaining economic life of the associated or existing asset should be the primary consideration for determining the life of the part. Individual parts may last longer but are worthless if they are not part of a functioning asset, particularly as it is not efficient to salvage individual parts of a decommissioned transmission line.

Powerlink disagrees with the AER's Draft Decision to allocate an element of transmission line refit capital expenditure to another asset class that has a significantly longer asset life. Both the refit component and the transmission line will have a short life expectancy unless significant additional refit capital expenditure is performed in the future that would further extend the asset life.

To do so unnecessarily creates a disconnect between the regulatory and financial asset bases, since the financial accounts take the approach that is put forward in Powerlink's Revenue Proposal and Revised Revenue Proposal. The alignment between the financial asset register and RAB is important to Powerlink as it serves to promote transparency between regulatory and statutory business processes. The transparency helps to better align business decisions with the incentives of the regulatory framework. Placing the asset in the incorrect asset class could lead to Powerlink receiving revenue for an asset that is no longer in service, and in the case proposed

[259] Letter – Accounting Advice in Relation to the New "Transmission Line Refit" Asset Class, KPMG, 13 January 2012.
[260] Ibid.

by the AER, could be over a period of 35 years. Powerlink does not consider this to be appropriate.

In applying the advice of KPMG, Powerlink will be managing the capital expenditure of the life extension refit projects as a single component relative to the underlying asset. Powerlink recognises that some structural components may have an enduring life but their value is small relative to the underlying asset.

Due to such factors as urban encroachment and changing technology, Powerlink cannot predict which of the lines currently planned for refit will be suitable for a subsequent refit in the future. As described in Powerlink's Asset Management Strategy, the investment decision is typically developed at that point in time for each specific asset when 20% of residual asset life is remaining. The decision will follow Powerlink's agreed asset management processes and the outcome will be based on a range of inputs including a condition assessment of the individual built section of line, as well as the prevailing needs of the network and any associated constraints.

In the event a subsequent refit is performed in the future, the common costs associated with the construction, access and outages of the initial refit works would be incurred again. The accounting standards recognise that increasing an asset's value by not depreciating recurring costs appropriately may risk overstating the value of assets. The accounting standards refer to repeated major inspections taking place over a long period of time. The accounting standards address this risk by specifying that the original costs of the previous major inspection will be de-recognised from the asset value at the time of the subsequent major inspection[261]. The need to take anti corrosion measures are the primary driver of the refit projects. As such, the common costs associated with tower painting and surface preparation need to be depreciated over the expected life of the refit which is 15 years. The painting, surface preparation and common costs represent approximately 57% of the transmission line refit costs.

Powerlink considered the accounting standards[262] and the Rules[263] when structuring the "transmission line refit" asset class. Powerlink's objective was to ensure costs would be captured in a manner that satisfied both the financial (statutory) and regulatory reporting frameworks without creating an administrative compliance overhead.

Powerlink intends to separately report the component of the transmission line refit costs from the existing aged transmission line. In establishing the asset life, Powerlink has followed accounting standard AASB 116 Property, Plant and Equipment and defined the useful life as the period over which the asset is expected to be available for use by the entity. A further separation of the costs into "painting and surface preparation" and "other" was considered inappropriate as the underlying transmission asset will need to be replaced unless further significant capital expenditure is again employed to extend its life in the future.

Powerlink has obtained advice from KPMG on the accounting considerations for the transmission line asset class and the issues that apply to determining an asset life. Powerlink considers that the concepts underlying the accounting standards satisfy the requirements of the Rules[264]. That is, to reflect the nature of the assets or category of assets over the economic life of that asset or category of assets.

It is important to recognise that changes in the allocation of capital expenditure to an asset class will only alter the timing of the return of assets (depreciation), but will not alter the overall

[261] Property Plant and Equipment (AASB 116), paragraph 14, Australian Accounting Standards Board, June 2009.
[262] Property Plant and Equipment (AASB 116), Australian Accounting Standards Board, June 2009.
[263] National Electricity Rules, Chapter 6A, Clause 6A.6.3, AEMC.
[264] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.

revenue to Powerlink. At all times, the resulting revenue will be constant in real terms as required under the Rules[265].

With the new "transmission line refit" asset class, Powerlink seeks to ensure that the revenue from the depreciation and return on assets components of the building-blocks maintain a profile that reflects the life of the underlying assets. Powerlink considers that this approach is consistent with that of a prudent and efficient TNSP and, as such, Powerlink has allocated all transmission line refit costs to the "transmission line refit" asset class in preparing this Revised Revenue Proposal.

10.3 Remaining asset lives

AER Draft Decision

The AER did not accept Powerlink's proposed remaining asset lives. The AER considered Powerlink's approach to calculating the remaining asset lives results in a depreciation profile that did not reflect the economic life of assets under the Rules[266].

The AER considered that the use of financial accounting values in the calculation of remaining asset lives was not representative of Powerlink's Regulatory Asset Base (RAB). The inconsistency in asset values resulted in remaining asset lives and rates of depreciation which were not representative of the standard asset life of the asset at the time of its inclusion in the RAB. Therefore, the AER did not accept that Powerlink's approach resulted in a depreciation profile that reflected the nature of the asset classes over the economic life of the assets classes under of the Rules[267].

The AER also stated that financial accounting data is not representative of the written down value and economic life of assets contained in the RAB. The financial asset values and depreciation amounts used in Powerlink's approach represented a disconnection between:

- the value of the assets contained within the RAB and roll forward over the current regulatory period; and
- the rate at which these assets are depreciated from 1 July 2012.

To determine the depreciation schedules, the AER employed its preferred weighted average approach in the Roll Forward Model (RFM) to calculate Powerlink's remaining asset lives. The AER considered the weighted average method provided a better reflection of the mix of assets within an asset class and the economic life of the asset class, as required under the Rules[268]. However, the AER also recognised that a variety of methods can be employed to calculate the remaining asset lives which also satisfy this clause.

Powerlink's response

Representing economic asset lives

Powerlink considers that its audited financial asset register provides an appropriate representation of the economic life of the assets as required under the Rules[269] as it is responsive to changes in the nature of asset economic lives. The use of remaining asset lives calculated from the financial asset register provides an effective way to adjust for actual changes to the asset base that are not adequately captured in the regulatory models.

[265] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(2), AEMC.
[266] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.
[267] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.
[268] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.
[269] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.

It is important to recognise that changes in the remaining asset lives will alter the timing of the return of assets (depreciation), but it does not alter the overall revenue to Powerlink. At all times the resulting revenue returned through depreciation will be constant in real terms as required under the Rules[270].

Comparison of RAB and financial asset register

Using the existing AER regulatory models it is possible to demonstrate two alternative depreciation calculations for the 2012/13 year. Using the AER's models from the Powerlink Draft Decision, the PTRM forecasts real straight line depreciation for 2012/13 at $207.76m ($ 2011/12). Using the AER's RFM model from Powerlink's Draft Decision and extending the number of years from five to six, nominal straight line depreciation for 2012/13 is $245.05m ($ 2011/12) (CPI in 2012/13 was set a 0%). The difference in the calculations is $37.3m (17.9%) The scale of the difference is an indicator of the sensitivity and importance of the weighted average life calculation to the depreciation component of MAR. If the RFM's depreciation profile were carried forward, RAB and Maximum Allowable Revenue (MAR) under the PTRM would differ by in excess of $100m at the end of the next regulatory period.

Powerlink considers that the scale of the difference between the depreciation calculated using the RFM and PTRM should be recognised when the AER is to make an assessment of the representative nature of alternative depreciation profiles.

Powerlink considers that there is insufficient information in the RFM to predict the natural attrition of assets over the next regulatory period and that the use of a weighted average is a fixed measure that bears no relationship to the duration of the regulatory period. In using the financial asset register, Powerlink can forecast the natural attrition of assets and its effect on the depreciation profile.

In the Draft Decision, the AER considered that the financial accounting data is not representative of the written down value and economic life of the assets contained in the RAB[271]. To demonstrate this the AER cited an example of the asset class 'transmission lines overhead' and identified a difference of $113m or 4.7% as at 1 July 2010. This difference was addressed by Powerlink in its Revenue Proposal by proposing the redistribution of asset class values in the opening RAB as at 1 July 2012. This was accepted by the AER in its Draft Decision[272].

In supporting its comments that financial accounting data is not representative, the AER identified a disconnect through a comparison of one methodology to its own preferred methodology. Powerlink considers that the AER's preference for a methodology is not a reason for not accepting a valid method of calculating the remaining asset lives under the Rules[273]. In its Draft Decision, the AER offered no explanation as to why its preferred calculation for weighted average remaining asset lives will produce a more reflective profile of depreciation.

Powerlink also notes that the Rules specifically provide TNSPs with the flexibility to propose alternative options for calculating remaining asset lives. The AER[274] has also accepted that:

- there is no single correct method for calculating the average remaining lives for a group of assets; and
- the inclusions of its default option asset lives roll forward worksheet in the RFM does not restrict TNSPs from proposing a method other than the weighted average method to calculate the average remaining lives for a group of assets.

[270] National Electricity Rules, Chapter 6A, Clause 6A.6.3.b(2), AEMC.
[271] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.259, AER, November 2011.
[272] Ibid, p.204.
[273] Ibid, p.259.
[274] Final Decision, Amendment Electricity Transmission Network Service Providers Roll Forward Model, pp.6-7, AER, December 2010.

The financial asset register used by Powerlink is reported in the audited annual financial statements and the regulatory financial statements and has been completed with many of the same characteristics that are used in the RAB. Given there are only minor differences in philosophy, there is a close alignment in the values and the patterns of depreciation obtained from the two methods. The alignment between financial asset register and RAB will promote transparency between regulatory and statutory business processes.

Common characteristics between the financial asset register and the RAB are:

- the remaining asset lives from the 2001 financial asset register were used as the basis of the remaining asset life calculation in the regulatory period commencing January 2002 to 2006/07;
- Powerlink uses the schedule of standard asset lives in both the financial asset register and the RAB;
- straight line depreciation is applied to both the financial asset register and the RAB;
- capitalisations are based on the reported actual costs of completed projects for both the financial asset register and the RAB; and
- for capitalisations, the PTRM applies a half year WACC uplift to the RAB. To approximate this, Powerlink calculates a Finance During Construction (FDC) (equivalent to the PTRM) that is applied to the financial asset register at the time of capitalisation.

Taking into account the points above, Powerlink considers that the financial asset register provides a comparable benchmark asset base to the RAB. The use of remaining asset lives calculated from the financial asset register provides an opportunity to realign the opening RAB remaining asset lives and remove inconsistencies that arise when trying to summarise a complex business into regulatory financial models.

Verification of data used to calculate remaining asset lives

Powerlink engaged its internal auditor KPMG to verify that the summary reports used in the remaining asset life calculations reconciled to the regulated financial asset register reported in the regulatory financial statements. KPMG verified forecast depreciation used in the calculations is based on the information in the SAP system. Powerlink has provided KPMG's verification to the AER on a confidential basis as part of its Revised Revenue Proposal.

Powerlink considers that the financial asset register provides a better representation of the remaining economic life of the opening RAB assets as it is more responsive to changes in the actual nature of the assets than that calculated from regulatory models. The use of remaining asset lives calculated from the audited financial asset register also provides an effective way to adjust for changes to the asset base that are not captured in the regulatory models as discussed above.

For the purposes of the Revised Revenue Proposal, Powerlink has used the financial asset register to calculate the opening RAB remaining asset lives as it reflects the mix of assets within an asset class and the economic life of the assets as required by the Rules[275].

Calculation methodology for remaining asset lives

Powerlink's calculation of the remaining asset life for each asset class is described below:

1. Forecast depreciation expense for the next six years from the financial asset register. The forecast is calculated on the financial characteristics for each individual asset at 30 June 2011

[275] Ibid.

and the results are summed into the asset classes. This produces an unsmoothed depreciation profile.

2. Calculate the six year average depreciation for each asset class. This produces a smooth constant depreciation profile.
3. Calculate the remaining asset life by dividing the Net Book Value (NBV) from the 30 June 2011 financial asset register by the six year average depreciation.
4. Roll forward the financial NBV and financial asset life details using forecast capitalisations and disposals for 2011/12.
5. Recalculate the remaining asset life at 30 June 2012 using the revised NBV and revised forecast depreciation for the year ended 30 June 2013. The ratio of NBV and forecast depreciation is the remaining asset life.
6. Transfer the remaining asset life at 30 June 2012 into the PTRM.

Powerlink has provided the AER with two confidential attachments in support of the depreciation forecast. The first is a summary calculation schedule and the second is a report from KPMG which verifies the calculations and the source data.

Powerlink has forecast the depreciation schedules for the next regulatory period based on the opening RAB, remaining asset lives calculated using the above methodology, and forecast asset additions and disposals. Asset class lives included in the opening RAB (as at 1 July 2012) have been calculated using information sourced from the financial asset register. The PTRM has been used to calculate the depreciation forecast on a straight-line-basis. As part of a Revenue Proposal, the Rules[276] requires Powerlink to provide depreciation schedules, which are categorised by the relevant assets by reference to well accepted categories. Powerlink has provided depreciation schedules by asset class in the depreciation pro forma template 7.2. In addition, Table 10.1 sets out the remaining asset lives associated with Powerlink's asset classes.

[276] National Electricity Rules, Chapter 6A, Clause S6A.1.3(7), AEMC.

Table 10.1: Remaining asset lives

Asset class	AER Draft Decision	Revised Revenue Proposal
Overhead lines	35.2	30.7
Underground Lines	28.4	24.0
Lines – Refit	n/a	14.6
Substations Primary Plant	28.6	27.8
Substations Secondary Systems	9.2	11.8
Comms – Civil Works	9.8	12.9
Communications Other Assets	24.2	17.8
Network Switching Centres	9.4	10.2
Land	n/a	n/a
Easements	n/a	n/a
Commercial Buildings	n/a	n/a
Computer Equipment	33.1	31.7
Office Furniture & Miscellaneous	3.2	4.2
Office Machines	3.6	3.9
Vehicles	4.5	4.9
Moveable Plant	6.0	5.7
Insurance Spares	n/a	n/a

Powerlink's revised regulatory depreciation for the next regulatory period is shown in Table 10.2. The AER's PTRM has been used to calculate the regulatory depreciation allowance and incorporates all the proposed changes from the AER's Draft Decision with the exception of:

- the allocation of capital expenditure from the 'transmission line refit' asset class into the "transmission lines overhead" asset class; and
- remaining asset lives, which have been calculated using Powerlink's own methodology, consistent with the Rules.

Table 10.2: Revised regulatory depreciation forecast ($m, nominal)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Straight line depreciation	216.9	247.6	287.2	320.8	351.7	1,424.2
Less inflation adjustment on RAB	169.9	190.6	209.5	227.2	241.0	1,038.1
Regulatory depreciation	**47.0**	**57.0**	**77.8**	**93.6**	**110.6**	**386.0**

*Numbers may not add due to rounding.

Table 10.3 compares the revised regulatory depreciation forecast with the AER's Draft Decision. Differences in regulatory depreciation also include the consequential impacts discussed in other relevant chapters e.g. Powerlink's revised capital expenditure.

Table 10.3: Revised regulatory depreciation comparison ($m, nominal)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	40.9	62.8	76.7	73.8	83.8	338.0
Revised Revenue Proposal	47.0	57.0	77.8	93.6	110.6	386.0

*Numbers may not add due to rounding.

11 Taxation Allowance

11.1 Summary

Chapter 7 of Powerlink's Revenue Proposal outlined the methodology to derive Powerlink's proposed taxation allowance. Under a post-tax framework, a taxation allowance is calculated as part of the building-block approach. The Post Tax Revenue Model) (PTRM) is used to calculate the taxation allowance.

In its Draft Decision, the AER:

- did not accept Powerlink's proposed corporate income tax allowance for the next regulatory period (page 264);
- accepted Powerlink's opening Tax Asset Base (TAB) value as at 1 July 2012 of $4,487m, subject to some input adjustments to the Roll Forward Model (RFM) (page 264);
- accepted Powerlink's proposed redistribution of asset class values in the opening TAB as at 1 July 2012. Powerlink proposed to align its regulatory and financial asset bases to ensure consistency going forward. It has redistributed the opening values in the TAB roll forward asset classes in the proportions represented in its financial assets register (page 265);
- accepted Powerlink's proposed standard tax asset lives with the exception of the standard tax life for equity raising costs. The AER has determined a standard tax asset life of five years for equity raising costs (page 265);
- accepted Powerlink's proposed standard tax asset life of 15 years assigned to a new asset class of "transmission line refit" for life extension or refit works. However, the AER considered that this standard asset life is only appropriate for capital expenditure associated with surface preparation and painting works allocated to the new asset class (page 266); and
- did not accept Powerlink's proposed remaining tax asset lives, which are the same as the proposed remaining asset lives used to depreciate the opening RAB. The AER has applied a weighted average approach to determine revised remaining tax asset lives for Powerlink (page 266).

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

11.2 Allocation of capital expenditure to "transmission line refit" asset class

AER Draft Decision

Powerlink proposed a new asset class of "transmission line refit" for life extension or refit works. The AER considered the standard tax asset life of 15 years is appropriate for capital expenditure associated with surface preparation and painting works allocated to that asset class. However, the AER considered that the other capital expenditure allocated to this new asset class included a significant proportion of assets that have an expected standard tax asset life greater than 15 years. Therefore, the capital expenditure associated with such assets that have longer lives should be reallocated to the existing asset class of "transmission lines overhead". This has the impact of reducing the estimate of Powerlink's depreciation for tax purposes.

Powerlink's response

As stated in Chapter 10, Powerlink has provided further information, expert independent advice and clarification, which supports the inclusion of all the transmission line refit capital expenditure to the new "transmission line refit" asset class. Powerlink considers that its approach is appropriate, reasonable and consistent with the Rules[277]. As such, Powerlink will adopt the same approach used for calculating the transmission line refit capital expenditure for depreciation in calculating the tax allowance.

11.3 Remaining tax asset lives

AER Draft Decision

The AER did not accept Powerlink's method for calculating the remaining tax assets lives as at 1 July 2012. In determining the revised remaining tax asset lives, the AER applied a weighted average approach.

The AER considered that Powerlink's method to calculate the proposed remaining asset lives results in a depreciation profile that does not reflect the economic life of assets as required by the Rules[278]. Accordingly, the AER did not consider that Powerlink's proposed remaining asset lives should be used for tax depreciation purposes.

The AER's RFM employs a weighted average method to calculate remaining tax asset lives for a TNSP. The AER considered that the remaining tax asset lives calculated in the RFM are appropriate for use in estimating the tax depreciation of Powerlink's opening TAB. These remaining tax asset lives resulted in a tax depreciation estimate for a benchmark efficient TNSP based on the value of assets included in the RAB, and therefore satisfy the requirements of the Rules[279].

Powerlink's response

As stated in Chapter 10, Powerlink has provided further information, expert independent advice and clarification supporting the information used to calculate the remaining asset lives. Powerlink considers that its approach is appropriate, reasonable and consistent with the Rules[280]. As such, Powerlink will adopt the same approach used for calculating the remaining asset lives for depreciation in calculating the tax allowance.

11.4 Revised taxation allowance

Powerlink's revised tax allowance for the next regulatory period is shown in Table 11.1. This tax allowance has been calculated using the PTRM and the tax depreciation which incorporates the proposed changes from the AER's Draft Decision with the exception of:

- the allocation of capital expenditure to "transmission line refit" asset class; and
- remaining tax asset lives.

[277] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.
[278] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.
[279] National Electricity Rules, Chapter 6A, Clause 6A.6.4(a)(2), AEMC.
[280] National Electricity Rules, Chapter 6A, Clause 6A.6.3(b)(1), AEMC.

Table 11.1: Revised tax allowance ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Corporate income tax	36.2	38.2	41.7	48.7	53.4	218.4
Less value of imputation credits	23.6	24.9	27.1	31.7	34.7	141.9
Tax allowance	**12.7**	**13.4**	**14.6**	**17.1**	**18.7**	**76.4**

*Numbers may not add due to rounding.

Table 11.2 compares the tax allowance with the AER's Draft Decision and Powerlink's revised tax allowance. Differences in the tax allowance also include the consequential impacts on the tax allowance discussed in other relevant chapters.

Table 11.2: Revised tax allowance comparison ($m, nominal, end)

Adjustment	2012/13	2013/14	2014/15	2015/16	2016/17	Total
AER Draft Decision	15.0	15.9	18.3	18.7	20.4	88.4
Revised Revenue Proposal	12.7	13.4	14.6	17.1	18.7	76.4

*Numbers may not add due to rounding.

12 Maximum Allowable Revenue

12.1 Introduction

This Chapter sets out Powerlink's calculation of the Maximum Allowable Revenue (MAR) for the provision of prescribed transmission services for each year of the next regulatory period based on the building-block approach outlined in the Rules, the Submission Guidelines and the Post Tax Revenue Model (PTRM). The revenue building-block components included in Powerlink's Revenue Proposal have been updated in line with this Revised Revenue Proposal.

12.1.1 Building-block approach

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

MAR = return on capital + return of capital + operating expenditure + tax
= (WACC * RAB) + D + operating expenditure + 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 = regulated business income tax allowance.

The MAR is then smoothed with an X-factor in accordance with the requirements of the Rules[281].

The Rules[282] allows for revenue increments and decrements arising from the Efficiency Benefit Sharing Scheme (EBSS). The net carry over for the EBSS as calculated in Chapter 13 has been included in the operating expenditure building-block.

The increment or decrement associated with the Service Target Performance Incentive Scheme (STPIS) are not included in this Revised Revenue Proposal, but rather included as future revenue cap adjustments.

The values reported in the following sections are "end of year" nominal as sourced from the PTRM.

12.2 Building-block components

12.2.1 Regulatory asset base

The estimated 1 July 2012 opening RAB of $6,485.5m was established in Chapter 3.

Asset values have been rolled forward using the capital expenditure forecast in Chapter 7 and expected regulatory depreciation as detailed in Chapter 10. The RAB for the next regulatory period is summarised in Table 12.1.

[281] National Electricity Rules, Chapter 6A, Clause 6A.6.8, AEMC.
[282] National Electricity Rules, Chapter 6A, Clause 6A.5.4(a)5, AEMC.

Table 12.1: Summary of RAB ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17
Opening RAB	6,485.5	7,273.1	7,994.4	8,670.6	9,200.2
Net capital expenditure	834.6	778.3	754.0	623.3	751.6
Regulatory depreciation	47.0	57.0	77.8	93.6	110.6
Closing RAB	**7,273.1**	**7,994.4**	**8,670.6**	**9,200.2**	**9,841.2**

12.2.2 Return on capital

Return on capital has been calculated by applying the post-tax nominal vanilla WACC to the opening RAB in the respective year.

The post-tax nominal vanilla WACC of 8.68% was established using the methodology detailed in Chapter 4. Powerlink has calculated the return on capital in line with the PTRM. This calculation is summarised in Table 12.2 below.

Table 12.2: Summary of return on capital forecast ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17
Opening RAB	6,485.5	7,273.1	7,994.4	8,670.6	9,200.2
Return on capital	562.7	631.0	693.6	752.3	798.2

12.2.3 Return of capital

The return of capital provided by depreciation has been derived and detailed in Chapter 10 of this Revised Revenue Proposal. The regulatory models combine 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 12.3.

Table 12.3: Summary of return of capital – regulatory depreciation ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Regulatory depreciation	47.0	57.0	77.8	93.6	110.6	386.0

12.2.4 Operating expenditure

Chapter 9 of this Revised Revenue Proposal details Powerlink's requirement for operating expenditure requirements in each year of the next regulatory period summarised in Table 12.4.

Table 12.4: Summary of forecast operating expenditure ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Controllable operating expenditure	173.6	187.6	200.1	218.0	233.2	1,012.5
Network support	2.0	6.2	4.8	5.3	2.9	21.1
Insurances	8.9	9.7	10.7	11.6	12.7	53.6
Debt raising costs	3.5	4.0	4.4	4.7	5.0	21.6
Total operating expenditure	**188.0**	**207.4**	**219.9**	**239.7**	**253.9**	**1,108.8**

12.2.5 Tax allowance

The tax allowance associated with the RAB is outlined in Chapter 11. The forecast tax allowance is summarised in Table 12.5.

Table 12.5: Summary of tax allowance ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Corporate income tax	36.2	38.2	41.7	48.7	53.4	218.4
Less value of imputation credits	23.6	24.9	27.1	31.7	34.7	141.9
Tax allowance	**12.7**	**13.4**	**14.6**	**17.1**	**18.7**	**76.4**

*Numbers may not add due to rounding.

12.3 Revised Maximum Allowable Revenue

The total revenue cap and the MAR for each year of the next regulatory period are 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 12.6.

Table 12.6: Summary of unsmoothed revenue requirement ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Return on capital	562.7	631.0	693.6	752.3	798.2	3,437.8
Return of capital	47.0	57.0	77.8	93.6	110.6	386.0
Total operating expenditure	188.0	207.4	219.9	239.7	253.9	1,108.8
Efficiency carryover	-1.22	-0.76	-3.63	0.60	0.0	-5.0
Tax allowance	12.7	13.4	14.6	17.1	18.7	76.4
Unsmoothed revenue requirement	**809.2**	**908.0**	**1,002.3**	**1,103.2**	**1,181.4**	**5,004.0**

*Numbers may not add due to rounding.

12.4 Revised X-factor smoothed revenue

Powerlink accepts the methodology used by the AER in the Draft Decision regarding smoothing MAR. Powerlink has determined a smoothed nominal MAR using the same approach. The first year MAR has been set to a level which maintains revenue growth from the current regulatory period. A constant X-factor has been applied thereafter so as to target a smoothed MAR in the last year of the regulatory period that is as close to the unsmoothed annual building-block revenue requirement in that last year. To minimise the impact of a price shock at the beginning of the 2018-22 regulatory period, Powerlink considers that the smoothed revenue in the 2016/17 year should be within one per cent of the annual building-block revenue requirement in the 2016/17 year.

Powerlink's revised smoothed revenue requirement and X-factors are presented in Table 12.7.

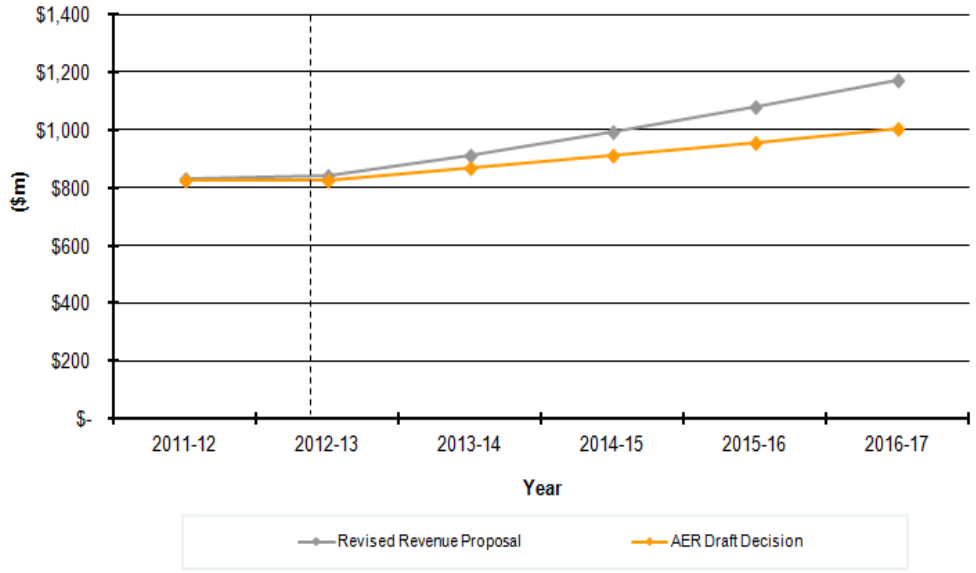
Table 12.7: Revised smoothed revenue requirement and X-factor ($m, nominal, end)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Unsmoothed revenue requirement	809.2	908.0	1,002.3	1,103.2	1,181.4	5,004.0
Smoothed revenue requirement*	840.0	912.9	992.0	1,078.1	1,171.6	4,994.5
X-factor		**-5.90%**	**-5.90%**	**-5.90%**	**-5.90%**	

*Totals are in nominal values. The net present value of the smoothed and unsmoothed cash flows is equal for the regulatory period.

Figure 12.1 shows Powerlink's smoothed revenue path in nominal terms compared to the AER's Draft Decision.

Figure 12.1: Smoothed revenue requirement comparison ($m, nominal)



Source: Powerlink data.

As noted in the AER's Draft Decision[283], the AER may adjust the MAR during the next regulatory period for a number of reasons set out in the Rules, including for cost pass-through events, reopening for capital expenditure to respond to unforeseen circumstances, contingent projects and the STPIS applied to Powerlink.

12.5 Revised average price path

Powerlink determines its transmission charges based on the AER's approved revenues and the pricing principles contained in the Rules. The effect of this Revised Revenue Proposal on average transmission charges can be estimated by taking the smooth revenue requirement and dividing it by the forecast energy delivered in Queensland[284].

Table 12.8 shows the expected average price path resulting from the Revised Revenue Proposal during the next regulatory period, compared with the average price for the final year of the current regulatory period.

[283] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.272, AER, November 2011.
[284] Annual Planning Report 2011 Update, Powerlink, January 2012.

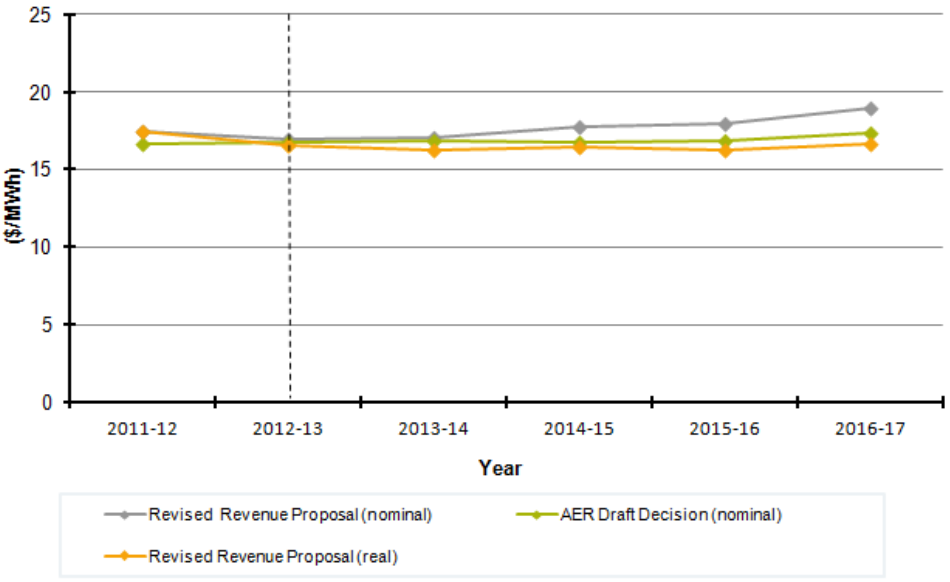
Table 12.8: Revised average price path

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Smoothed revenue requirement ($m, nominal, end)	828.6	840.0	912.9	992.0	1,078.1	1,171.6
Energy (GWh)	47,431	49,561	53,467	55,855	59,985	61,877
Average transmission price ($/MWh, nominal, end)	17.47	16.95	17.07	17.76	17.97	18.93
Average transmission price ($/MWh, real)	17.47	16.52	16.21	16.43	16.21	16.64

Average transmission charges are estimated to increase in nominal terms from around $17.47 per MWh in 2011/12 to $18.93 per MWh in 2016/17. That is, an expected increase in average transmission charges of 1.6% per annum in nominal terms, or -1.0% per annum in real terms.

Figure 12.2 shows the Revised Revenue Proposal nominal and real price paths along with the AER's Draft Decision indicative nominal price path.

Figure 12.2: Average price path from 2011/12 to 2016/17 ($/MWh)



Source: Powerlink data.

Using the same assumptions made by the AER in its Draft Decision of TUOS charges representing approximately 10% of electricity charges in Queensland and an average annual residential customer electricity bill of $1,655[285], Powerlink estimates that the increase in transmission charges under its Revised Revenue Proposal will add approximately $2.77 per annum, or a small nominal electricity price increase of approximately 0.2% per annum.

[285] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.5, AER, November 2011.

13 Efficiency Benefit Sharing Scheme

13.1 Summary

This chapter provides Powerlink's response to the AER's Draft Decision in relation to the Efficiency Benefit Sharing Scheme (EBSS) applicable to the current (2008-12) regulatory period and the scheme that will apply to Powerlink in the next (2013-17) regulatory period.

Current regulatory period

In its Draft Decision, the AER:

- accepted all proposed exclusions, namely, debt raising costs, equity raising costs, network support costs, insurance costs and self-insurance costs (page 308);
- applied a further exclusion for movements in provisions (page 308);
- accepted that no adjustments be made to operating expenditure allowances in relation to demand growth (page 308); and
- did not accept Powerlink's proposed net negative carryover of $1.3m for the current regulatory period (page 301).

Next regulatory period

In its Draft Decision, the AER:

- did not accept Powerlink's proposed method for adjusting for the cost consequences of the difference between forecast and actual demand growth in calculating the net carryover for the 2013-17 regulatory period. Instead, the AER proposed an alternative method to adjust for actual demand growth (page 305);
- accepted the majority of Powerlink's proposed exclusions. Specifically, the AER accepts the following exclusions (page 306):
    - debt-raising costs;
    - network support costs;
    - insurance costs; and
    - self-insurance costs.
- noted that since equity raising costs are not provided as an operating expenditure allowance, they are already excluded from operation of the scheme (page 306).

Powerlink's Revised Revenue Proposal incorporates the matters accepted by the AER above. The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

13.2 Efficiency Benefit Sharing Scheme (2008-12)

AER Draft Decision

The AER was not satisfied that Powerlink's proposed EBSS carryover amount of -$1.3m ($2011/12) for the current regulatory period complied with the requirements of the scheme and calculated a substitute carryover amount of -$3.8m ($2011/12).

In relation to exclusions, the AER agreed to exclude all of Powerlink's proposed exclusions from calculation of the EBSS carryover for the current regulatory period, namely:

- debt raising costs;
- equity raising costs;
- network support costs;
- insurance costs; and
- self-insurance costs.

In addition, the AER also excluded movements in provisions from both forecast and actual operating expenditure for the current regulatory period. The AER reasoned that it adopted such an approach given that it had excluded these costs from Powerlink's base operating expenditure to forecast operating expenditure for the next (2013-17) regulatory period[286].

In relation to demand growth, the AER agreed with Powerlink's proposal that no adjustment be made to its operating expenditure allowances for this regulatory period for the purposes of the EBSS.

Powerlink's response

Powerlink has implemented the AER's Draft Decision position in relation to exclusions and demand growth. However, Powerlink strongly disagrees with the AER's adjustment to its actual operating expenditure for movements in provisions. It is important to note that the scheme was specifically designed to focus on controllable costs[287] [288]. In response to the AER's Draft Decision approach on this matter, Section 9.4 of the Revised Revenue Proposal explains the precise nature of these provisions and why Powerlink considers that they represent recurrent expenditure. Given that such costs are fundamentally controllable costs, Powerlink maintains that they should not be excluded from the EBSS.

In addition, Powerlink notes that the AER's reason for excluding movements in provisions from the EBSS in this regulatory period was driven by its decision to exclude such costs from its base operating expenditure forecast for the next (2013-17) regulatory period. Notwithstanding the merits or otherwise of applying such an exclusion to the base operating expenditure going forward, as a matter of principle and good regulatory practice, Powerlink considers that it is unreasonable for the AER to retrospectively apply an exclusion to this regulatory period. The AER's decision to apply an additional exclusion five months into the final year of a 5-year operating expenditure incentive scheme seriously undermines the incentive properties of the scheme. In such circumstances, the AER has made an ex-post adjustment to an ex-ante incentive scheme in a way that was not known to Powerlink at the start of the regulatory period. In doing so, the AER has effectively removed the incentive properties inherent in the scheme (Powerlink was not afforded the opportunity to respond to the incentive) and has affected the magnitude of any gains or losses actually achieved by Powerlink during this regulatory period.

Therefore, for the purposes of its Final Decision, Powerlink considers that the AER should reverse its position to exclude movements in provisions from calculation of the EBSS for the 2008-12 regulatory period.

[286] Ibid, p.308.
[287] Final, Electricity Transmission Network Service Providers Efficiency Benefit Sharing Scheme, p.5, AER, September 2007.
[288] Final Decision, Electricity Transmission Network Service Providers Efficiency Benefit Sharing Scheme, pp.2-3, AER, September 2007.

13.2.1 Revised net carryover amount

In deriving its revised net carryover for this regulatory period, Powerlink has included actual controllable and non-controllable operating expenditure for the four years to 2010/11 inclusive and, consistent with the scheme, has assumed no incremental efficiency gains for 2011/12. Powerlink has also excluded the five items agreed by the AER. However, consistent with its arguments in response to the AER's Draft Decision above, Powerlink has not excluded movements in provisions for this calculation. Powerlink has also adopted the AER's Draft Decision model (inclusive of inflation inputs) to derive its revised figures in Table 13.1 below. Overall, Powerlink has calculated a revised net carryover amount of minus $4.7m. An adjustment for this amount has been accounted for in the PTRM for the 2013-17 regulatory period. In addition, pro forma statement 7.4 has been submitted as part of the Revised Revenue Proposal.

Table 13.1: Revised EBSS carryover amounts (2007/08 to 2011/12) ($m, 2011/12, end)

	2007/08	2008/09	2009/10	2010/11	2011/12	Total
AER Draft Decision	-4.1	-0.4	-2.9	3.5	-	-4.0
Revised Revenue Proposal	-1.2	-0.7	-3.4	0.5	-	-4.7

*Numbers may not add due to rounding.

13.3 Efficiency Benefit Sharing Scheme (2013-17)

In relation to the EBSS applicable to its next regulatory period, Powerlink does not agree with the AER's Draft Decision positions in relation to the demand adjustment and exclusions. These issues are discussed further below.

13.3.1 Demand adjustment

AER Draft Decision

The AER rejected Powerlink's proposed approach to adjust for the cost consequences of variations between forecast and actual demand growth where total cumulative controllable operating expenditure for the regulatory period exceeds 1%. The AER's reasons for doing so were that:

- setting an adjustment trigger based on actual operating expenditure would not provide Powerlink with a continuous incentive to reduce operating expenditure;
- it considered the trigger should be an exogenous factor that Powerlink cannot influence; and
- having the trigger based on actual operating expenditure could reward Powerlink for efficiency losses.

Based on this reasoning, the AER flagged its intention to adjust Powerlink's forecast operating expenditure for the cost consequences of any difference between forecast and actual demand growth over the next regulatory period if actual demand growth is outside the low and medium growth scenarios in Table 11.4 of its Draft Decision. The AER describes that Powerlink should adjust its operating expenditure allowance as follows:

- where actual demand growth < low demand growth scenario, total asset values and hence operating expenditure, be recalculated with 100% weight applied to the low growth scenario;
- where actual demand growth > medium demand growth scenario, as above, with 100% weight applied to the medium growth scenario; and

- where actual demand growth > high demand growth scenario, as above, with 100% weight applied to the high growth scenario.

Powerlink's response

Having considered the AER's arguments in relation to an exogenous trigger, Powerlink is prepared to adjust its allowed operating expenditure targets on such a basis. However, Powerlink does not agree with the AER's proposed range of triggers. As the AER[289] points out, in its latest revenue cap decisions for TransGrid and Transend, it determined that the trigger for adjusting forecast operating expenditure for actual demand growth is where actual demand is outside the range of scenarios modelled to develop the two TNSPs' capital expenditure forecasts. Specifically, the AER determined that an ex-post adjustment should only be applied if actual demand was outside the low and high growth scenarios proposed by TransGrid[290] and Transend[291].

However, for Powerlink, the AER has determined that Powerlink should adjust its operating expenditure allowances where actual demand growth is below the low growth and above the medium growth scenarios, respectively. Powerlink notes that while the AER acknowledges that it had applied a proportionate approach to both TransGrid and Transend, it then arrives at a result in its Draft Decision which Powerlink considers is neither proportionate nor consistent with its previous decisions above. Specifically, Powerlink considers that to meet these objectives the AER should also apply a similar adjustment mechanism whereby operating expenditure allowances will be adjusted in the event that actual demand growth is outside the range of scenarios modelled in the development of Powerlink's capital expenditure forecast. That is, a range of low to high demand growth rather than low to medium.

It is well documented that Queensland has one of the highest demand growth environments in the NEM. It is also well known amongst key stakeholders that, given Powerlink's network is heavily driven by the mining and resources sector, the relativities between the low and high demand growth range is greater in Queensland. In light of these well-known and very real factors, Powerlink does not consider it logical or reasonable to apply one of the narrowest demand growth range adjustments to the TNSP facilitating prudent and efficient network growth in the highest demand growth environment in the NEM.

While the AER might consider (although not explained) that such an approach corresponds to its rejection of Powerlink's demand forecasts, Powerlink maintains that the AER's approach on this particular matter completely falls away given Powerlink's response in the demand forecast chapter. In particular, Powerlink has vigorously responded to the AER's Draft Decision on demand forecasts given that both the AER and its consultants have fundamentally misunderstood Powerlink's demand forecast methodology and the substitute demand forecast used by the AER in its Draft Decision was not prepared on a sound basis.

In addition, Powerlink's proposed methodology on the approach to be taken in the event actual demand falls outside the low and high growth demand scenarios is provided in Appendix Q.

13.3.2 Exclusions

AER Draft Decision

The AER intends to exclude the following cost categories from the EBSS carryover calculation for the 2013-17 regulatory period:

- debt raising costs;

[289] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.305, AER, November 2011.
[290] Final Decision, TransGrid Transmission Determination 2009/10 to 2013/14, p.104, AER, April 2009.
[291] Final Decision, Transend Transmission Determination 2009/10 to 2013/14, p.123, AER, April 2009.

- network support costs;
- insurance costs;
- self-insurance costs; and
- movements in provisions – an exclusion imposed by the AER.

The AER justifies its exclusion of movements in provisions from the EBSS on the basis that it has adjusted such movements from Powerlink's base year operating expenditure.

The exclusions identified above are intended to be additional to the adjustments set out in Section 2.4.2 of the AER's EBSS Guidelines for Transmission. Further, the AER notes that equity raising costs are already excluded from the scheme given that they are not included in Powerlink's forecast operating expenditure.

Powerlink's response

Powerlink disagrees with the AER's approach to exclude movements in provisions from the EBSS for the next regulatory period. In particular, Powerlink considers that the underlying nature of the provisions which are accounted for in its financial statements are controllable. Therefore, there is no basis for excluding these costs from the base year operating expenditure or the EBSS.

Powerlink has explained its position in relation to movements in provisions in the operating expenditure chapter, Section 9.4.

13.4 Revised Efficiency Benefit Sharing Scheme

For the purposes of establishing the controllable operating expenditure forecasts applicable to the EBSS calculation for the next regulatory period, Powerlink proposes the following values as outlined in Table 13.2. To be clear, in proposing the Revised Revenue Proposal values below, Powerlink has applied the AER's agreed exclusions, with the exception of movements in provisions.

Table 13.2: Revised EBSS operating expenditure forecasts ($m, 2011/12, mid-year)

	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Forecast operating expenditure	181.0	194.5	201.0	213.5	220.3	1,010.3
Adjustment for debt raising costs	3.4	3.7	4.0	4.2	4.4	19.7
Adjustment for network support	1.9	5.8	4.3	4.7	2.5	19.3
Adjustment for insurances	8.5	9.1	9.8	10.3	11.0	48.8
Forecast operating expenditure for EBSS purposes	**167.1**	**175.9**	**182.9**	**194.2**	**202.4**	**922.5**

14 Service Target Performance Incentive Scheme (2013-17)

14.1 Summary

Chapter 13 of Powerlink's Revenue Proposal sets out the proposed performance targets, caps, collars and weightings for each of the parameters for the Service Target Performance Incentive Scheme (STPIS).

In its Draft Decision, the AER made an assessment of Powerlink's proposed parameter definitions and associated values for the next regulatory period and:

- considered that Powerlink's proposed parameter values largely complied with the requirements of the STPIS (page 280);
- did not accept Powerlink's proposal for offsets to the transmission line and transformer parameters on the basis of operational refurbishment works (page 287);
- accepted Powerlink's proposal for an offset to the transmission line sub-parameter on the basis of capital works (page 287);
- did not accept Powerlink's use of ten years historical data (2001-2010) for calculating the caps and collars for the Loss of Supply event frequency caps and collars (page 289);
- did not accept Powerlink's weightings for the transmission circuit availability sub-parameters (page 293);
- did not accept Powerlink's LOS event frequency weightings (page 293);
- accepted Powerlink's average outage duration weighting (page 293);
- did not accept adjustments to Powerlink's 2010 Market Impact of Transmission Congestion (MITC) performance history (page 295);
- did not accept Powerlink's proposed offset to the target for the MITC (page 295);
- accepted Powerlink's performance cap of zero dispatch intervals for the MITC (page 298); and
- advised that in the Final Decision, the AER would update the performance targets, caps and collars using performance data from 2007-2011 (page 299).

In this Revised Revenue Proposal, Powerlink has implemented the following aspects of the AER's Draft Decision:

- capital works offset for the transmission line circuit availability sub-parameter;
- MITC performance cap of zero Dispatch Intervals (DIs);
- caps and collars for large LOS event frequency based on five years of data; and
- Average Outage Duration weighting.

The sections below present Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

14.2 Circuit availability operational refurbishment offsets

AER Draft Decision

The AER accepted Powerlink's offsets on transmission line availability for capital works. However, the AER did not accept Powerlink's offsets on transmission line availability and transformer availability for operational refurbishment. The AER stated that it could not accept an adjustment unless it was explicitly permitted by Clause 3.3(k) of the STPIS. It also stated that it considered:

- that the operational refurbishment allowance is provided so that the reliability of the network is maintained in the next regulatory period; and
- that refurbishments are in the general course of operating a transmission network and it is the intention of the STPIS that TNSPs manage these types of outages with minimal interruptions to customers[292].

Powerlink's response

Powerlink does not agree with the AER's Draft Decision not to allow offsets for transmission line and transformer refurbishments based on increased levels of operational refurbishment in the next regulatory period.

In the Draft Decision, the AER rejected Powerlink's proposed offset for Operational Refurbishment projects on the basis 'that clause 3.3(k) does not explicitly permit adjustment for operational works'[293] and further justified its position by stating 'they were not aware of TNSPs seeking adjustments for operational works in the past'[294].

Powerlink considers that while Clause 3.3(k) of the STPIS does not explicitly permit an adjustment for operational refurbishment works, it certainly does not prohibit an adjustment either. In addition, Powerlink does not consider that just because other TNSPs have not applied for an offset for operational works in the past, this does not provide sufficient reason for the AER to reject Powerlink's proposal. Powerlink understands the relevance of precedent in providing a level of certainty in the regulatory process. However, Powerlink also notes that the AER has changed its thinking in relation to some long-held positions in the past. In light of this, Powerlink considers the AER needs to take into account the specific circumstances of Powerlink's operational refurbishment offset, set out below, to ensure that Powerlink will remain incentivised to maintain and improve the reliability of elements of the transmission network in line with the STPIS principles in Section 6A.7.4 (b) of the Rules.

Powerlink's specific circumstances

Powerlink capitalises network assets to a higher level of equipment grouping than other NEM TNSPs and classifies assets at substation bay and transmission line built section levels. As a result, Powerlink classifies works as operational refurbishment that other TNSPs would classify as capital expenditure. For example, while some TNSPs classify replacement of a single circuit breaker as capital expenditure, Powerlink classifies it as operational refurbishment, as the circuit breaker by itself does not constitute the substantive part of the substation bay.

In the Draft Decision, Powerlink notes that the "AER considers that refurbishments are in the general course of operating a transmission network and it is the intention of the STPIS that TNSPs manage these types of outages with minimal interruptions to customers."[295] Powerlink considers that if the AER was to approve an offset for transmission line and transformer availability,

[292] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.288, AER, November 2011.
[293] Ibid, p.287.
[294] Ibid.
[295] Ibid, p.288.

Powerlink would still be incentivised to manage the impact on customers, i.e. Powerlink will still be incentivised under the LOS event frequency parameter to minimise supply interruptions.

Powerlink considers that while the regulatory accounting classification for some of the expenditure that is the subject of the offsets is operating expenditure, all of the work requires that whole capital assets be removed from service for an extended period of time. From the perspective of the STPIS scheme the work has a similar impact on results as capital works, even though the expenditure is classified as operational in Powerlink's particular circumstances. While Powerlink will always ensure that transmission network interruptions to its customers are kept to a minimum, it strongly disagrees with the AER that operational refurbishment projects proposed for the offset are in the general course of operating the transmission network. While the works proposed for the offset will assist in maintaining the reliability of the network in future regulatory periods, they will require Powerlink to take substantial network outages and will substantively impact on the availability sub-parameters. These types of works have not been undertaken by Powerlink in the current regulatory period and their effect is not captured in the performance history.

Powerlink understands that the intention of the Scheme is to incentivise TNSPs to improve, maintain and provide greater reliability of the transmission network. By rejecting Powerlink's proposal for an offset for an increase in operational refurbishment projects, the AER is penalising Powerlink under the STPIS for undertaking operational refurbishment works (which would be classified as capital works by other TNSPs) on its transmission system.

For the purposes of Powerlink's Revised Revenue Proposal, Powerlink maintains that the operational refurbishment offsets for transmission line and transformer works are consistent with the STPIS. These offsets have therefore been included in transmission lines and transformer refurbishment for circuit availability sub parameters in the Revised Revenue Proposal.

14.3 LOS event frequency targets, caps and collars

AER Draft Decision

In its review of Powerlink's LOS event frequency targets, caps and collars, EMCa suggested:

- using ten years of data as it considered the sample size was already small; and
- it was logical to use the same ten years data for the performance targets as allowed under 3.3(h) of the STPIS[296].

The AER did not accept Powerlink's LOS event frequency caps and collars as it considered that that the 'use of ten years actual performance data is inconsistent with the data used to calculate the performance targets'. In its place, the AER substituted LOS event frequency caps and collars based on the five most recent years of data.

The AER noted EMCa's suggestion to use ten years data for the performance target, caps and collars but stated that it cannot approve a performance target based on different period (to the most recent five years) if it was not proposed by Powerlink.

The AER also considered that a discrete distribution as opposed to continuous distributions (as used by Powerlink) for the curve of best fit was more appropriate as the LOS data represents discrete events.

[296] Powerlink Revenue Determination: Technical Review – Forecast Capital Expenditure and Service Targets, pp.88-89 (paragraph 401 and 407), EMCa, 6 September 2011.

Powerlink's response

Powerlink does not accept the AER's Draft Decision to replace the caps and collars for moderate LOS event frequency based on ten years of data with caps and collars based on five years of data.

The AER noted that 'Powerlink experienced a much higher loss of supply event frequency in 2002 and 2003 when compared with the performance in the other years for both sub-parameters'[297]. Powerlink advised the AER and EMCa[298] that this performance was "attributable to a number of factors, internal and external, for example: natural hazards such as lightning and other environmental factors. Powerlink can confirm that these events were all unrelated, random and unforeseeable and are not the result of any common cause of failure." With this in mind, Powerlink considers that its performance in 2002 and 2003 fairly represents possible future outcomes.

As indicated by the AER in the Draft Decision, Clause 3.3(h) allows the AER to approve a performance target based on a different period if the AER is satisfied that the use of a different period is consistent with the objectives of the STPIS.

Both EMCa[299] and the AER[300] have previously stated that the use of 10 years is appropriate given the small size of five years of performance history. The AER stated it had previously accepted caps and collars for TransGrid based on ten years of data where a target has been calculated with five years data. The AER stated that 'this was because the 10 year average of TransGrid's historical performance is relatively consistent with its most recent five year's average'[301]. The AER compared Powerlink's average LOS event frequency for large and moderate LOS event frequency over the period from 2001-2010, 2001-2005 and 2006-2010 and concluded that the means for 2001-2005 and 2001-2010 were significantly higher than 2006-2010[302]. The AER considered 'Powerlink's performance in those early years does not reflect its performance during the most recent five years (2006-2010)'[303].

However, Powerlink has concerns about the AER's methodology to compare Powerlink's performance between different periods. It considers that the AER's simple comparison of means and variances to determine performance between periods does not give consideration to the impact of sample sizes. A number of statistical methods can be adopted to analyse the mean and variances of different sized groups, e.g. the one way Analysis of Variance (ANOVA) and t-test. Powerlink used the one way ANOVA[304] test to test differences in means (for groups or variables) for statistical significance by analysing the variances of the samples. The analysis provides a better understanding of the statistical significance of each data set and has been provided to the AER on a confidential basis.

Taking into account the importance the AER has previously place on a larger dataset, Powerlink considers that the AER should approve caps and collars where the five and ten year datasets have similar statistical significance.

The analysis indicates that for the large (greater than 0.75 system minutes) LOS event, the most recent five years of data is most reflective of Powerlink's performance. With this in mind,

[297] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.290, AER, November 2011.
[298] Response - Request EMCa/013 and EMCa/016 – STPIS, p.3, Powerlink, 2 August 2011.
[299] EMCa, Powerlink Revenue Determination: Technical Review – Forecast Capital Expenditure and Service Targets, pp.88 and 89 (paragraph 401 and 407), EMCa, 6 September 2011.
[300] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.290, AER, November 2011.
[301] Ibid.
[302] Ibid.
[303] Ibid.
[304] As the AER analysed three different groups, the one way ANOVA test is a more suitable test (as t-test is only used for two groups.

Powerlink considers that the AER's decision to use five years of data to calculate caps and collars is acceptable.

However, for a moderate (greater than 0.10 system minutes) LOS event, the last ten years of data has the same statistical significance as the most recent five years, and is reflective of Powerlink's moderate LOS event frequency performance.

Powerlink considers that this supports the case that its performance over the last ten years will be reflective of Powerlink's future performance for moderate LOS events and is therefore consistent with the objectives in Clause 1.4 of Powerlink's STPIS. For this reason, Powerlink does not agree with the AER's decision to calculate the caps and collars for moderate LOS events using five years of data. Powerlink considers that based on the information provided above, the AER can approve caps and collars based on the most recent ten years of data for the moderate LOS event frequency. For the purposes of the Revised Revenue Proposal, Powerlink has used ten years of data to calculate the moderate LOS event frequency caps and collars.

In addition, Powerlink notes and agrees with the AER and EMCa that discrete distributions are more appropriate when fitting LOS event frequency data.

14.4 Circuit availability weightings

AER Draft Decision

In relation to the circuit availability weightings, EMCa was of the opinion 'that an appropriate starting position is that all plant classes contribute equally to the overall transmission system service to provide reliable supply.' [305] EMCa considered that 'any variation from the initial starting position should be justified on the basis of identification of specific plant items being perceived to be of greater value contributing to a service or reliability or to seek improvement in lower performing areas'[306]. EMCa suggested that reactive plant was one such area as:

- in many of its planning reports and onsite presentations, Powerlink emphasised the use of reactive plant to 'push the transmission network to maximum delivery and the key role it plays in maintaining voltage stability'; and
- the unavailability of capacitor banks has high variability within each year and across each year historically. An incentive to focus solutions to technical problems and managed processes to improve outcomes for this plant family is desirable[307].

The AER did not accept Powerlink's proposed circuit availability weightings. The AER accepted EMCa's view that all plant classes should contribute equally to the overall transmission system and the reactive plant availability sub parameter should have a higher weight. The AER substituted availability sub parameter weightings of 0.1% of MAR for transmission lines circuit availability, 0.1% of MAR for transformer circuit availability, 0.15% of MAR for reactive plant circuit availability and 0.1% of MAR for peak circuit availability.

Powerlink's response

Powerlink disagrees with EMCa's view that all plant classes contribute equally to the overall transmission system. Powerlink's network is underpinned by thousands of kilometres of transmission network and over one hundred substations. As such the network has large numbers of transmission line elements compared to other plant elements. Powerlink considers that in terms of the transmission network's operational performance and its subsequent impact on the

[305] Powerlink Revenue Determination – Technical Review – Forecast Capital Expenditure and Service Targets, p.90, EMCa, 6 September 2011.
[306] Ibid, p.91.
[307] Ibid.

service level provided to customers, transmission lines (which form the backbone of the network) will have the greatest impact on network performance, followed by large capacity transformers and then reactive devices.

However, Powerlink's historical performance of its reactive plant indicates that some improvement is possible. Powerlink also considers that in order to be consistent with Section 3.5(3) of the STPIS, the weightings should reflect the need for this improvement and provide appropriate incentives to improve the reliability of the network. With this in mind, Powerlink considers that it is appropriate to weight the reactive plant somewhat higher. As a result, Powerlink accepts the AER's proposed circuit availability weightings.

14.5 LOS event frequency weightings

AER Draft Decision

EMCa considered that as the large LOS event frequency target is one compared to a moderate LOS event frequency target of four, the moderate LOS event frequency parameter is easier to measure and interpret and is therefore a more meaningful incentivisation target[308].

The AER did not agree with Powerlink's proposed LOS event weightings and considered that the weightings for the LOS event frequency parameters would provide greater incentive for Powerlink to improve the reliability of its transmission system if they were reversed, i.e. a large LOS event frequency weighting of 0.15% of MAR and a moderate LOS event frequency weighting of 0.3% of MAR.

The AER also noted that in the upcoming regulatory period, Powerlink is required to count the large LOS event as a moderate LOS event. The AER considered that this would provide a greater incentive for Powerlink to reduce the frequency of LOS events as a whole, as large LOS events are also counted as a moderate LOS event.

Powerlink's response

Powerlink does not accept the AER's decision to change the weightings for the large LOS event frequency to 0.15% of MAR and moderate LOS event frequency to 0.3% of MAR.

Powerlink's notes that the weightings it proposed in the Revenue Proposal were consistent with the weightings for the large LOS event frequency and moderate LOS event frequency in its current STPIS. This has provided continual incentive to maintain the reliability of the network throughout the current regulatory period. Powerlink considers that in order to modify the weightings, the AER is required to take into account Powerlink's specific circumstances and provide evidence that Powerlink's proposed weightings will not continue to provide incentive to reduce LOS events in the next regulatory period.

As already noted, the AER considered the requirement for Powerlink to count the large LOS event as moderate LOS events would provide greater incentive to reduce the frequency of LOS as a whole. Powerlink proposed this clarification to the current STPIS as part of its submission to the AER. Powerlink's existing STPIS arrangement already counts a large LOS event frequency as a moderate event. In the submission, Powerlink noted that the "refinement reinforced the existing process used by Powerlink in its current service standard scheme"[309]. As the existing data recording process within the STPIS will be maintained in the next regulatory period, Powerlink does not consider that the AER's proposed weightings will provide any additional incentive to Powerlink.

[308] Ibid.
[309] Powerlink Service Target Performance Incentive Scheme Proposal - 1 July 2012 to 30 June 2017 Regulatory period, p.7, Powerlink, 31 August 2010.

Both the AER and EMCa considered that reversing the weightings of the large and moderate LOS event frequency would provide greater incentive to improve the reliability of the transmission system. EMCa's consideration was that a larger target "was easier to measure and interpret and therefore likely to be a more meaningful incentivisation target"[310]. Powerlink considers that EMCa's consideration is purely theoretical and does not take into account Powerlink's changing circumstances (further elaborated on below) in the next regulatory period. As such, Powerlink does not consider that the AER has provided sufficient evidence that the AER's proposed weightings will provide greater incentives to Powerlink to reduce LOS events in the next regulatory period.

Powerlink specific LOS circumstances

The demand from Powerlink's direct connect customers is expected to double in the next regulatory period. These developments, primarily in the Surat and Bowen Basins, will see Powerlink connect numerous additional direct connect customers, most in excess of 100MW. This block load growth is unprecedented, and far outweighs the growth patterns traditionally observed at DNSP connection points. Other loads, subject to connection agreements are also expected to be connected during Powerlink's next regulatory period.

The majority of these new developments will also be in the geographically remote areas of Powerlink's network. This represents a step change in Powerlink's circumstances which will require a change in operational response for which Powerlink should be strongly incentivised. For these large loads, customers will place value on Powerlink being incentivised to respond and reduce the impact of large LOS events and ensure a reliable and continuous electricity supply.

Using Powerlink's 2011 system maximum demand, a moderate LOS event requires Powerlink to restore a 100MW load in nine minutes[311]. For outages of load of this size, this response time frame is unlikely to be met, even with best industry practice. Powerlink has previously advised the AER that the operation of its network is subject to statutory and regulatory requirements set out in the Rules, various legislation, codes and guidelines[312], as reproduced below:

> The guideline "ENA NENS 07-2006: National Guideline for Manual Reclosing of High Voltage Apparatus Following a Fault Operation" sets out the minimum industry standards for the safe manual reclosing of high voltage electrical apparatus following a network fault.
>
> The Guideline states that "before attempting an initial manual reclose, the Network Operator shall wait a minimum of fifteen minutes (to allow the receipt of information regarding any incident to the Control Centre), and consider sectionalising the feeder and re-energising, section by section."[313]Powerlink has auto-reclose installed on all critical feeders where possible (given constraints on generator feeders). The automatic reclose of transmission lines helps minimise the impact of transitory faults on the network.
>
> However, if a fault fails to clear and the feeder is not automatically returned to service under the ENA Guideline, Powerlink is required to wait 15 minutes (in the absence of other information) before attempting to manually reclose the circuit breaker to restore supply.

Powerlink considers that if the response time is not practically achievable, the event is outside Powerlink's control and the incentive for Powerlink to respond to the event is removed. In

[310] Powerlink Revenue Determination: Technical Review – Forecast Capital Expenditure and Service Targets, p.91, paragraph 426, EMCa, 6 September 2011

[311] Powerlink notes that the maximum demand will increase as a result of load increase. However, for a 0.1 system minute event, each additional 1000MW of maximum demand will only increase the required restoration time by 1 minute.

[312] Powerlink Service Target Performance Incentive Scheme Proposal - 1 July 2012 to 30 June 2017 Regulatory period, p.12, Powerlink, 31 August 2010.

[313] Electricity Network Association, "ENA NENS 07-2006: National Guideline for Manual Reclosing of High Voltage Apparatus Following a Fault Operation", Section 6.3.

comparison, to avoid incurring a large LOS event, Powerlink is required to respond in 67 minutes, which is more achievable and within Powerlink's control.

The AER's decision to reverse the LOS event frequency sub parameter weighting diminishes the incentive on Powerlink to respond to the loss of supply of large loads. Powerlink does not consider that data recording will provide any additional incentives as Powerlink already includes large LOS events in the measurement of moderate LOS events. Further, Powerlink's network will have numerous large additional load customers, who value reliability of supply and are important to Queensland's economy. The weightings should therefore reflect the requirement on Powerlink to manage events that are practically achievable and within its control. In addition, Powerlink considers that a higher weighting on the large LOS event frequency sub parameter will provide an incentive:

- firstly to prevent an event from occurring (e.g. through activities such as improved worked practices); and
- secondly to minimise LOS event durations.

As such, Powerlink considers that a higher weighting placed on the large LOS events is consistent with the Rules[314] and will provide an appropriate incentive to Powerlink to provide greater reliability of the transmission network.

14.6 MITC adjustment to Powerlink's performance history

AER Draft Decision

The AER did not agree with Powerlink's 2010 MITC performance history. Powerlink's Revenue Proposal did not take into account the AER's decision for the period 13 July to 31 December 2010. Powerlink proposed a performance history of four DIs, while the AER subsequently determined Powerlink's performance over this period was 11 DIs.

As Powerlink commenced the market impact component on 13 July 2010, with a performance target based on a performance history from 2006 to 2009, the period from 1 January 2010 to 12 July 2010 was not assessed by the AER. The AER has since reviewed this period and adjusted the 2010 performance history by 88 from 1,414 DIs to 1,502 DIs.

Powerlink's response

Powerlink has reviewed the adjustments and accepts the AER's adjustment for the period from 13 July 2010 to 31 December 2010 of 11 dispatch intervals.

However, Powerlink does not accept some of the adjustments made to Powerlink's performance from 1 January 2010 to 12 July 2010. Table 14.1 outlines the AER's adjustments to the performance history which Powerlink agree and do not agree.

The Constraint ID Q>TV_TYP refers to a planned outage of a generator connection in Queensland. Powerlink had previously agreed the outage timing with the generator and notes that the outage was to assets that were not providing prescribed services. Consistent with similar outages, Powerlink has excluded the relevant DIs from the 2010 performance.

This has the impact of changing the performance history by 21 from 1,414 DIs to 1,393 DIs. For clarification, Powerlink's 2010 performance history is 1,404 DIs[315].

[314] National Electricity Rules, Clause 6A.7.4(b)(1), AEMC.
[315] Powerlink had 1393 DIs from 1 January 2010 to 12 July 2010 and 11 DIs from 13 July 2010 to 31 December 2010.

Table 14.1: Adjustments to Powerlink's performance history (1 January to 12 July 2010)

Constraint ID	Powerlink's proposed DI count	AER adjustment to DI count	Reason for adjustment	Exclusion clause	Date binding	Powerlink Comment	Powerlink Revised Adjustment
#N-Q-MNSP1_I_E	0	2	Outage in Qld - see market notice 31863	N/A	5/05/2010	Accept adjustment but note market notice number should be 31683.	2
CA_BPS_3B1F648C_01	0	35	Outage in Qld - see market notice 18461	N/A	7/06/2010 8/06/2010	Accept adjustment but note market notice number should be 32061.	35
Q>GBMU_GBMU_MDSPT	537	-53	Dispatch intervals had marginal value <$10/MWh	N/A	17/05/2010 18/05/2010 19/05/2010 20/05/2010 21/05/2010 25/05/2010 27/05/2010 31/05/2010 01/06/2010 02/06/2010 03/06/2010	Accept	-53
Q_RS_260	72	-3	Dispatch intervals had marginal value <$10/MWh	N/A	18/05/2010	Accept	-3
Q^FNQ_-030	14	-2	Dispatch intervals had marginal value <$10/MWh	N/A	17/01/2010	Accept	-2
Q>TV_TYP	0	109	Outage in Qld	N/A	11/04/2010	Not Accept. ID refers to a generator connection. Powerlink had agreed outage with generator. Consistent with how similar outages have been treated in the past, this has been excluded.	0
Total	**623**	**88**					**-21**

Source: AER analysis, Powerlink analysis.

14.7 MITC offset

AER Draft Decision

In the Draft Decision, the AER rejected Powerlink's MITC offset on the basis that the proposed STPIS does not allow for the inclusion of the offset. It stated that in order for a reasonable adjustment to be made, the requirements of Clause 4.2(f) of the STPIS should be met. The AER also considered that Powerlink relied on a notion of 'reasonableness' as the basis for the inclusion for the offset.

Powerlink's response

Powerlink did not rely on the notion of 'reasonableness' as the basis of the inclusion of the offset. Powerlink is acquiring the assets as a result of the most economic option under the Regulatory Test recently conducted for augmentation to this area. The network assets that are to be acquired are around 25 years old and of a rating that will have an impact on network performance (when compared to Powerlink's existing network assets).

Powerlink does not agree with the AER that the offset does not meet the requirement in Clause 4.2(f)(2) of the STPIS. Clause 4.2(f)(2) states:

> 'The proposed performance target may be subject to reasonable adjustment to allow for:
>
> ...
>
> (2) the expected material effects on the TNSP's performance from any changes to the age and ratings of the assets comprising the TNSP's transmission system during the TNSP's next regulatory control period (compared to the age and ratings of the TNSP's assets comprising the TNSP's transmission system during the period used to calculate performance targets)'

The offsets proposed by Powerlink are the expected DI effects on Powerlink's performance as a result of the changes to the age and ratings of the assets of Powerlink's network. Powerlink therefore considers, the offset meets the requirement of Clause 4.2(f)(2) of the STPIS and should therefore be included in the performance target. Powerlink has reinstated the offset as part of the Revised Revenue Proposal.

14.8 Updating targets, caps, collars from 2006-2010 to 2007-2011

AER Draft Decision

The AER has stated in the Draft Decision that it will update Powerlink's performance targets, caps and collars using Powerlink's 2007-2011 performance data. The AER has stated that Clause 3.3(g) and 4.2 of the STPIS require TNSPs to calculate performance targets, caps and collars on the performance history over the most recent five years. The AER has also noted that this will not place any additional resourcing requirement on Powerlink and the AER[316].

Powerlink's response

Powerlink notes that previous versions of the STPIS have also included the requirement to use the five most recent years of performance data. However, all previous TNSP decisions have set performance targets, caps and collars based on performance history data up to the year immediately prior to submitting the Revenue Proposal (i.e. 16 months prior to the final decision date). Powerlink considers that the AER's decision to use data from the year ending 4 months prior to the final decision is inconsistent with the precedent set in previous TNSPs decisions and introduces uncertainty to the regulatory process. Taking into account the AER's past decisions,

[316] Draft Decision, Powerlink Transmission Determination 2012-13 to 2016-17, p.299, AER, November 2011.

Powerlink interpreted the most recent five years as the calendar year concluding immediately prior to submitting the Revenue Proposal.

Whilst Powerlink does not agree, for the reasons listed above, with the AER's decision to update performance measures with 2007-2011 performance data, it notes the requirement of the STPIS to use the most recent five years of performance history. To this end, Powerlink would like to understand the AER's timeframes to update the performance targets, caps and collars with 2007-2011 data in time for the Final Decision. Within these timeframes, Powerlink requests that the AER provides sufficient time for the verification of the resulting performance measures as well as relevant discussion on updating of values for targets, caps and collars.

14.9 Revised Service Target Performance Incentive Scheme

This section presents Powerlink's revised performance targets, caps, collars and weightings proposed for the next regulatory period. Powerlink has incorporated all the proposed changes from the AER's Draft Decision with the exception of:

- the offset for transmission line and transformer operational refurbishment works;
- the moderate LOS event frequency caps and collars using ten years of performance data;
- the AER's proposed large and moderate LOS event weightings;
- adjustment of the DI count for actual 2010 MITC performance; and
- the MITC offset for the acquisition of network assets.

Table 14.2 specifies the proposed values, weightings and other elements related to Powerlink's STPIS parameters. In addition, pro forma statement 7.3 has been submitted as part of the Revised Revenue Proposal.

Table 14.2: Revised STPIS targets, caps, collars and weightings

Parameter	Unit	Collar	Target	Cap	Weighting (% of MAR)
Transmission Lines Availability	%	97.51	98.67	99.83	0.100
Transformer Availability	%	98.11	98.59	99.08	0.100
Reactive Plant Availability	%	94.45	97.15	99.84	0.150
Peak Availability	%	98.31	98.76	99.20	0.100
Loss of Supply > 0.75 system minutes	Events	2	1	0	0.300
Loss of Supply > 0.10 system minutes	Events	10	4	3	0.150
Average Outage Duration	Minutes	1,306	859	412	0.100
Market Impact of Transmission Congestion	Dispatch Intervals	-	1,950	0	2.000

For comparison the STPIS targets, caps, collars and weightings proposed by the AER in the Draft Decision is provided in Table 14.3.

Table 14.3: AER Draft Decision STPIS targets, caps, collars and weightings

Parameter	Unit	Collar	Target	Cap	Weighting (% of MAR)
Transmission Lines Availability	%	97.60	98.76	99.92	0.100
Transformer Availability	%	98.27	98.76	99.24	0.100
Reactive Plant Availability	%	94.45	97.15	99.84	0.150
Peak Availability	%	98.31	98.76	99.20	0.100
Loss of Supply > 0.75 system minutes	Events	2	1	0	0.150
Loss of Supply > 0.10 system minutes	Events	6	4	2	0.300
Average Outage Duration	Minutes	1,306	859	412	0.100
Market Impact of Transmission Congestion	Dispatch Intervals	-	1,442	0	2.000

15 Pricing Methodology and Negotiating Framework

15.1 Summary

Chapter 14 of Powerlink's Revenue Proposal sets out the proposed Pricing Methodology and Negotiating Framework to apply for the next regulatory period.

Pricing Methodology

In its Draft Decision, the AER approved Powerlink's proposed Pricing Methodology for the 2013-17 regulatory period as lodged and was satisfied it met the requirements of the Rules and the AER's Pricing Methodology Guidelines (page 327).

For the purposes of its Revised Revenue Proposal, Powerlink refers the AER to its proposed Pricing Methodology lodged as part of its Revenue Proposal. No new document is provided herein.

Negotiating Framework

In its Draft Decision, the AER did not accept Powerlink's proposed Negotiating Framework (page 333).

The section below presents Powerlink's response to a number of matters raised in the AER's Draft Decision, including where Powerlink does not agree on these matters. Powerlink also provides additional information and analysis for the AER's consideration in reaching its Final Decision where necessary.

Negotiated Transmission Service Criteria

In its Draft Decision, the AER determined that its proposed Negotiated Transmission Service Criteria published in June 2011 will apply to Powerlink in the next regulatory period (page 334). Powerlink agrees to the proposed criteria.

15.2 Proposed Negotiating Framework

15.2.1 Reasonable costs

AER Draft Decision

The AER was not satisfied that Powerlink's proposed Negotiating Framework complied with the Rules. Specifically, the AER considered that the framework does not reflect Clause 6A.9.5(c)(3)(i)-(ii) of the Rules (relating to reasonable costs) in a transparent manner.

To improve transparency, the AER considered that Clause 6.1.3 of Powerlink's proposed Negotiating Framework should be amended to read:

- the reasonable costs and/or the increase or decrease in costs (as appropriate) of providing the negotiated transmission service to the service applicant; and
- a demonstration to the service applicant that the charges for providing the negotiated transmission service reflect those costs and/or the increase or decrease (as appropriate).

Powerlink's response

Powerlink has amended its revised proposed Negotiating Framework to reflect the AER's required changes above as drafted.

15.2.2 Commercial information

AER Draft Decision

The AER raised two concerns regarding commercial information in Powerlink's proposed Negotiating Framework. These include that:

- the framework does not make provision for the service applicant to request additional commercial information or clarification of that information from Powerlink; and
- an equivalent provision which requires Powerlink to provide additional commercial information or clarification of that information within a timely manner should be included in the proposed framework.

Powerlink's response

In relation to the first dot point above, Powerlink disagrees with the AER's claim that its proposed Negotiating Framework does not make provision for a service applicant to request additional commercial information from Powerlink. Such a requirement is clearly provided for in Section 6.1 of Powerlink's proposed Negotiating Framework in the context of Powerlink providing all commercial information reasonably required by a service applicant. Section 6.1 is encompassed under the Section 6 heading of "Provision of Commercial Information by Powerlink".

Notwithstanding this, Powerlink acknowledges that Section 6.1 could be clarified to cover off commercial information also specifically *requested* by the service applicant. Further, Powerlink acknowledges that Section 6.1 does not similarly provide for *clarification* of the commercial information provided. Powerlink considers the existing provision can be remedied to address the AER's concerns about requests and clarification with only minor changes to the existing document. As a result, Powerlink has amended Section 6.1 of its revised proposed Negotiating Framework to reflect the AER's requirements, but has not adopted the AER's proposed clauses in the Draft Decision.

In relation to the second dot point above, Powerlink notes that Section 6.1 of its proposed Negotiating Framework already includes a timeframe for Powerlink to provide commercial information to a service applicant. That is, "within a timeframe agreed by the parties".

However, Powerlink acknowledges that it would be appropriate to apply a consistent timeframe to service applicants and itself in relation to this matter, as proposed in Section 5.2 of its proposed Negotiating Framework. Therefore, Powerlink has amended Section 6.1 of its revised proposed Negotiating Framework to reflect that it will provide or clarify any commercial information requested by the service applicant within 10 business days of the date of the request or such other period as agreed by the parties.

15.3 Revised proposed Negotiating Framework

Powerlink's revised proposed Negotiating Framework provided at Appendix R, incorporates the AER's amendments as drafted in relation to reasonable costs and, gives effect to the AER's amendments in relation to commercial information.

Powerlink considers that its revised proposed Negotiating Framework is consistent with the Rules.

16 Glossary

AASB	Australian Accounting Standards Board
ABS	Australian Bureau of Statistics
ACG	Allen Consulting Group
AEM	Deloitte Access Economics Macro Model
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ANOVA	Analysis of Variance
ANSIO	Australian National State and Industry Outlook
APR	Annual Planning Report
AWOTE	Average Weekly Ordinary Time Earning
BPO	Base Planning Objects
CERF	Cost Estimate Risk Factor
CPI	Consumer Price Index
CPT	Carbon Price Trajectory
CQ	Central Queensland
CVR	Customer Value of Reliability
DAE	Deloitte Access Economics
DCST	Double Circuit Steel Tower
DI	Dispatch Interval
DNSP	Distribution Network Service Provider
DRP	Debt Risk Premium
DSM	Demand Side Management
EBSS	Efficiency Benefit Sharing Scheme
EGW	Electricity Gas Water
EGWWS	Electricity Gas Water and Waste Services
EIS	Environmental Impact Statement
EMCa	Energy Market Consulting associates
ESOO	Electricity Statement of Opportunities
EUAA	Energy Users Association of Australia
FDC	Finance During Construction
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GSDA	Gladstone State Development Area
GSP	Gross State Product
GVA	Gross Value Added
GWh	Gigawatt hours
IES	Intelligent Energy Systems
ITOMS	International Transmission Operations and Maintenance Study
kV	Kilovolt
LPI	Labour Price Index
LNG	Liquefied Natural Gas
LOS	Loss of Supply
MAE	Mean Absolute Error
MAPE	Mean Absolute Percentage Error
MAR	Maximum Allowable Revenue
MITC	Market Impact of Transmission Congestion
MMA	McLennan Magasanik Associates
MW	Megawatt
MWh	Megawatt hours

NBV	Net Book Value
NEL	National Electricity Law
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NIEIR	National Institute of Economic and Industry Research
NPV	Net Present Value
NQ	North Queensland
NTNDP	National Transmission Network Development Plan
NZIER	New Zealand Institute of Economic Research
PoE	Probability of Exceedance
PSC	Power System Consultants
PTRM	Post Tax Revenue Model
PV	Photovoltaic
QCA	Queensland Competition Authority
QIP	Queensland Infrastructure Plan
Qld	Queensland
QNI	Queensland – New South Wales Interconnector
QTC	Queensland Treasury Corporation
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
RFI	Request for Information
RFM	Roll Forward Model
RIT-T	Regulatory Investment Test for Transmission
Rules	National Electricity Rules
SCER	Standing Council on Energy and Resources
SCST	Single Circuit Steel Tower
SFG	SFG Consulting
SEQ	South East Queensland
SKM	Sinclair Knight Merz
SPA	Sustainable Planning Act 2009
STPIS	Service Target Performance Incentive Scheme
SWQ	South West Queensland
TAB	Tax Asset Base
TNSP	Transmission Network Service Provider
TUOS	Transmission Use of System
WACC	Weighted Average Cost of Capital

17 Appendices

Appendices	Title
Appendix A	Powerlink Revised Revenue Proposal Submission Guidelines Compliance Checklist
Appendix B	PwC - Debt Risk Premium and Equity Raising Costs PriceWaterhouseCoopers
Appendix C	QTC - Debt Risk Premium Analysis Queensland Treasury Corporation
Appendix D	Issues relating to Draft Decision (DRP and Equity Raising Costs) SFG Consulting
Appendix E	Review of Labour Cost Escalation Issues under National Electricity Rules Synergies Report
Appendix F	Labour Cost Escalation Forecasts to 2016/17 – Australia and Queensland BIS Shrapnel
Appendix G	Labour Cost Escalators in the AER's Powerlink Draft Decision (Nov 2011) Professor John Mangan
Appendix H	Revised Materials Escalation Forecast for Upcoming Regulatory Period to July 2017 Sinclair Knight Merz
Appendix I	Forecast of Land Value Escalation – Queensland Urbis Pty Ltd
Appendix J	Assessment of Load Forecast Methodology and Results ACIL Tasman
Appendix K	Carbon Reduction Scenarios in AER Draft Decision on Powerlink Transmission Determination ROAM Consulting
Appendix L	Capital Program Estimating Risk Analysis Evans and Peck
Appendix M	Economic Analysis SEQ Reliability of Supply 275kV Alternatives Powerlink
Appendix N	500kV Projects: Incremental Costs and Contingent Projects Powerlink
Appendix O	Directors' Responsibility Statement Powerlink
Appendix P	Proposed Contingent Projects 1 July 2012 to 30 June 2017 Powerlink
Appendix Q	EBSS Methodology for adjusting for actual demand growth for the 2013-2017 Regulatory Period Powerlink
Appendix R	Negotiating Framework for Negotiated Transmission Services Powerlink

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