Draft decision

Powerlink

Transmission determination

2012-13 to 2016-17

November 2011

AUSTRALIAN ENERGY REGULATOR

Submissions

This document sets out the reasons for the Australian Energy Regulator's (AER) draft transmission decision for Powerlink for the period 1 July 2012 to 30 June 2017.

The AER will hold a public forum on this draft decision on 14 December 2011 in Brisbane. Interested parties can register to attend the forum by calling the AER's Network Regulation branch on (02) 6243 1233, or by emailing aerinquiry@aer.gov.au.

The AER invites interested parties to make written submission on the draft decision and the consultants' reports to the AER by the closing date 20 February 2012. It will deal with all information it receives in the transmission decision process, including submissions on the draft decision, in accordance with the Australian Competition and Consumer Commission (ACCC) / AER information policy (available at www.aer.gov.au).

Submissions can be sent electronically to aerinquiry@aer.gov.au or mailed to:

Mr Warwick Anderson
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Network Regulation
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

The AER prefers all submissions to be publicly available to facilitate an informed and transparent consultative process. It will treat submissions as public documents unless otherwise requested. Parties wishing to submit confidential information must:

- identify clearly the information that is the subject of the confidentiality claim
- provide a non–confidential version of the submission.

The AER will publish all non–confidential submissions on its website, www.aer.gov.au. Also available on the website are a copy of Powerlink's revenue proposal, consultancy reports and submissions from interested parties are available on the AER website.

Please direct inquiries about the draft transmission decision, or about lodging submissions to the Network Regulation branch of the AER on (02) 6243 1233 or alternatively emailing aerinquiry@aer.gov.au.

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Shortened forms

Shortened form	Full title
AER	Australian Energy Regulator
APR	annual planning report
APS	annual planning statement
Capex	capital expenditure
CPI	consumer price index
Current regulatory control period	1 July 2007 to 30 June 2012
DRP	debt risk premium
EMCa	Energy Market Consulting associates
MAR	maximum allowed revenue
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
Next regulatory control period	1 July 2012 to 30 June 2017
NTSC	negotiating transmission service criteria
Opex	operating expenditure
PoE	probability of exceedence
Powerlink	Queensland Electricity Transmission Corporation Limited
PTRM	post tax revenue model
QNI	Queensland–NSW Interconnector
RAB	regulatory asset base
RPP	revenue and pricing principles
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUOS	transmission use of system
WACC	weighted average cost of capital

Background

The AER is responsible for regulating the revenues of transmission network service providers (TNSPs) operating in the National Electricity Market (NEM). Powerlink is a TNSP operating in the NEM. It is both the owner and operator of a network covering more than 1700 kilometres from north of Cairns in Queensland to the New South Wales border. The Powerlink network comprises more than 13 000 circuit kilometres of transmission lines and 112 substations.[1] It is used to connect generators, distributors and large directly connected mining and industrial customers in Queensland. The Queensland–NSW Interconnector (QNI) connects Queensland to the rest of the NEM.[2]

As part of the AER's transmission determination for Powerlink,[3] the AER is required to make a draft decision.[4] The National Electricity Rules (NER) stipulate that the AER is to provide reasons for its decision which are to include the basis and rationale of the AER's decision.[5] Together, this document and its attachments constitute the AER's draft decision and reasons as required by the NER.[6] The AER has changed the format in which it presents its draft decision to be more concise. For simplicity, the AER has decided to refer to this document as the draft decision.

The National Electricity Law (NEL) and the NER set out the framework for the economic regulation of TNSP. The NEL requires the AER to make decisions in a manner that will, or is likely to, contribute to the achievement of the national electricity objective (NEO).[7] The NEO can be briefly described as promoting efficient investment in, and the efficient operation and use of, electricity services, for the long term benefit of consumers.[8] The AER must also have regard to the revenue and pricing principles (RPP) set out in the NEL.[9] The RPP promotes efficient provision of, and recovery of costs for providing, transmission services.[10]

Chapter 6A of the NER sets out the framework for the economic regulation of transmission services. The AER's draft decision for Powerlink must include decisions on:[11]

- the revenue cap for Powerlink
- a negotiating framework setting out requirements for the preparation, replacement, application or operation of Powerlink's negotiating framework

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1 Powerlink, *2013–2017 Powerlink Queensland Revenue Proposal*, p. 27 (Powerlink, *Revenue Proposal*).
2 Powerlink, *Revenue Proposal*, p. 22.
3 Section 15 and the Glossary of the NEL require the AER to make a transmission determination for TNSPs.
4 NER, clause 6A.12.2.
5 NER, clause 6A.14.2.
6 This document satisfies the AER's obligations to produce a draft decision and reasons for decision under the NER.
7 National Electricity Law, section 16.
8 National Electricity Law, section 7.
9 National Electricity Law, section 16(2)(a)(i).
10 National Electricity Law, section 7A.
11 NER, clause 6A.14.1.

- negotiated transmission service criteria to be applied in relation to disputes about access to negotiated transmission services
- the proposed contingent projects and associated trigger events
- a pricing methodology setting out Powerlink's approach to determining charges for prescribed transmission services
- how the AER will apply the incentive schemes.

In making its draft decision, the AER has reviewed Powerlink's revenue proposal, the proposed negotiating framework and submissions received in accordance with the process outlined in part E of chapter 6A of the NER. This process involved:

- Pre-decision consultation—the AER consulted with Powerlink regarding the development of the revenue proposal.
- Powerlink's proposal—its revenue proposal and proposed negotiating framework were submitted to the AER on 31 May 2011.
- Public consultation—the AER published Powerlink's revenue proposal and the AER's proposed negotiated transmission service criteria in June 2011, and called for submissions from interested parties. It held a public forum on Powerlink's revenue proposal in Brisbane on 26 July 2011. The AER considered submissions on Powerlink's revenue proposal in making its draft decision.
- Specialist advice—the AER engaged expert engineering, financial and economic experts to advise on key aspects of the revenue proposal. It considered this advice in making its draft decision.

Summary

The NER requires the AER to make a transmission determination on Powerlink's revenue proposal.[12] The AER's determination sets the transmission component of electricity prices in Queensland from 1 July 2012. The NEL requires the AER to make decisions in a manner that will, or is likely to, contribute to the achievement of the NEO. The NEO promotes efficient investment in, and operation and use of, electricity services for the long term benefit of consumers.[13]

The AER's draft decision and indicative price impacts

Powerlink proposed total revenue for the regulatory control period 1 July 2012 to 30 June 2017 of $5954 million ($nominal), an increase of 78 per cent from its current allowance.[14]

This increase is based on Powerlink's expectations of the costs required to achieve its obligations under NER. These obligations include:

- meeting and managing expected demand
- complying with regulatory obligations or requirements
- maintaining the quality, reliability and security of supply
- maintaining the reliability, safety and security of the transmission system.

The AER has accepted much of Powerlink's revenue proposal as being consistent with the NER requirements. However, the AER does not accept all elements of Powerlink's revenue proposal. The AER's draft decision is for total (smoothed) maximum allowed revenue (MAR) of $4563 million ($nominal) for the next regulatory control period, or 23 per cent below Powerlink's proposal.

The draft decision is expected to result in a typical residential customer's bill increasing on average by about $1.40 per annum.[15].

Drivers of the difference of opinion

The main drivers of the difference between the AER's draft decision and Powerlink's proposal are the weighted average cost of capital (WACC), capital expenditure (capex) and operating expenditure (opex).

12 NER, clause 6A.2.1.
13 NEL, section 7.
14 The current total revenue allowance for 1 July 2007 to 30 June 2012 is $3343 million ($nominal).
15 Based on an average residential customer's electricity bill of $1655.

WACC

The WACC is the most significant driver of the AER's lower revenue allowance. In particular, a change in market conditions since Powerlink submitted its revenue proposal means the AER's nominal risk free rate is lower than Powerlink's. The AER also considers Powerlink's proposed debt risk premium (DRP) value is too high. If the AER was to accept Powerlink's values for these two WACC parameters, the draft decision would have resulted in total (unsmoothed) revenue increasing by a further $781.4 million ($nominal) over the next regulatory control period.[16]

Capital expenditure

The AER considers Powerlink's proposed total forecast capex is more than is necessary to achieve the capex objectives in the NER. The AER has substituted Powerlink's total forecast capex with its own forecast. The key reasons for this are rejection of the costs associated with the proposed 500kV upgrade and lower demand forecasts, which reduce load driven capex. If the AER was to accept Powerlink's capex, the draft decision would have resulted in total (unsmoothed) revenue increasing by a further $254.8 million ($nominal) over the next regulatory control period.

Operating expenditure

The AER considers Powerlink's proposed total forecast opex is more than is necessary to achieve the opex objectives in the NER. The AER has substituted Powerlink's total forecast opex with its own forecast. The key reasons for this are lower expected labour cost escalation. If the AER was to accept Powerlink's opex forecast, the draft decision would have resulted in total (unsmoothed) revenue increasing by a further $85.9 million ($nominal) over the next regulatory control period.

Negotiated transmission services

The draft decision sets out the proposed negotiating service criteria which give effect to the negotiated transmission services principles set out in the NER.

Outputs

Accountability for delivering prescribed transmission services lies with Powerlink. Nevertheless, the AER, through its service target performance and efficiency benefit sharing schemes has strengthened the incentives on Powerlink to improve transmission system reliability to all customers. This ensures that any cost savings achieved by Powerlink during the next regulatory control period do not come at the expense of service standards.

16 The AER conducted sensitivity analysis using its draft decision inputs, but adopting Powerlink's WACC parameters to demonstrate the impact of Powerlink's proposed WACC parameters on the AER's revenue allowance. The AER conducted similar analysis using Powerlink's capex and opex forecasts.

1 Revenue

Powerlink lodged its revenue proposal for the regulatory control period 2012-13 to 2016-17 (figure 1.1), proposing total (smoothed) MAR of $5954.0 million ($nominal)[17], which table 1.1 displays.

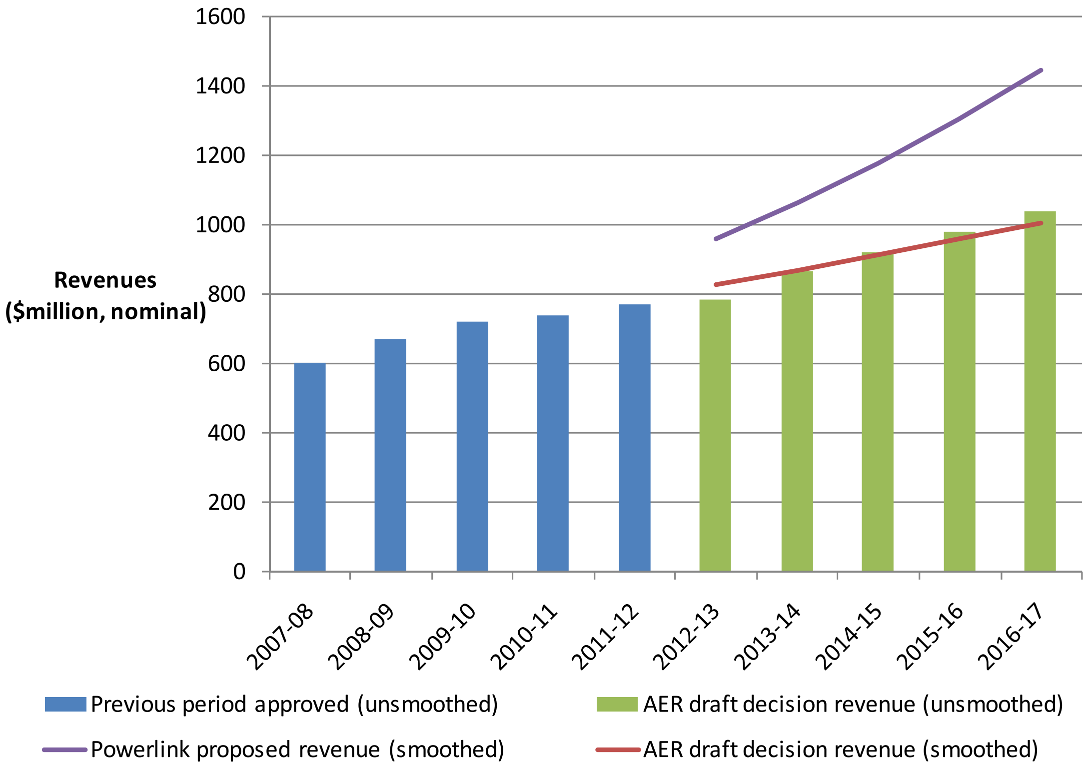
Table 1.1 Powerlink's proposed revenue allowance ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposal	960.6	1064.0	1178.5	1305.3	1445.7	5954.0

Source: Powerlink, *2013–2017 Powerlink Queensland Revenue Proposal*, May 2011, p. 113 (Powerlink, *Revenue Proposal*).

The AER has accepted much of Powerlink's proposal as being consistent with requirements in the NER. However, the AER does not accept all elements of Powerlink's revenue proposal. The AER's draft decision approves total smoothed MAR of $4562.8 million ($nominal); that is, 23 per cent below Powerlink's proposal. This is demonstrated at figure 1.1.

Figure 1.1 AER's draft decision on Powerlink's revenue allowance ($million, nominal)



Source: AER analysis.

The AER draft decision on Powerlink's total revenue allowance is calculated by summing a set of 'building blocks'. These building blocks are displayed in table 1.2, and are discussed throughout this document.

17 Powerlink submitted its revenue proposal with the AER on 31 May 2011.

Table 1.2 AER's draft decision on Powerlink's revenue cap for prescribed transmission services ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Return on capital	546.7	590.2	627.4	669.0	708.8	3142.0
Regulatory depreciation	40.9	62.8	76.7	73.8	83.8	338.0
Operating expenditure	184.5	193.1	201.1	211.3	222.3	1012.4
Efficiency benefit sharing scheme (carryover amounts)	–4.2	–0.4	–3.2	3.9	–	–4.0
Net tax allowance	15.0	15.9	18.3	18.7	20.4	88.4
Annual building block revenue requirement (unsmoothed)	783.0	861.5	920.3	976.7	1035.3	4576.8
Annual expected MAR (smoothed)	825.5	866.9	910.4	956.0	1004.0	4562.8
X factor (per cent)	n/a	–2.33	–2.33	–2.33	–2.33	n/a

Source: AER analysis.

The most significant change in the AER's draft decision to Powerlink's revenue proposal is a lower WACC. The lower WACC is largely due to a lower nominal risk free rate and is also due to a lower DRP. The nominal risk free rate is determined by observing market determined Commonwealth Government bond rates over an averaging period.[18] For this draft decision, the AER has used an indicative averaging period. Since Powerlink proposed its indicative WACC, a change in market conditions has been reflected in the observed market data. This has led to the nominal risk free rate the AER has applied in this draft decision being lower than that set out in Powerlink's proposal. The AER will update the WACC for the nominal risk free rate based on the agreed averaging period at the time of the final decision.

The AER also rejected Powerlink's proposed DRP and will instead apply a lower DRP. The AER considers that its method to calculate the DRP, based on the average of observed bond yields, appropriately incorporates relevant information from the market. This will contribute to a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and with the risk involved in providing prescribed transmission services.

Other key adjustments the AER has made to Powerlink's proposed revenue allowance include:

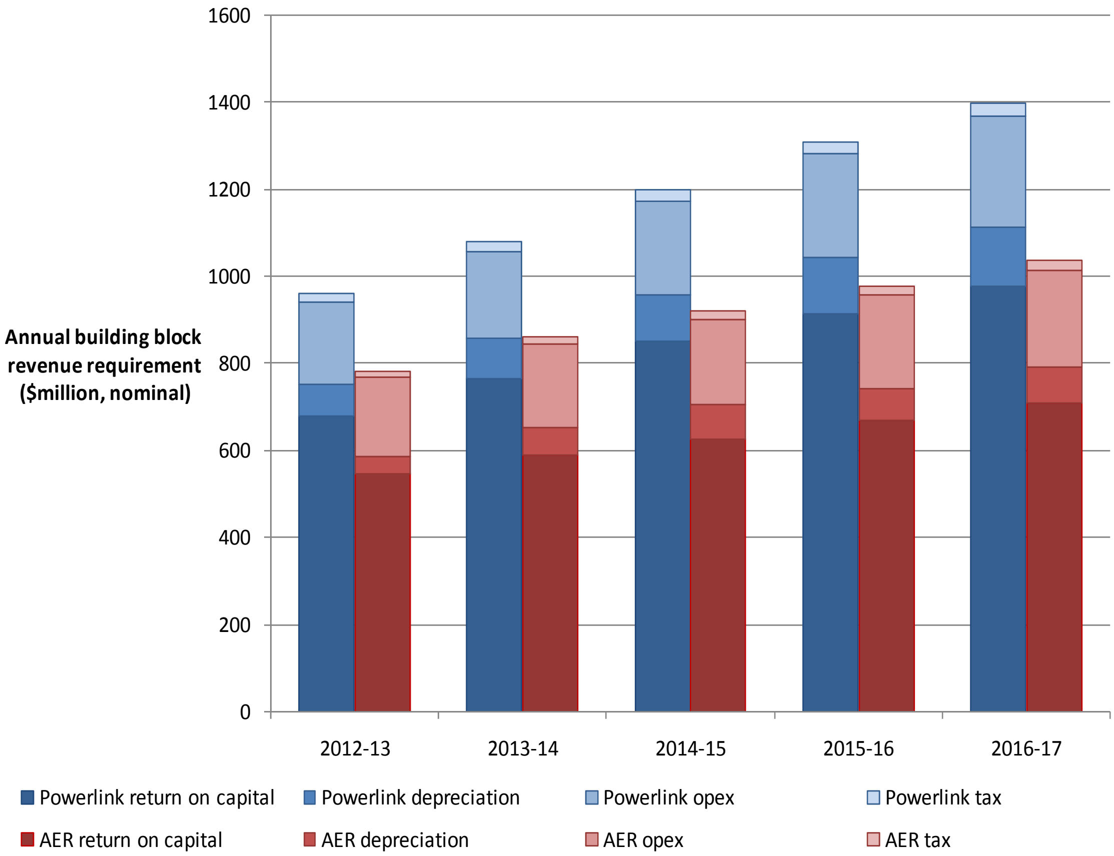
- rejected Powerlink's proposal for forecast capex and included its own forecast capex—Powerlink's forecast capex does not reasonably reflect the capex criteria given the AER's forecast demand for electricity. The AER also identified issues with Powerlink's proposal to upgrade capacity on part of its network to 500kV.
- rejected Powerlink's proposal for forecast opex and included its own forecast opex—Powerlink's forecast opex does not reasonably reflect the opex criteria. It is more than the efficient costs required to meet the opex objectives. In particular, the AER identified

18 NER, clause. 6A.6.2.

issues with aspects of Powerlink's proposed allowances for controllable opex and real cost escalators.

The AER does not accept some elements of the efficiency benefit sharing scheme (EBSS), the service target performance incentive scheme (STPIS) and self insurance costs. The AER has made adjustments to Powerlink's proposed opening regulatory asset base (RAB) as at 1 July 2012. The AER also rejects aspects of Powerlink's network support and contingent projects. The effect of the AER's adjustments on Powerlink's proposed (unsmoothed) annual building block revenue requirement is displayed in figure 1.2.

Figure 1.2 The AER's adjustments to Powerlink's proposed annual building block revenue requirement ($million, nominal)



Source: AER analysis.

The AER has conducted sensitivity analysis of the key adjustments contained in this draft decision. In particular, the AER has calculated the effect of applying Powerlink's proposed cost of capital parameters, and opex and capex forecasts. table 1.3 and table 1.4 outline this analysis.

Table 1.3 Changes to AER draft decision in total over 5 years, if Powerlink's cost of capital parameters were adopted

	Increased revenues ($million, nominal)	Increased revenues (per cent)
Risk free rate (Rf)	518.2	11.3
Debt risk premium (DRP)	262.7	5.7
Rf + DRP	**781.4**	**17.1**

Source: AER analysis.

Table 1.4 Changes to AER draft decision in total over 5 years, if Powerlink's capex and opex forecasts were adopted

	Increased revenues ($million, nominal)	Increased revenues (per cent)
Capex	254.8	5.6
Opex	85.9	1.9

Source: AER analysis.

The AER has smoothed the annual building block revenue requirement to determine the annual expected MAR to provide a smoother profile of revenues over the next regulatory control period. The AER's total adjustment to Powerlink's proposed expected MAR for each year of the next regulatory control period are displayed in table 1.5.

Table 1.5 Comparison of Powerlink's proposed expected MAR and the AER draft decision ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposed expected MAR	960.6	1064.0	1178.5	1305.3	1445.7	5954.0
Adjustment	–135.1	–197.1	–268.1	–349.2	–441.8	–1391.2
AER's draft decision expected MAR	825.5	866.9	910.4	956.0	1004.0	4562.8
Percentage change (per cent)	14.1	18.5	22.7	26.8	30.6	23.4

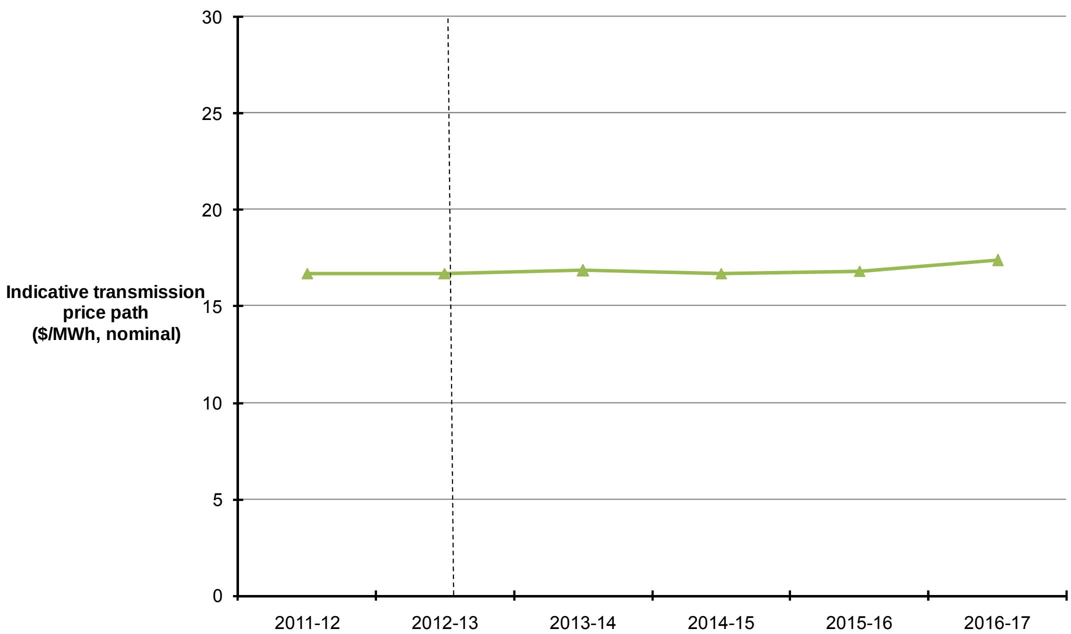
Source: AER analysis; Powerlink, *Revenue Proposal,* p. 113.

The NER does not require the AER to estimate transmission price changes for a TNSP revenue determination. Nonetheless, the AER typically provides some indicative transmission price impacts flowing from its decisions.

The effect of the AER's draft decision on forecast average transmission charges can be estimated by taking the annual expected MAR and dividing it by forecast annual energy delivered in Queensland.[19] Based on this approach, the AER estimates that this draft decision will result in a 0.8 per cent per annum (nominal) increase in average transmission charges from 2011-12 to 2016-17. This estimated increase in average transmission charges is because the average increase in the AER approved MAR is higher than the average increase in Powerlink's forecast annual energy delivered over the next regulatory control period. The average increase in the AER approved MAR is 4.0 per cent per annum, whereas the average increase in the forecast energy delivered in Queensland is 3.1 per cent per annum for the next regulatory control period.

Transmission charges represent approximately 10 per cent on average of end user electricity charges in Queensland.[20] As set out at figure 1.3 the AER estimates that the increase in average transmission charges under this draft decision will add approximately $1.40 per annum (or 0.1 per cent) to the average residential customer's annual electricity bill of $1655 during the next regulatory control period.[21]

Figure 1.3 Indicative transmission price path from 2011-12 to 2016-17 ($/MWh, nominal)



Source: AER analysis.

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19 The forecast annual energy delivered figures are obtained from Powerlink, *2011 Annual Planning Report*, June 2011, p. 28. The AER has made downward adjustments to the energy delivered forecasts shown in the 2011 Annual Planning Report. The AER's adjustments to the energy delivered forecasts are made based on the same proportion of the AER's adjustments to Powerlink's peak demand (as discussed in attachment 2). The adjustment to forecast energy delivered is necessary because of the reduced demand forecasts. However, the AER notes that its approach to adjust the energy delivered forecasts is only a high level approximation. For simplicity, it has not taken into account other matters that may also affect forecast energy delivered such as load factors when making this adjustment.

20 Queensland Competition Authority, *Final decision—Benchmark retail cost index for electricity 2011-12*, May 2011, p. 44.

21 The average customer annual electricity bill was calculated based on average household electricity consumption of 8000 kWh per year and QCA determined domestic tariff of 20.69 c/kWh (excluding GST) for 2011-12. See Queensland Competition Authority, *Queensland Government gazette No.35: Retail electricity prices for non-market customers*, May 2011.

2 Powerlink's outputs

2.1 Powerlink’s transmission services

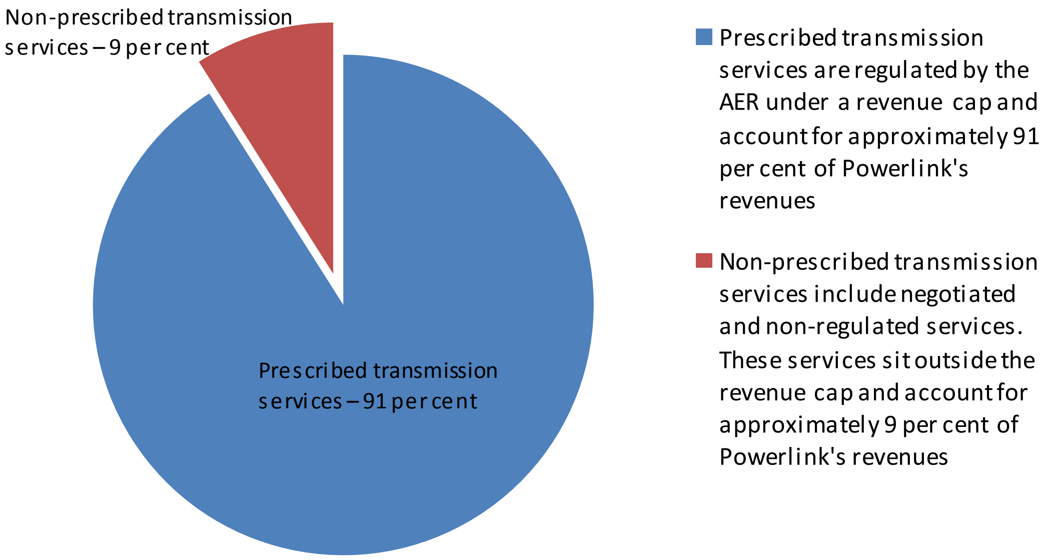
Powerlink’s services relate to developing, operating and maintaining the Queensland electricity transmission network.

Figure 2.1 Powerlink's electricity transmission network

Source: Powerlink, *Revenue Proposal*, p. 22.

The majority of the AER’s draft decision concerns prescribed transmission services that are recovered through network tariffs. Prescribed transmission services are those that a TNSP is required to provide under the NER, or in accordance with jurisdictional electricity legislation. Negotiated transmission services are generally subject to negotiation, arbitration and dispute resolution. Figure 2.2 sets out the revenues and forms of regulation of Powerlink’s services.

Figure 2.2 Powerlink's categories of services by revenue ($2010-11)[22]



Source: Powerlink, *Regulatory Financial Statements 2010-11.*

The MAR enables Powerlink to recover costs associated with providing prescribed transmission services to customers, which comprise:[23]

- shared transmission services provided to directly connected customers and distribution networks (prescribed transmission use of system (TUOS) services)
- connection services for Queensland DNSPs' networks connected to the transmission network (prescribed exit services)
- grandfathered connection services provided to directly connected generators and customers that were in place on 9 February 2006 (prescribed entry and exit services)
- services required under the NER or in accordance with jurisdictional electricity legislation that are necessary to ensure the integrity of the transmission network, including the maintenance of power system security and quality (prescribed common transmission services).

The AER's detailed reasons for its draft decision on the regulation of prescribed transmission services are provided in attachment 9.

22 This chart represents total revenues that Powerlink derives from all its business functions. Only the revenues associated with the provision of prescribed transmission services are included in the revenue cap which is the subject of this draft decision.

23 Powerlink, *Revenue Proposal*, p. 16.

Powerlink's negotiated transmission services include:[24]

- a shared transmission service that:
  - exceeds the network performance requirements (whether as to quality or quantity—if any) that the shared transmission service is required to meet under any jurisdictional electricity legislation; or
  - except to the extent that the network performance requirements that the shared transmission service is required to meet are prescribed under any jurisdictional electricity legislation, exceeds or does not meet the network performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1
- connection services that are provided to serve a Transmission Network User, or group of Transmission Network Users, at a single transmission network connection point, other than connection services that are provided by one Network Service Provider to another Network Service Provider to connect their networks where neither of the Network Service Providers is a Market Network Service Provider
- use of system services provided to a Transmission Network User and referred to in clause 5.4A(f)(3) in relation to augmentations or extensions required to be undertaken on a transmission network (as described in clause 5.4A)
- but does not include an above-standard system shared transmission service or a market network service.

The AER's detailed reasons for its draft decision on the negotiated transmission services are set out in attachment 14. Unregulated services sit outside the jurisdiction of the AER and are not part of this draft decision.

2.2 NER objectives

The AER regulates Powerlink's prescribed transmission services under a revenue cap. This means that the amount of revenue Powerlink can earn in each year of the next regulatory control period is limited to the amount that the AER determines. The NER sets out the following objectives that Powerlink's forecasts of total capex and opex (which are used in determining the revenue cap) are intended to achieve:[25]

- to meet or manage expected demand
- to comply with regulatory obligations or requirements
- to maintain the quality, reliability and security of supply
- to maintain the reliability, safety and security of the transmission system.

The AER must determine whether Powerlink's forecast capex and opex are required to meet these objectives. Further, the AER must determine whether this expenditure reasonably

[24] NER, Glossary.
[25] NER, clauses 6A.6.6(a) and 6A.6.7(a).

reflects the efficient costs that a prudent operator in Powerlink's circumstances would need to incur based on a realistic expectation of the demand forecast and cost inputs required to achieve these objectives.[26]

2.2.1 Meeting and managing expected demand

Powerlink must be able to deliver electricity to its customers and build, operate and maintain its network to manage expected changes in the demand for electricity. Powerlink invests in its network to meet peak demand and increases in electricity consumption. Powerlink also incurs opex to maintain its network appropriately to meet and manage expected demand. Therefore, the amount of capex and opex needed by Powerlink depends in part on the expected level of demand in the regulatory control period.

Powerlink's demand forecast for its prescribed transmission services in the next regulatory control period is set out at table 2.1. The AER considers that Powerlink's demand forecast is too high. Two key issues with Powerlink's demand forecast which the AER considered resulted in the forecast being too high were:

- temperature correction method
- assumptions and inputs to models.

Therefore, the AER, in accordance with the NER, has not accepted Powerlink's demand forecasts and has developed an alternative forecast which is also set out at table 2.1.[27] The AER considers Powerlink's demand forecast is materially different to the AER's demand forecast and is not a realistic expectation of demand for the next regulatory control period.

Table 2.1 and figure 2.3 demonstrate the difference between the AER's alternative demand forecast and Powerlink demand forecast. The lower demand forecast would mean deferring projects to the later years of the next regulatory control period which will impact forecast capex.

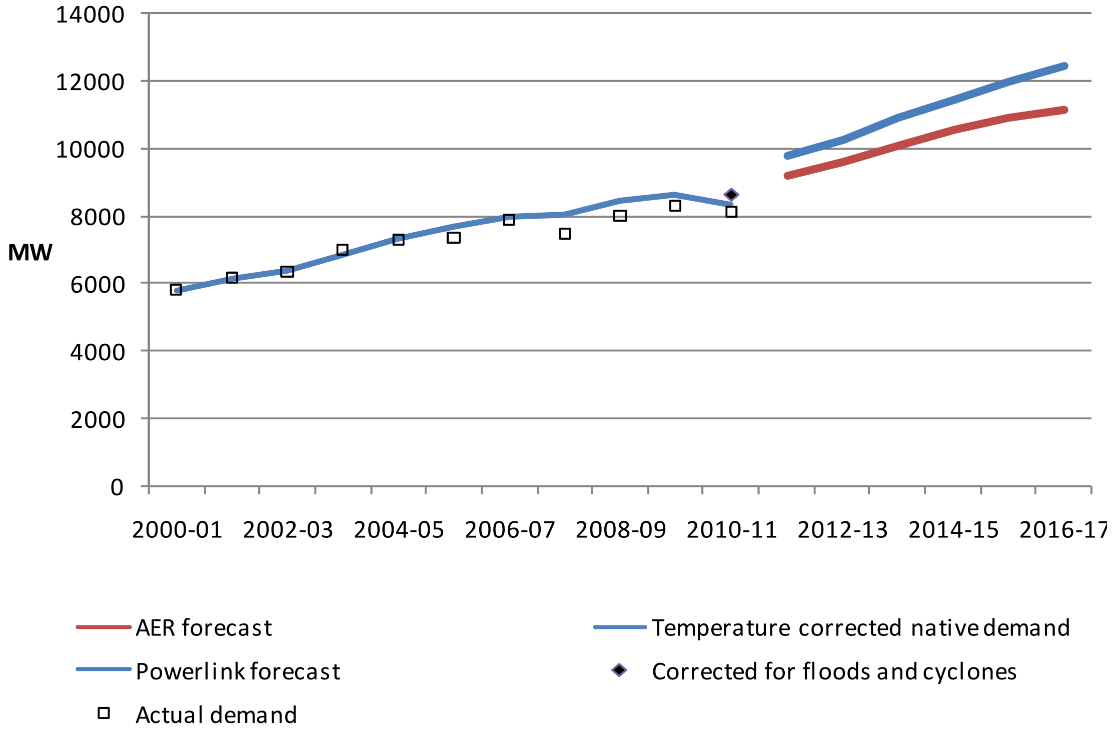
Table 2.1 Expected peak summer demand for Powerlink's transmission services—medium scenario 10 per cent PoE (MW)

	2012-13	2013-14	2014-15	2015-16	2016-17
Powerlink	10 252	10 907	11 450	11 984	12 437
AER	9 632	10 090	10 547	10 931	11 146
Powerlink minus AER	620	817	903	1 053	1 291

Source: AER analysis.

[26] NER, clauses 6A.6.6(c) and 6A.6.7(c).
[27] NER, clauses 6A.6.7(d) and 6A.12.1(c).

Figure 2.3 Powerlink's and the AER's demand forecast (10 per cent PoE) with past actual and corrected native demand



Source: Powerlink, *Annual Planning Report 2010*, p. 28; Powerlink, *Annual Planning Report 2011*, pp. 3 and 30; EMCa, *Powerlink revenue determination 2013–17*, *Demand forecast review, Report to Australian Energy Regulator*, 6 September 2011, p.51.

The key issues that the AER identified in the demand forecasts for the next regulatory control period are set out below.

Temperature correction

Powerlink used weather and diversity corrected demand to establish the starting point and trend for its demand forecasts.

Powerlink used an S curve to correct actual demand in South East Queensland (SEQ). The AER considers Powerlink's use of the S curve in correcting demand in SEQ is not appropriate. Upward corrections to demand using the S curve tend to be larger per degree Celsius than downward corrections, producing a higher demand forecast. The AER's consultant, Energy Market Consulting associates (EMCa), investigated the relationship between demand and average temperature for SEQ using data from the summers between 2000 and 2011. EMCa stated the S curve does not provide a clearly improved fit to data compared to a linear relationship.[28]

Powerlink corrects actual demand to standard temperature to establish the starting point for its demand forecasts. To do this, Powerlink uses the relationship between daily maximum demand and average temperature for each region (except for direct connect customers). The

28 EMCa, *Demand forecast review*, 6 September 2011, p. 27.

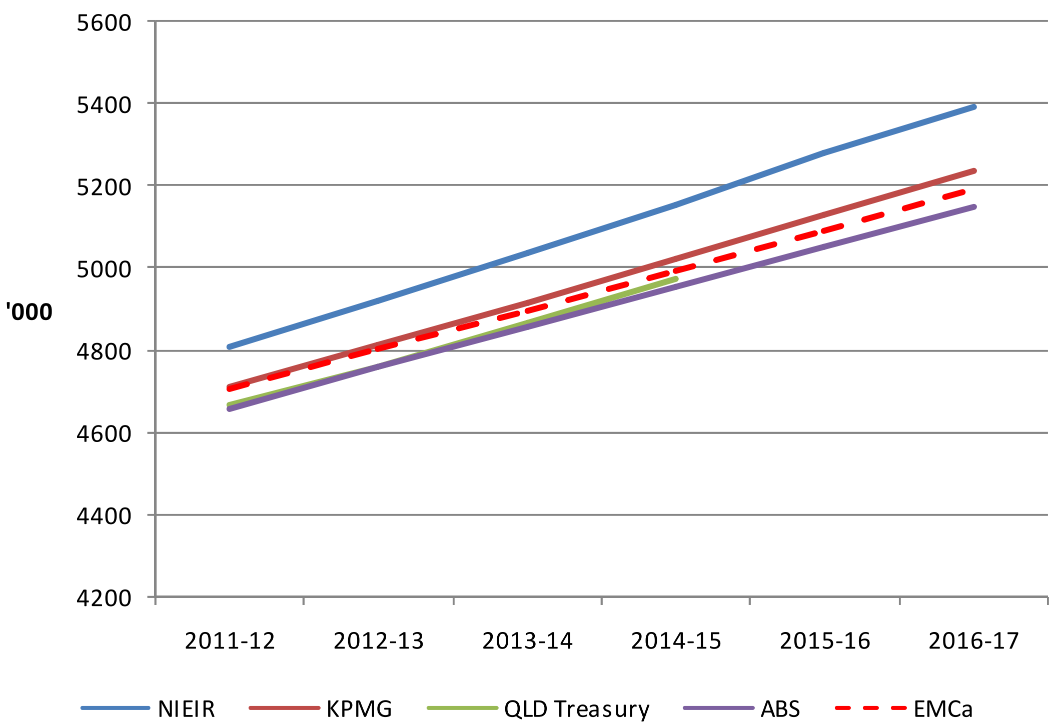
AER considers Powerlink's use of the relationship between daily maximum demand and daily average temperature to correct demand is not appropriate. The AER found daily maximum demand is more highly correlated with daily maximum temperature. The AER thus considers the latter relationship is more appropriate for use in temperature correction.

Assumptions and inputs to models

Powerlink engaged the National Institute of Economic and Industry Research (NIEIR) to provide a top down demand forecast. Powerlink did not provide NIEIR's model to the AER or EMCa; however the AER and EMCa were able to assess NIEIR's inputs and assumptions behind the top-down forecasts. The AER identified the following issues which have likely contributed to differences in inputs and Powerlink's higher demand forecasts:

- Population forecasts—figure 2.4 shows that Powerlink's top down forecast differs considerably from other forecasters such as KPMG, Qld Treasury, the ABS and EMCa. NIEIR's forecast is noticeably higher than the other forecasts for the whole of the next regulatory control period.

Figure 2.4 Queensland population forecasts ('000)



Source: NIEIR, *Long run economic and electricity load forecasts to 2024–25 for the Queensland electricity network*, April 2010, p. 29, CONFIDENTIAL; KPMG data from Powerlink, *Response to information request EMCa DFR1 of 23 June 2011*, received 27 June 2011; Queensland Government Budget, *State budget 2011-12, Budget strategy and outlook, Budget paper no. 2,* 2011, pp. 36–38; ABS 3222.0, 4 September 2008; EMCa, *Response to information request AER/041 of 26 September 2011*, received 27 September 2011.

- Electricity prices—NIEIR's forecasts of electricity price rises are lower than the AER would expect. The AER considers these forecasts do not adequately allow for the likely increase associated with the introduction of a carbon tax. Higher electricity prices have coincided with a decline in demand for electricity in recent years.

- Temperatures—NIEIR calculated temperatures associated with various PoE levels. NIEIR applies a ‘warming trend’ for the purpose of its calculations. The AER has been unable to assess how robust the ‘warming trend’ is.

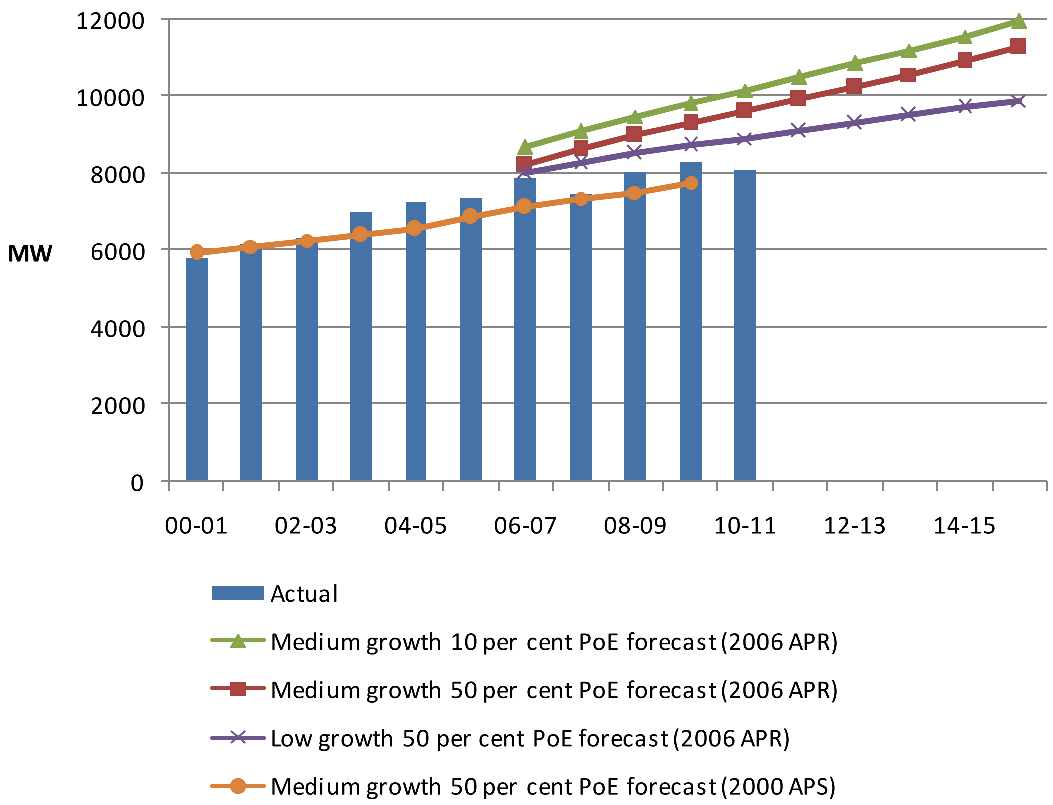
- Energy sector assumptions (sectoral growth)—while the AER acknowledges that GSP is likely to grow between four and five per cent over the next regulatory control period, the AER expects that the activities of the mining sector will be the main contributor to increases in GSP. NIEIR has forecast high growth across all aspects of the commercial sector.

- Energy and demand trends—Queensland’s energy intensity (electricity consumption per connection) has fallen over the past decade which has coincided with increasing retail prices. Powerlink does not appear to demonstrate recognition of these patterns in calibrating econometric models for its demand forecasts.

Past demand forecasting performance

Powerlink’s forecasts appear to be too high when compared with actual figures. Figure 2.5 shows actual demand has been below 2006 demand forecasts. While this may be attributable in part to the global financial crisis, it also indicates an apparent step change in customer demand. The difference between actual and forecast demand meant Powerlink could have deferred a significant amount of capex over the current regulatory control period. The AER considers Powerlink, if it applies a forecasting approach similar to that used previously, is likely to over forecast demand for the next regulatory control period.

Figure 2.5 Powerlink’s forecast and actual demand



Note: Powerlink used the 2005 Annual Planning Review (APR) demand forecasts in its proposal for the 2007 AER transmission determination. Powerlink subsequently submitted a revised capex proposal using the demand forecasts in the 2006 APR. Powerlink used the 2000 Annual Planning Statement (APS) in its proposal for the previous regulatory control period.

Note: Native demand refers to the demand delivered to DNSPs and direct connect customers. It includes the output of embedded exempted and non-scheduled generators. Corrected native demand refers to weather correction.

Source: Powerlink, *Annual Planning Reports for 2006, 2010 and 2011*; Powerlink, *Annual Planning Statement 2000*.

Alternative demand forecast

For the reasons set out above, the AER was not satisfied that Powerlink's demand forecast represented a realistic forecast of demand.[29] In accordance with the NER, the AER has not accepted Powerlink's demand forecasts and the AER must develop an alternative forecast.[30] The AER engaged EMCa to develop alternative demand forecasts for the next regulatory control period. As set out at attachment 2, the AER considers EMCa's demand forecasting method and assumptions are robust and produce a realistic expectation of demand.[31]

2.2.2 Complying with regulatory obligations

As a Queensland based TNSP operating in the NEM, Powerlink is required to meet statutory obligations at both the national and state levels. The most significant of these obligations are:

- the provision of safe, reliable and cost effective transmission services to users of the grid in accordance with the NER and its Transmission Authority
- the requirements of the NEL and the NER
- compliance with all relevant state and federal environmental, planning and cultural heritage legislation
- compliance with all statutory workplace health and safety requirements including the *Electricity Safety Act 2002* and the *Workplace Health and Safety Act 1995* and Regulations
- acting in the role of Jurisdictional Planning Body for Queensland.

The AER considered Powerlink's obligations in developing a substitute total capex and opex forecast to enable Powerlink to meet these obligations. Where appropriate, the AER will consider new obligations arising from legislative changes during the next regulatory control period as cost pass throughs, upon separate application by Powerlink.

2.2.3 Maintaining quality, reliability and security supply

The NER, Powerlink's Transmission Authority (and other jurisdictional legislation and instruments) and customer connection agreements establish the required quality, reliability and security of supply of prescribed transmission services to be provided by Powerlink. Powerlink operates and develops the high voltage transmission network such that it can meet these service levels. Powerlink is required to consider the following in complying with its obligations:

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29 NER, clause 6A.6.7(c)(3).

30 NER, clauses 6A.6.7(d) and 6A.12.1(c).

31 NER, clause 6A.6.7(c)(3).

- network investment
- network operation and maintenance
- market participants and customers
- environment
- safety.

The AER has determined a MAR that will enable Powerlink to meet its requirements under the NER.

Service target performance incentive scheme

The AER will apply its STPIS, consisting of the service component and the market impact component, to Powerlink in the next regulatory control period to assist with maintaining quality, reliability and security of supply. The STPIS provides incentives for TNSPs to make efficient operating decisions to maintain and improve network reliability. The AER makes annual adjustments to allowed revenues that reward or penalise Powerlink for its service performance. These adjustments are made in accordance with Powerlink's performance against target parameters and associated financial incentives defined in the STPIS. Powerlink is currently subject to the AER's STPIS.

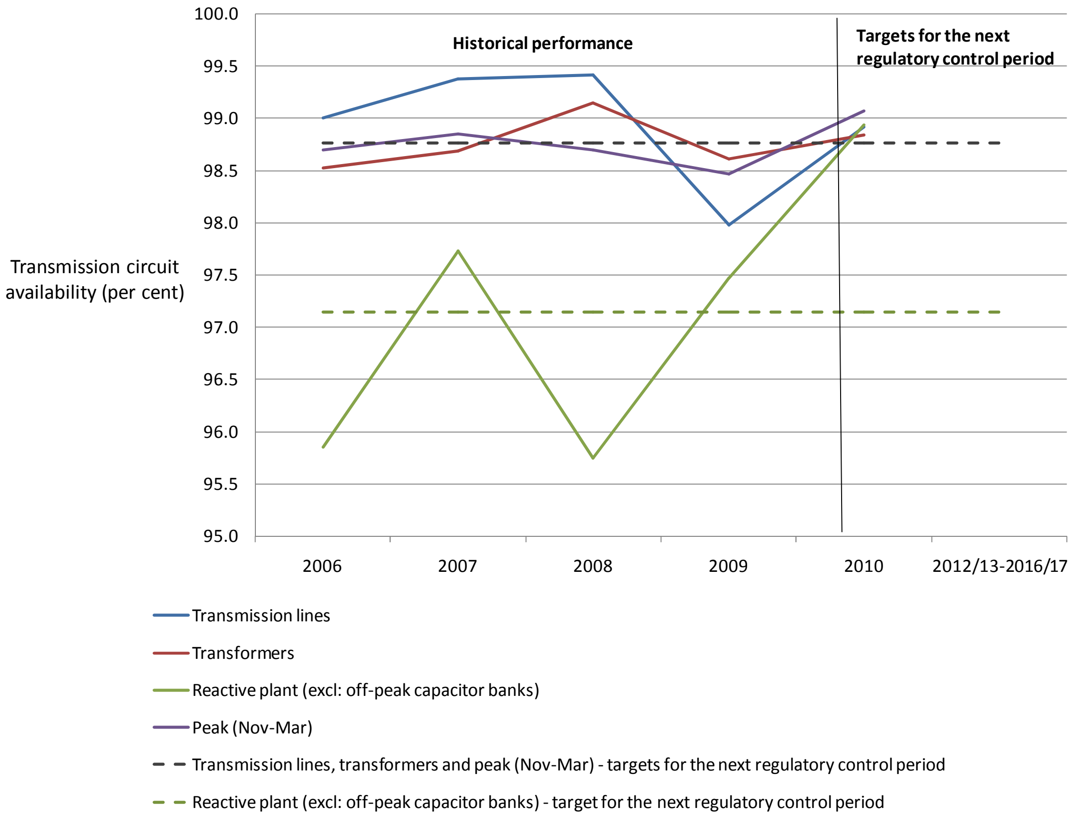
Service component

As part of this draft decision, the AER sets performance targets relating to certain reliability measures in accordance with the AER's STPIS. The AER must assess whether Powerlink's proposed performance targets, caps, collars and weightings comply with the requirements of the STPIS for each of the parameters that apply to Powerlink. In relation to the service component, the AER rejected:

- proposed adjustments for operational works on the transmission line and transformer availability performance targets. The AER recalculated Powerlink's caps and collars for the transmission line and transformer availability sub-parameters by referencing its draft decision on the performance targets for these sub-parameters.
- use of historical performance data over a 10 year period (2001–2010) for calculating the caps and collars for the LOS frequency sub-parameters. The AER used the most recent five years (2006–2010) performance data for calculating the caps of collars for these sub-parameters.
- proposed weightings for the transmission circuit availability sub-parameters and LOS event frequency sub-parameters.

Figure 2.6 shows Powerlink's transmission availability performance has generally improved from 2006 to 2010. The availability of its transmission lines is the only indicator measured that did not improve across this period. Figure 2.6 also indicates the targets for the next regulatory control period.

Figure 2.6 Powerlink transmission circuit availability performance (2006 to 2010)

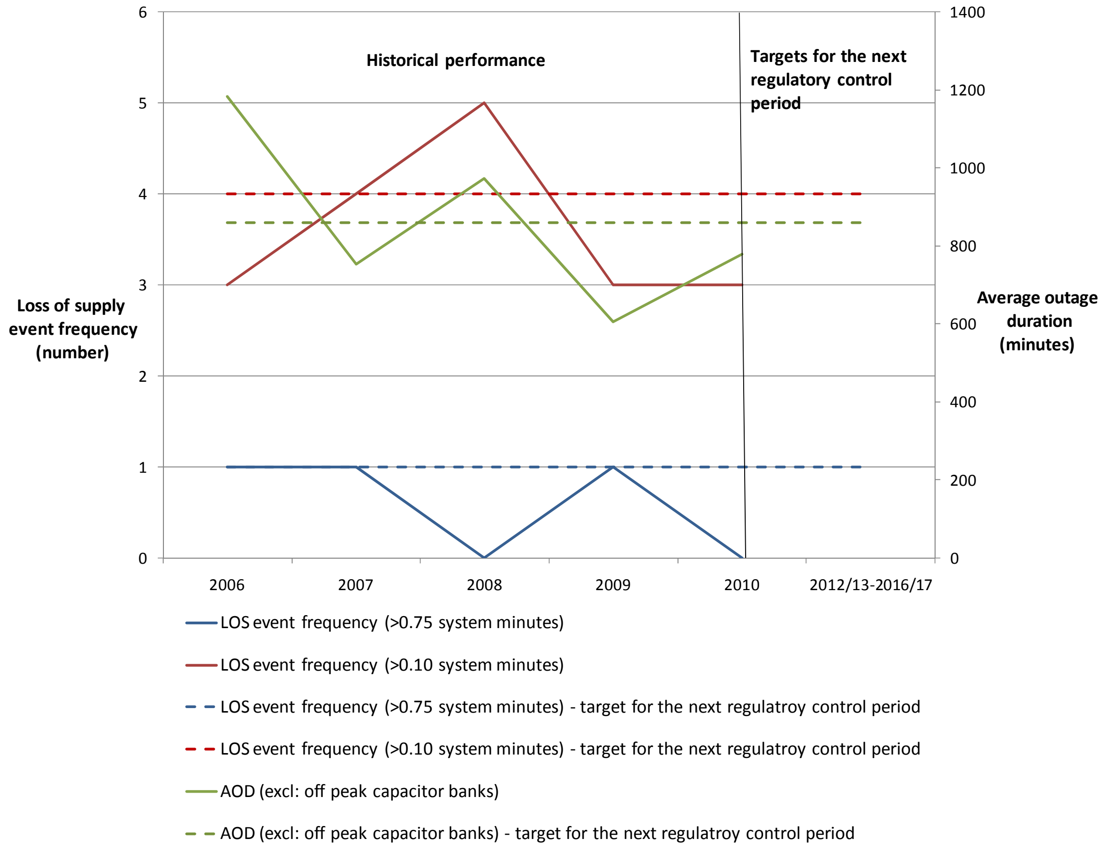


Note: The targets for transmission lines, transformers, and peak (Nov-Mar) are identical.

Source: Powerlink, *Revenue Proposal, Appendix O*: Powerlink *STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 2–4; AER analysis.

Figure 2.7 shows Powerlink's loss of supply performance and average outage duration generally improved from 2006 to 2010. Figure 2.7 also indicates the AER's draft decision on the performance targets for these parameters for the next regulatory control period.

Figure 2.7 Powerlink loss of supply (LOS) event frequency and average outage duration (AOD) performance (2006 to 2010)



Source: Powerlink, *Revenue Proposal–Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 5–7; AER analysis.

Table 2.2 sets out the AER's draft decision on the parameter values under the service component that will apply to Powerlink in the next regulatory control period. In the final decision, the AER will update Powerlink's performance targets, caps and collars for each parameter using Powerlink's performance data from 2007–2011.

Table 2.2 AER decision on Powerlink's parameter values and weightings for the service component

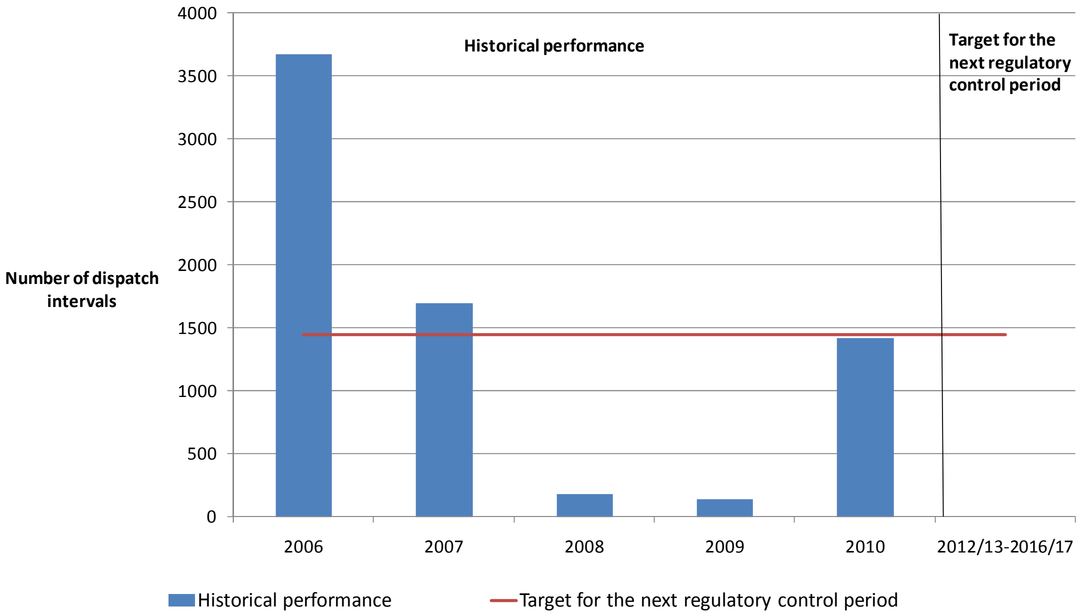
Parameters				Values
	Collar	Target	Cap	Weighting
Transmission Circuit availability (per cent)				**MAR (per cent)**
Transmission line availability	97.60	98.76	99.92	0.10
Transformers availability	98.27	98.76	99.24	0.10
Reactive plant availability	94.45	97.15	99.84	0.15
Peak transmission circuit availability	98.31	98.76	99.20	0.10
Loss of supply event frequency (number)				**MAR (per cent)**
>0.75(y) system minutes	2	1	–	0.15
>0.10(x) system minutes	6	4	2	0.30
Average outage duration (minutes)				**MAR (per cent)**
	1306	859	412	0.10
Total				**1.00**

Source: AER analysis.

Market impact component

The AER is also required to make a decision on the performance target and the cap proposed by Powerlink for the market impact parameter. In response to Powerlink's revenue proposal in relation to the market impact component, the AER has rejected the proposed performance target of 1953 and substituted a performance target of 1442 dispatch intervals. The AER approves Powerlink's proposed performance cap of 0. Powerlink's proposed performance target included an offset for dispatch intervals affected by network outages on assets it intends to acquire prior to the commencement of the next regulatory control period. The AER rejected the inclusion of the offset. Powerlink's actual performance and forecast performance targets are set out at figure 2.8. In the final decision the AER will update Powerlink's performance target to reflect the most recent five years of performance history which will capture performance data for the 2007–2011 calendar years. Powerlink's proposed performance target was based on performance data available at the time which included the 2006–2010 calendar years only. The AER's detailed reasons for its draft decision on the STPIS is set out in attachment 10.

Figure 2.8 Powerlink's market impact parameter historical performance and AER decision on future market impact parameter target



Note: Powerlink has, subsequent to the revenue proposal, updated its proposed performance history to take into account the AER's determination on Powerlink's 2010 performance measure.

Source: Powerlink, *Revenue Proposal–Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, p. 8.

2.2.4 Maintaining reliability, safety and security of the system

Powerlink's transmission system must also be reliable, safe and secure. Although this objective overlaps with the previous objective, safety and security are particularly important. Powerlink must ensure its network does not pose safety risks to either its personnel or the public. Many of the requirements in this objective therefore overlap with regulatory obligations.

Among other things, network reliability, safety and security may be affected by:

- old or degraded assets
- unsafe assets
- environmental factors.

Powerlink's proposal identified many reliability, safety and security issues with its network and forecast capex and opex to address them. The AER considers Powerlink's transmission network faces a number of safety and security issues and has accounted for this in coming to its draft decision on total capex and opex.

3 Regulatory asset base

Powerlink's past investment in assets forms its regulatory asset base (RAB) which is used to calculate the return on and return of capital.[32] Powerlink recovers the cost of this investment over the expected lives of the assets. The AER must therefore make a decision on Powerlink's proposed opening RAB as at the start of the next regulatory control period. The AER is also required to make a decision on the depreciation schedules for the commencement of the next regulatory control period.[33]

The AER determines an appropriate value for Powerlink's opening RAB by assessing Powerlink's RAB at the start of the previous regulatory control period and rolling it forward. The AER adds capex to, and subtracts depreciation from, the RAB to complete the roll forward.

3.1 Draft decision

Powerlink proposed an opening RAB as at 1 July 2012 of $6575.8 million and a closing RAB as at 30 June 2017 of $9981.5 million. The AER broadly accepted Powerlink's proposed opening RAB and approved an opening RAB as at 1 July 2012 of $6575.9 million. The AER forecasts Powerlink's closing RAB to be $8876.6 million as at 30 June 2017, which represents a 35 per cent increase in the value of the RAB during the next regulatory control period. Figure 3.1 shows the increase in the value of the RAB until 2016-17.

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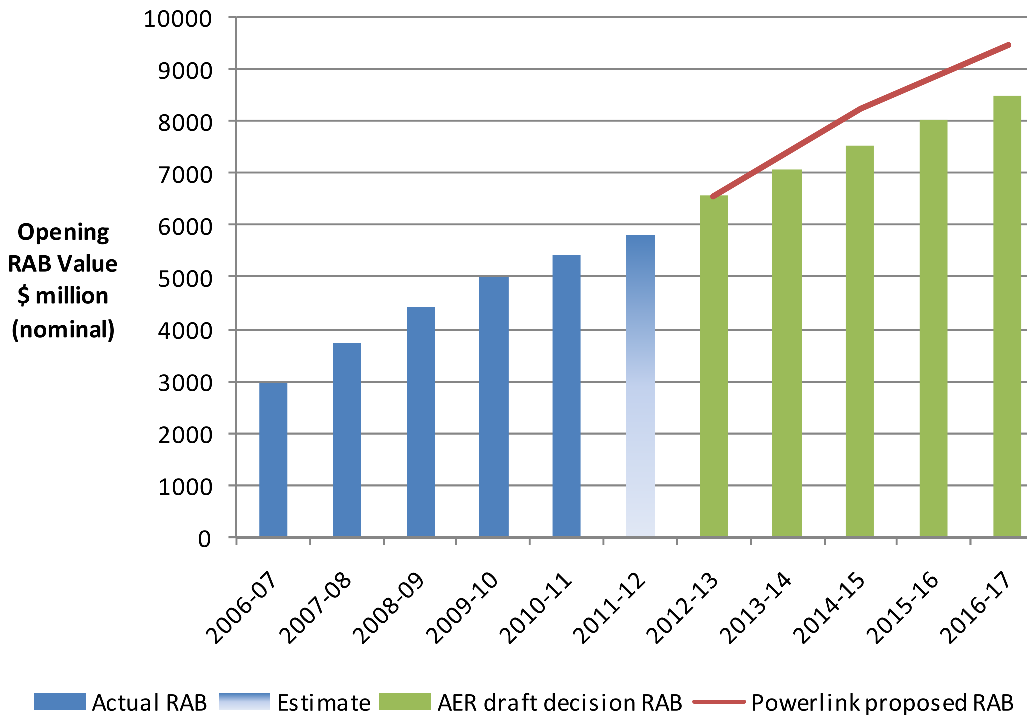
32 The return on capital is Powerlink's opening RAB multiplied by the rate of return, and the return of capital is the depreciation of the RAB.

33 NER, clause 6A.6.3(a)(2)(ii).

Figure 3.1 Powerlink's past opening RAB values and the AER draft decision



Source: AER analysis; Powerlink's roll forward model.

The AER's roll forward of the RAB from the final year (2006-07) of the previous regulatory control period through to the opening RAB value for the start of the next regulatory control period is shown in table 3.1. The AER's roll forward of the RAB across the next regulatory control period is shown in table 3.2.

Table 3.1 AER's draft decision on Powerlink's RAB for the current regulatory control period ($million, nominal)

	2007-08	2008-09	2009-10	2010-11[a]	2011-12[b]
Opening RAB	3752.8	4448.1	5016.0	5429.7	5830.2
Capital expenditure[c]	693.1	640.8	460.6	429.7	812.1
CPI indexation on opening RAB	159.2	109.7	145.0	180.8	145.8
Straight-line depreciation[d]	–157.0	–182.6	–192.0	–209.9	–225.3
Closing RAB as at 30 June	4448.1	5016.0	5429.7	5830.2	6562.8
Difference between forecast and actual capex (1 July 2006 to 30 June 2007)					–33.7
Return on difference for 2006-07 capex					–17.4
Difference between forecast and actual assets under construction (2006-07)					42.3
Return on difference (assets under construction)					21.8
Opening RAB as at 1 July 2012					6575.9

(a) Based on estimated capex. The asset base roll forward will be updated for actual capex at the time of the AER final decision.
(b) Based on estimated capex and forecast inflation. The asset base roll forward will be updated for actual CPI at the time of the AER final decision. However, the update for actual capex will be made at the next reset.
(c) As incurred, net of disposals, and adjusted for actual CPI and WACC.
(d) Adjusted for actual CPI.
Source: AER analysis.

Table 3.2 AER's draft decision on Powerlink's RAB for the next regulatory control period ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17
Opening RAB	6575.9	7098.3	7546.4	8046.1	8524.9
Capital expenditure[a]	563.3	510.9	576.4	552.5	435.5
Inflation indexation on opening RAB	172.3	186.0	197.7	210.8	223.4
Straight-line depreciation	–213.2	–248.7	–274.4	–284.6	–307.2
Closing RAB	7098.3	7546.4	8046.1	8524.9	8876.6

(a) As incurred, and net of disposals. In accordance with the timing assumptions of the PTRM, the capex includes a half-WACC allowance to compensate for the six-month period before capex is added to the RAB for revenue modelling purposes.

Source: AER analysis.

3.2 Summary of analysis and reasons

The AER does not accept the retrospective application of a new asset class (transmission line refit) to the roll forward calculations during the current regulatory control period. The AER does not consider this approach to be consistent with the requirements of the NER. The 'Transmission line (LE)' asset class was not approved in the transmission determination for the current regulatory control period. Therefore, this asset class should not be included for capex depreciation purposes in the roll forward of the RAB. The AER has reallocated this expenditure to the 'Transmission lines (OH)' asset class. As this expenditure is only capitalised during the final year of the current regulatory control period, the reallocation does not have a further impact on the total value of the opening RAB as at 1 July 2012.

The AER's forecast roll forward of the RAB over the next regulatory control period differs from Powerlink's due to differences in:

- the opening RAB as at 1 July 2012, as discussed in attachment 6
- the inflation forecast for the next regulatory control period, as discussed in attachment 5
- forecast capex, as discussed in attachment 3
- forecast depreciation, as discussed in attachment 7.

The AER's detailed reasons for its draft decision on Powerlink's RAB are provided in attachment 6.

4 Regulatory depreciation

Regulatory depreciation is a component of Powerlink's annual building block revenue requirement. It is also used to model the change in Powerlink's RAB over the next regulatory control period. Regulatory depreciation is the difference between Powerlink's straight-line depreciation on its assets and the annual inflation indexation on its RAB. The AER is required to make a determination on Powerlink's depreciation allowance (or return of capital) for the next regulatory control period.[34]

4.1 Draft decision

The AER does not accept Powerlink's proposed regulatory depreciation allowance of $541.0 million ($nominal) for the next regulatory control period. The AER's decisions regarding other components of Powerlink's revenue proposal have a consequential impact on the regulatory depreciation allowance. The AER's decisions on these other components are discussed in the following attachments:

- forecast capex (attachment 3)
- forecast inflation (attachment 5)
- the opening RAB (attachment 6).

The AER has also considered specific matters that impact on the estimate of regulatory depreciation over the next regulatory control period. These include the standard asset lives for the purposes of depreciating forecast capex, the allocation of capex to the proposed new asset class of 'Transmission line (LE)', and remaining asset lives for the purposes of depreciating existing assets in the opening RAB.

The AER's adjustments result in a regulatory depreciation allowance of $338.0 million ($nominal), as shown in table 4.1.

Table 4.1 AER's draft decision on Powerlink's depreciation allowance ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Straight-line depreciation	213.2	248.7	274.4	284.6	307.2	1328.1
Less: indexation on opening RAB	172.3	186.0	197.7	210.8	223.4	990.1
Regulatory depreciation	40.9	62.8	76.7	73.8	83.8	338.0

Source: AER analysis.

34 NER, clause 6A.5.4(a)(3).

4.2 Summary of analysis and reasons

The AER accepts Powerlink's proposed standard asset lives for asset classes which are consistent with those used in the current regulatory control period. The AER accepts Powerlink's proposed standard asset life of 15 years assigned to a new asset class of 'Transmission lines (LE)' for life extension or refit works.[35] However, the AER considers that this standard asset life is only appropriate for capex associated with surface preparation and painting works allocated to the new asset class. The AER requires other capex that results in a significant proportion of assets that have longer lives to be reallocated to the existing asset class of 'Transmission Lines (OH-inc wood poles)'.

The AER does not accept Powerlink's proposed remaining asset lives. The AER considers the proposed calculation of remaining asset lives using financial accounting data does not depreciate assets over their economic lives consistent with Powerlink's RAB. The AER has replaced Powerlink's proposed remaining asset lives with those calculated under a weighted average approach.

The AER's detailed reasons for its decision on regulatory depreciation are provided in attachment 7.

35 Powerlink refers to the asset class, Transmission lines (LE), as transmission line refit or life extension. To maintain consistency with the asset classification as per Powerlink's proposed PTRM, the AER has referred to the transmission line refit/life extension asset class as Transmission line (LE).

5 Capital expenditure

Powerlink proposed total forecast capex of $3488 million ($2011-12).[36] The AER must accept Powerlink's proposed total forecast capex if satisfied it reasonably reflects the capex criteria.[37] If not satisfied, the AER must give reasons for not accepting Powerlink's proposal, and estimate the total required capex that reasonably reflects the capex criteria. In doing so, the AER must have regard to the capex factors.[38]

5.1 Draft decision

The AER is not satisfied that Powerlink's forecast reasonably reflects the efficient costs that a prudent operator in Powerlink's circumstances would be required to incur, based on a realistic expectation of the demand forecast and the cost inputs, to achieve the capex objectives.[39]

The AER does not accept $1128 million ($2011-12) of Powerlink's proposed capex which is a reduction of 32 per cent. The AER has instead approved a capex allowance for the next regulatory control period of $2360 million ($2011-12).

Table 5.1 AER draft decision on Powerlink's total forecast capex ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposal	830	847	629	653	529	3488
Adjustment	–303	–379	–115	–172	–160	–1128
AER's estimate (before disposals)	529	469	514	480	369	2360
Less disposals						–4
AER's estimate						2356

Note: The adjustments represent the net effect on capex as a result of draft decisions on elements such as demand and capex programs which are interrelated. The total AER estimate of $2360 million includes the reduced escalators, and is based on revised data provided by Powerlink on 13 October 2011 which included different data for the non-network capex. Forecast capex in this table is on an 'as incurred basis', before disposals ($4 million) and decommissioning.

Source: AER analysis; Powerlink, *Revenue proposal*, p. 72 and data provided by Powerlink 13 October 2011.

Figure 5.1 compares Powerlink's past and forecast total capex with proposed and approved capex.

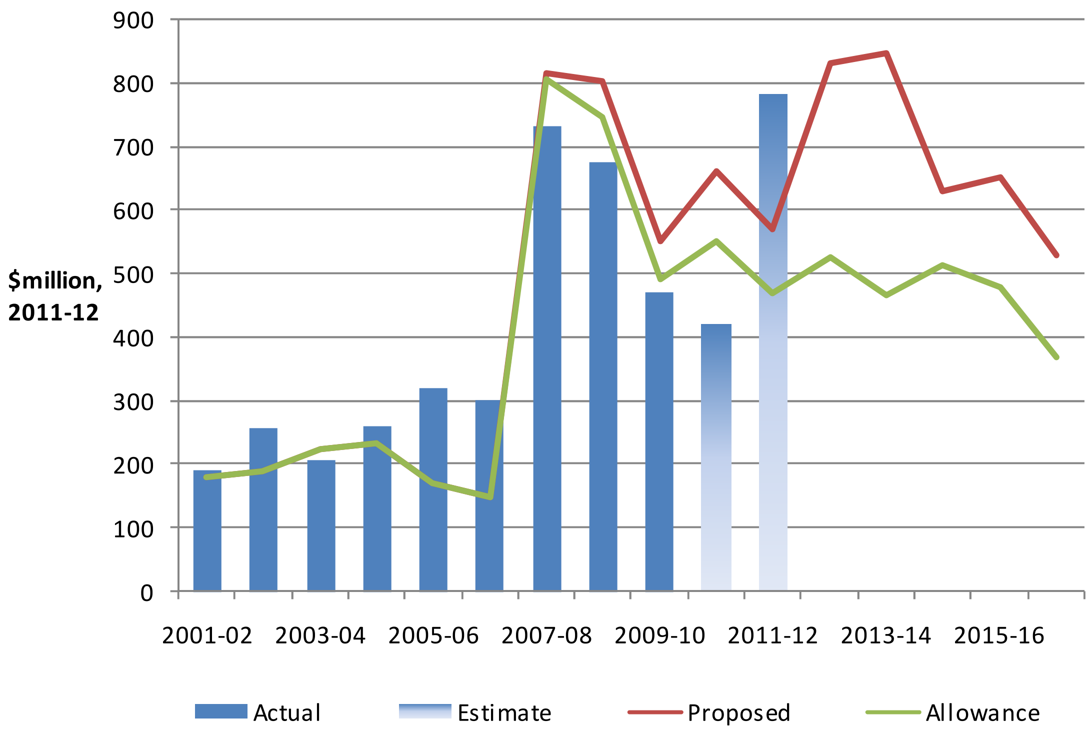
36 Where figures in this document are presented in $2011-12 values, they refer to mid year values.

37 NER, clause 6A.6.7(c).

38 NER, clause 6A.6.7(e).

39 NER, clause 6A.6.7(c). Clause 6A.6.7(a) specifies the capex objectives.

Figure 5.1 Comparison of Powerlink's past and future total capex



Source: AER analysis.

5.2 Summary of analysis and reasons

The AER reviewed Powerlink's supporting material including its reasoning and, where relevant, business cases, regulatory test/regulatory investment test analysis, changed legislative or regulatory obligations, or other drivers to assess proposed forecast capex. This information helped the AER identify the need for the forecast capex over the next regulatory control period and, in turn, whether the forecast reasonably reflected the capex criteria.

The AER assessed Powerlink's historic capex and determined the key drivers for forecast capex. This included analysis of Powerlink's:

- asset management polices
- capital governance arrangements
- business management systems and operations
- strategic planning, including policy development
- business processes improvement initiatives
- investment justification processes
- assessment of major risks identified for the next regulatory control period, and the risk management practices and polices adopted to mitigate those risks.

By examining key documents, processes and assumptions, and comparing historical expenditure to that proposed, the AER can better understand the key drivers behind Powerlink's need to augment and replace its network.

The AER considers that much of the capex proposed by Powerlink is consistent with the requirements of the NER and is therefore appropriate:

- The AER considers that the asset replacement procedures, process and project costing used by Powerlink are appropriate and consistent with good industry practice. The AER accepts $1230 million ($2011-12) of replacement capex proposed by Powerlink.

- Powerlink's proposal includes proposed non-load driven capex of $1389.6 million ($2011-12) and non-network capex of $120.1 million ($2011-12). After an examination of business cases for projects in the categories, and supporting information from Powerlink, the AER accepted the proposed expenditure.

However, the AER identified issues with several elements of Powerlink's total forecast capex proposal and therefore does not accept several aspects of the total forecast capex. The total adjustment to capex ($1128 million, $2011-12) is less than the sum of the individual adjustments listed below because these adjustments are interdependent and the AER's escalation differs from Powerlink's:

- Probabilistic planning—overall, the AER is satisfied that Powerlink's probabilistic planning model is appropriate. However the AER considers it appropriate for Powerlink to use lower demand forecasts and a low carbon reduction scenario. The AER's draft decision is to reduce load driven capex by $554 million ($2011-12).

- 500kV projects—Powerlink proposed several augmentation projects of the existing 275kV network to make it capable of operating at 500kV. Powerlink intends to operate them at 275kV for an indefinite period. The AER does not accept $544 million ($2011-12) of capex associated with these projects.

- Carbon price trajectory—the AER reduced Powerlink's forecast load driven capex by $135 million ($2011-12) calculated on the basis of an alternative carbon trajectory forecast, using Powerlink's probabilistic model.

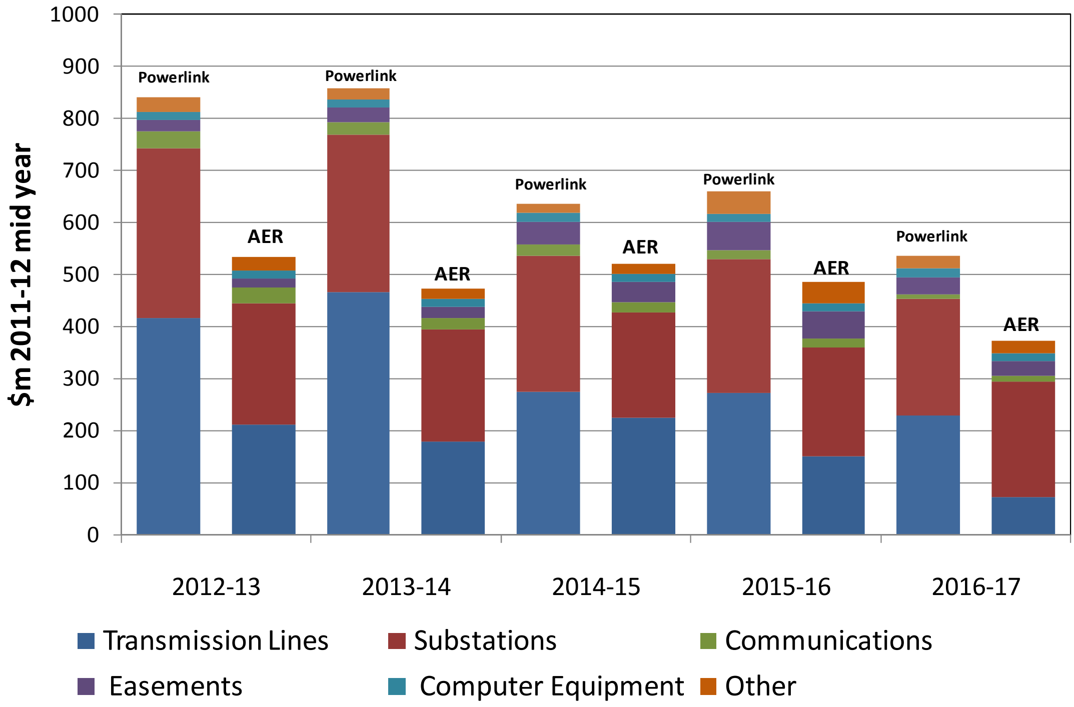
- Cost estimation risk factor—the AER considers that the cost estimation risk factor inflates the forecasts and represents additional costs to customers. The AER's decision reduces Powerlink's forecast capex by $70 million ($2011-12).

- Efficiency program—the AER has included a $45 million ($2011-12) efficiency adjustment to Powerlink's forecast capex on the basis that Powerlink could improve the efficiency with which it undertakes its investment program.

- Equity raising costs—the AER rejects Powerlink's proposed equity raising costs. The AER considers the use of a dividend yield approach to estimate the value of dividends under the cash flow analysis and the adoption of a cap of 18 per cent for dividend reinvestment plans are not appropriate. The AER rejects $23.8 million ($2011-12) of capex associated with equity raising costs.

These issues are also discussed further below. Figure 5.2 compares Powerlink's proposed capex with the AER's draft decision on forecast capex.

Figure 5.2 Powerlink's proposed capex and AER draft decision on forecast capex



Source: AER analysis, Powerlink, *Revenue proposal*.

5.2.2 500kV capable network development projects

Powerlink proposed four 500kV capable projects with a total capex of $1157.2 million ($2011-12) and a probability weighted forecast capex of $879.1 million ($2011-12) in the next regulatory control period. A significant proportion of the capital cost of these four projects is the capability for the assets to operate at 500kV in the future. Powerlink expects that these lines will continue to operate at 275kV for the time being.

The AER does not accept that all of the proposed capex meets the capex criteria. The AER considers the appropriate total adjustment to capex is a reduction of $544 million for the following reasons:

- The AER does not accept that two (of the four) 500kV capable projects are required, given the reduced demand forecast proposed by EMCa and accepted by the AER ($116.0 million). The AER considers this expenditure should be deferred to a subsequent regulatory control period.
- The AER is not satisfied that the incremental cost of building any of the 500kV capable infrastructure over and above 275kV reasonably reflects the capex criteria. The total 'incremental cost' of the four projects is $428.3 million.[40]

[40] The AER recommends deferring the total cost to the next regulatory control period, that is the build to 275kV ($116.0) and the increment expenditure ($110.2) of two of these projects.

Table 5.2 Capex adjustments for 500kV capable projects ($million 2011-12)

Project	Powerlink proposed capex[a]	275kV build	Increment	AER adj. (reduct'n)	Approved capex	Reason for adjustment
Halys–Blackwell[b]	357.8	183.5	174.3	174.3	183.5	Increment: $174.3
Halys–Western Downs (1st line)	295.1	151.3	143.8	143.8	151.3	Increment: $143.8
Halys–Greenbank	157.1	80.6	76.5	157.1	–	Increment: $76.5 Defer[c] $80.6
Halys–Western Downs (circuits 5 and 6)	69.1	35.4	33.7	69.1	–	Increment: $35.4 Defer[c] $33.7
TOTAL	**879.1**	**450.8**	**428.3**	**544.3**	**334.8**	

(a) Probability weighted in the next regulatory control period.
(b) This project has received Powerlink's board approval and has had a regulatory test applied.
(c) Assuming the EMCa reduced demand forecast.
Source: Powerlink, *Pro-forma information statement*, 31 May 2011; AER analysis.

The AER identified considerable uncertainty in the timing of, and need for, the 500kV network upgrade. In particular the AER considered that two of the four projects are unlikely to be required in the next regulatory control period.

The AER is also concerned about the inclusion of capex to provide the assets with the capability to operate at 500kV when these assets will run at 275kV for an undefined period. The AER would expect that Powerlink would demonstrate the need for, and efficient costs of, such strategic expenditure.

Accordingly, the AER does not accept $544 million ($2011-12) of proposed capex attributable to the 500kV capable projects. The AER's detailed reasons for its draft decision on capex for Powerlink’s 500kV network are provided in attachment 3.

5.2.3 Replacement capex

The AER accepts $1230 million ($2011-12) of replacement capex proposed by Powerlink for the next regulatory control period.

The AER is satisfied Powerlink's proposed replacement capex reasonably reflects the capex criteria. Firstly, the asset replacement procedures, process and project costing used by Powerlink is likely to result in appropriate decisions about asset replacement. In particular, the governance procedures around replacements provide a satisfactory degree of scrutiny around replacement decisions. Secondly, the AER accepts EMCa findings in regard to replacement capex. EMCa found that cost estimation and capex forecasting methodologies used by Powerlink are sound and are considered to align with good industry practice and guidelines.

The AER’s detailed reasons for its draft decision on Powerlink’s proposed replacement capex are provided in attachment 3.

5.2.4 Probabilistic planning approach

Given the uncertainty surrounding generation developments and load growth in Queensland over the next regulatory control period, Powerlink used a probabilistic planning approach to develop its forecast load driven capex. The overall objective of this approach is to develop a probabilistic weighted average expenditure profile for load driven capex. Powerlink used this probabilistic profile as an input to develop its proposed total capex for the next regulatory control period.

The AER considers 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. The AER has identified some concerns with inputs to the model (notably around demand and carbon reduction trajectory). The AER considers it appropriate for Powerlink to use lower demand forecasts which are consistent with the AER approach.

The AER also considers a low carbon reduction scenario—based on carbon reduction targets set by the Federal Government—to be a more appropriate input. Powerlink’s probabilistic planning method included scenarios based on the targets for reducing carbon emissions below 2000 levels by 2020. Powerlink proposed three options for the Australian Government's carbon pollution reduction target: 5 per cent, 10–15 per cent and 25 per cent reduction below 2000 levels by 2020. Powerlink used these probabilities in deriving its capex proposal. The AER considers including the 10–15 per cent and 25 per cent reduction scenarios (higher carbon pollution reduction scenarios) in Powerlink's probabilistic planning method is not appropriate.

Accordingly, the AER considers Powerlink's probabilistic planning results in a capex forecast that does not represent the prudent and efficient costs of a network service provider in Powerlink’s circumstances. The AER’s draft decision is to reduce Powerlink’s proposed load driven capex by $554 million ($2011-12). The AER’s detailed reasons for its draft decision on Powerlink’s probabilistic planning approach are set out in attachment 3.

5.2.5 Cost estimation risk factor

Powerlink proposed a capex allowance for cost estimation risk. The AER rejects Powerlink’s proposed allowance for cost estimation risk which reduces Powerlink’s forecast capex by $70 million ($2011-12) during the next regulatory control period. Powerlink applies a cost estimation risk factor to unapproved (that is, yet to receive board or delegate sign–off) capital projects. This is for risks that Powerlink considers, at the time of making its initial capex forecasts for the next regulatory control period, are beyond its control.

The AER concludes that Powerlink’s annual BPO update accounts for risks faced in the past. Good project management, planning and risk mitigation should minimise risks and cost overruns. A service provider’s capex forecasts must appropriately account for risks likely to be experienced during a regulatory control period. The AER considers that the cost estimation risk factor represents a premium above forecasts that already include adjustments based on previous experience, including risk.

The AER’s detailed reasons for its draft decision on Powerlink’s cost estimation risk factor are set out in attachment 3.

5.2.6 Capital governance framework

The AER is not required to make a decision to accept or reject a TNSP's capital governance framework. However, the AER does assess whether a TNSP's capital governance framework forms a reasonable basis to produce a capex forecast.

The AER considers Powerlink's capital governance framework (the 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. Attachment 3.4 sets out the AER's consideration of these issues

The AER and EMCa nevertheless identified issues with particular areas of Powerlink's framework, namely:

- Information flow between asset manager and asset owner
- Focus on individual projects.

As a consequence, the AER considers that Powerlink could achieve efficiencies in its capex program by addressing these. The AER's detailed reasons for its draft decision on Powerlink's capital governance framework are set out in attachment 3.

5.2.7 Equity raising costs

Equity raising costs are expenses associated with raising new equity capital. These are upfront costs with little or no ongoing costs over the life of the equity. Equity raising costs are a legitimate expense for an efficient operator where external equity funding is the least-cost option available.

Powerlink proposed a total equity raising cost allowance of $31.5 million over the next regulatory control period. This value was then discounted back using a notional 10 per cent WACC bringing the total allowance to $24.7 million ($2011–2012) for inclusion in the opening RAB. The AER does not accept Powerlink's proposed allowance for equity raising costs associated with its forecast capex. In particular, the AER does not consider the following to be appropriate:

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

Accordingly, the AER has decided not to accept Powerlink's proposed allowance for equity raising costs. The AER's draft decision is to provide an allowance for equity raising costs of $0.9 million which is a reduction of $23.8 million or 96 per cent compared to that proposed by Powerlink. The AER's detailed reasons for its draft decision on Powerlink's equity raising costs are set out in attachment 3.

6 Rate of return

The AER is required to make a decision on the rate of return on Powerlink's capital investment.[41] Under the NER, the AER is to apply a rate of return based on the nominal vanilla weighted average cost of capital (WACC) formulation.[42] Powerlink's return on capital building block is calculated by multiplying the rate of return with the value of Powerlink’s opening RAB.

6.1 Draft decision

The AER has not accepted Powerlink's proposed WACC of 10.30 per cent. The AER considers the proposed WACC does not reflect the return required by investors in a commercial enterprise with a similar nature and degree of non-diversifiable risk as that faced by Powerlink.[43]

For this draft decision, the AER has determined an indicative WACC of 8.31 per cent for Powerlink as set out in table 6.1. This WACC reflects market based parameters—nominal risk free rate and DRP—estimated over an indicative averaging period and will be updated for the final decision.

In establishing the WACC, the AER has accepted Powerlink’s proposed averaging period to calculate the nominal risk free rate. The AER also accepts Powerlink’s proposal to adopt the values for the equity beta, market risk premium (MRP) and gearing. However, the AER has not accepted Powerlink's proposed value for the DRP. The AER considers its method to calculate the DRP, based on the average of observed bond yields, appropriately incorporates relevant information from the market. The AER accepts Powerlink’s proposal to adopt the value of the assumed utilisation of imputation credits (gamma), which affects the corporate income tax building block allowance.

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41 NER, clause 6A.5(4).

42 NER, clause 6A.6.2(b).

43 NER, clause 6A.6.2(b).

Table 6.1 AER's draft decision on WACC parameters

Parameter	Powerlink's proposal	AER's draft decision
Nominal risk free rate (per cent)	5.62	4.32
Equity beta	0.80	0.80
Market risk premium (per cent)	6.50	6.50
Gearing level (debt/debt plus equity) (per cent)	60.00	60.00
Debt risk premium (per cent)	4.34	3.19
Assumed utilisation of imputation credits (gamma)[a]	0.65	0.65
Inflation forecast (per cent)	2.50	2.62
Cost of equity (per cent)	9.96	9.52
Cost of debt (per cent)	10.82	7.51
Nominal vanilla WACC (per cent)	**10.30**	**8.31**

(a) The gamma parameter affects the tax allowance, which is discussed in attachment 8.
Source: AER analysis, Powerlink's PTRM.

6.2 Summary of analysis and reasons

The AER's draft decision WACC differs from Powerlink's proposal primarily due to lower values for the nominal risk free rate and DRP.

6.2.1 2009 AER WACC review

In May 2009, the AER completed its review of the WACC parameters (WACC review) as required under the NER.[44] The WACC review sets out the values, methods and credit rating level to be applied for TNSPs. The AER's determination for Powerlink must use the values, methods and credit rating level determined in the WACC review because Powerlink's revenue proposal was submitted after the completion of that review.[45]

Consistent with the NER requirements, the AER adopts the parameter values for the equity beta, MRP and gearing specified in the WACC review to calculate Powerlink's WACC. The AER also adopts the gamma value specified in the WACC review for the purposes of estimating Powerlink's corporate income tax allowance (attachment 8).

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44 AER, *Electricity transmission and distribution network service providers Statement of the revised WACC parameters (transmission) Statement of regulatory intent on the revised WACC parameters (distribution)* May 2009; NER, clause 6A.6.2(g).

45 NER, clause 6A.6.2(h).

6.2.2 Nominal risk free rate

The AER determines the nominal risk free rate on a moving average basis from the annualised yield on Commonwealth Government bond rates over an averaging period.[46] For this draft decision, the AER has used an indicative averaging period. Since Powerlink proposed its indicative WACC, a change in market conditions has been reflected in the observed nominal risk free rate. Consequently, the nominal risk free rate the AER has applied in this draft decision is lower than that set out in Powerlink's proposal. The AER will update the WACC for the nominal risk free rate based on the agreed averaging period at the time of the final decision.

6.2.3 Debt risk premium

Powerlink proposed a DRP using the average of two Bloomberg extrapolated fair value curves—Bloomberg BBB rated 7 year fair value curve, extrapolated to a term to maturity of 10 years and Bloomberg BBB rated 5 year fair value curve, extrapolated to a term to maturity of 10 years. The AER does not accept Powerlink's proposed approach because of a sustained divergence between the fair value curve and market evidence. Relevant market data and expert commentary suggests that debt market conditions have improved since the global financial crisis, but this has not been reflected in the long dated (5+ year) Bloomberg BBB rated fair value curves. As such, the AER considers it is appropriate to update its previous approach to incorporate observed market bond yields for the purposes of estimating the DRP.

The AER considers its updated methodology to estimate the DRP based on observed market data uses the best available source of information on prevailing Australian bond market conditions. The AER has previously relied largely on extrapolated fair value curves to set the DRP, due to limited data availability. The AER's updated approach is based on a larger sample of data, which on average is representative of the benchmark Australian corporate bond with a 10 year term to maturity and BBB+ credit rating.

The AER considers that its method to calculate the DRP based on the average of observed bond yields appropriately incorporates relevant information from the market. This will contribute to a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and with the risk involved in providing prescribed transmission services.

The AER's draft decision on Powerlink's WACC results in the return on capital for each year of the next regulatory control period as set out in table 6.2. The AER's detailed reasons for its WACC decision are provided in attachment 5.

46 NER, clause. 6A.6.2(c).

Table 6.2 AER's draft decision on Powerlink's return on capital ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposal	677.6	764.5	851.1	913.4	977.9	4184.5
Adjustment	–130.9	–174.3	–223.7	–244.4	–269.1	–1042.5
AER's draft decision	546.7	590.2	627.4	669.0	708.8	3142.0

Source: Powerlink, *Revenue proposal*, p. 111; AER analysis.

7 Operating expenditure

Opex includes operating, maintenance and other non-capital costs Powerlink incurs in providing prescribed transmission services. Powerlink proposed total opex of $1001.8 million ($2011-12) over the next regulatory control period (table 7.1), representing a real increase of 25.4 per cent on actual expenditure in the current regulatory control period.

The AER must accept Powerlink's proposed total forecast opex if satisfied it reasonably reflects the opex criteria. If not satisfied, the AER must give reasons for not accepting Powerlink's proposal, and estimate the total required opex that reasonably reflects the opex criteria. In doing so, the AER must have regard to the opex factors.

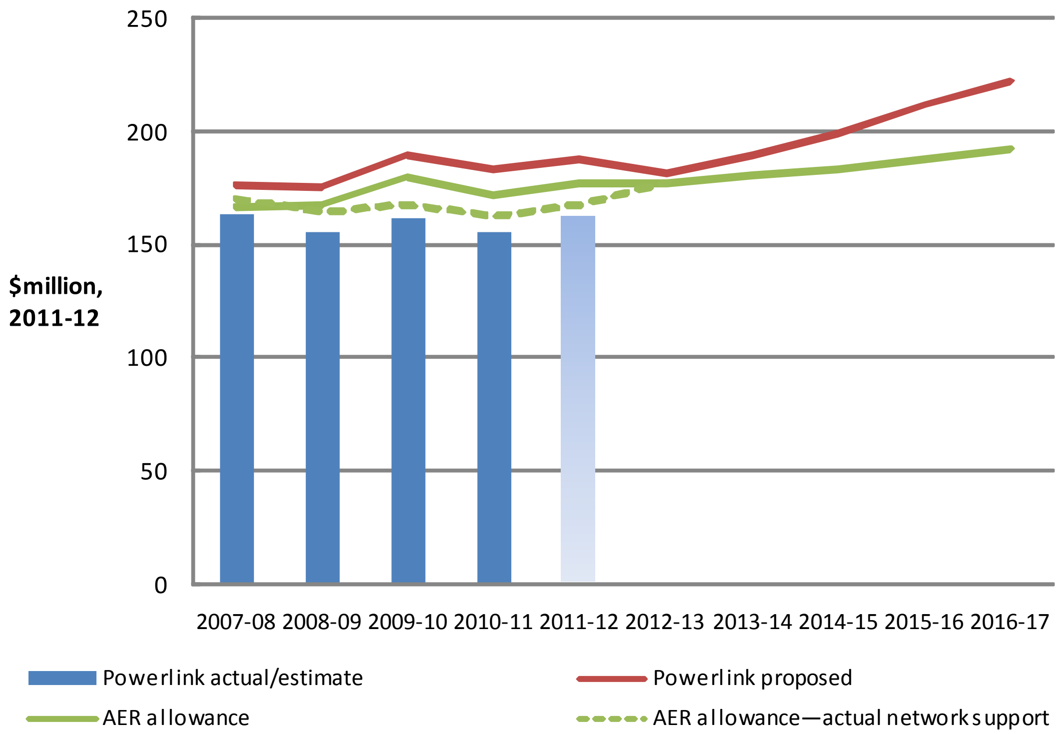
7.1 Draft decision

The AER is not satisfied that Powerlink's total forecast opex reasonably reflects the efficient costs that a prudent operator in Powerlink's circumstances would require to incur.[47] The AER's estimate of the total forecast opex that Powerlink requires for the next regulatory control period is less than Powerlink's proposal.

Figure 7.1 compares Powerlink's past and forecast total opex with proposed and approved opex. The AER's allowance for the next regulatory control period equates to a reduction of approximately 8.2 per cent.

[47] NER, clause 6A.6.6(c). Clause 6A.6.6(a) specifies the opex objectives.

Figure 7.1 Comparison of past and future total opex



Note: The 'AER allowance' and 'Powerlink proposed' values for the current regulatory control period include the network support payment allowances proposed/provided in the AER's 2007 regulatory determination. Under clause 6A.7.2 of the NER, any difference between actual and forecast network support payments is passed through to network users. Powerlink underspent its network support allowance in the current regulatory control period, which is reflected in the 'AER allowance—actual network support' line.

Source: AER analysis, Powerlink's RIN template.

Overall, the AER estimated a total forecast opex of $920.0 million ($2011-12) over the next regulatory control period (table 7.1)—a 15.2 per cent increase (in real terms) on expenditure incurred by Powerlink over the current regulatory control period.[48]

Table 7.1 AER draft decision on Powerlink's total forecast opex ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposal	181.3	188.9	198.7	211.1	221.7	1001.8
Adjustment	–4.4	–8.5	–15.6	–23.7	–29.6	–81.8
AER's allowance	176.9	180.4	183.1	187.4	192.1	920.0

Source: AER analysis.

7.2 Summary of analysis and reasons

To make this decision, the AER must form a view on Powerlink's proposed total forecast opex as a whole, not individual projects or programs.[49] However, because the total forecast opex

48 NER, clause 6A.14.1(3)(ii).

can be (and is by Powerlink) separated into expenditure components, the AER assesses these components to make its decision on the total amount. Powerlink separated its total forecast opex into controllable opex and other opex. Other opex included insurances, network support and debt raising costs. The AER identified issues with several elements of Powerlink's total forecast opex proposal:

- Controllable opex—the AER does not accept some of the inputs and assumptions including the proposed step changes, real cost escalators and network growth escalators. Accordingly, the AER's draft decision is to reject $70.2 million of the proposed allowance for controllable opex, a reduction of 7.6 per cent.

- Other opex—the AER made adjustments to the proposed allowances for insurance, network support and debt raising costs. Accordingly, the AER's draft decision is to reject $11.6 million of the proposed allowance for other opex, a reduction of 14.6 per cent.

Table 7.2 Comparison of Powerlink's proposal and the AER's draft decision on total proposed forecast opex ($million, 2010-11)

		2012-13	2013-14	2014-15	2015-16	2016-17	Total
Field maintenance	Powerlink	57.7	60.8	65.2	68.8	73.3	325.8
	AER	56.6	58.1	59.4	60.3	61.6	296.0
Operational refurbishment	Powerlink	34.8	35.6	34	35.3	39.8	179.5
	AER	34.0	34.9	33.5	35.1	39.6	177.1
Maintenance support	Powerlink	12.8	13.3	14	14.4	14.9	69.3
	AER	12.7	12.9	13.0	13.1	13.2	64.9
Network operations	Powerlink	14.1	14.7	15.5	16.1	16.8	77.3
	AER	14.1	14.2	14.1	14.0	14.0	70.4
Asset management support	Powerlink	33.6	34.7	36.1	37.2	38.5	180
	AER	33.2	33.2	33.0	32.6	32.3	164.4
Corporate support	Powerlink	14.8	15.8	18.4	21.4	20.4	90.9
	AER	14.2	14.4	16.5	18.2	16.3	79.6
Total controllable opex	**Powerlink**	**167.8**	**174.9**	**183.3**	**193.2**	**203.6**	**922.7**
	AER	**164.9**	**167.7**	**169.5**	**173.2**	**177.1**	**852.5**
Insurances	Powerlink	8.9	9.4	10.1	10.7	11.4	50.5
	AER	8.5	9.0	9.8	10.3	11.0	48.6
Network support	Powerlink	1.2	0.8	1.2	2.9	2.2	8.3

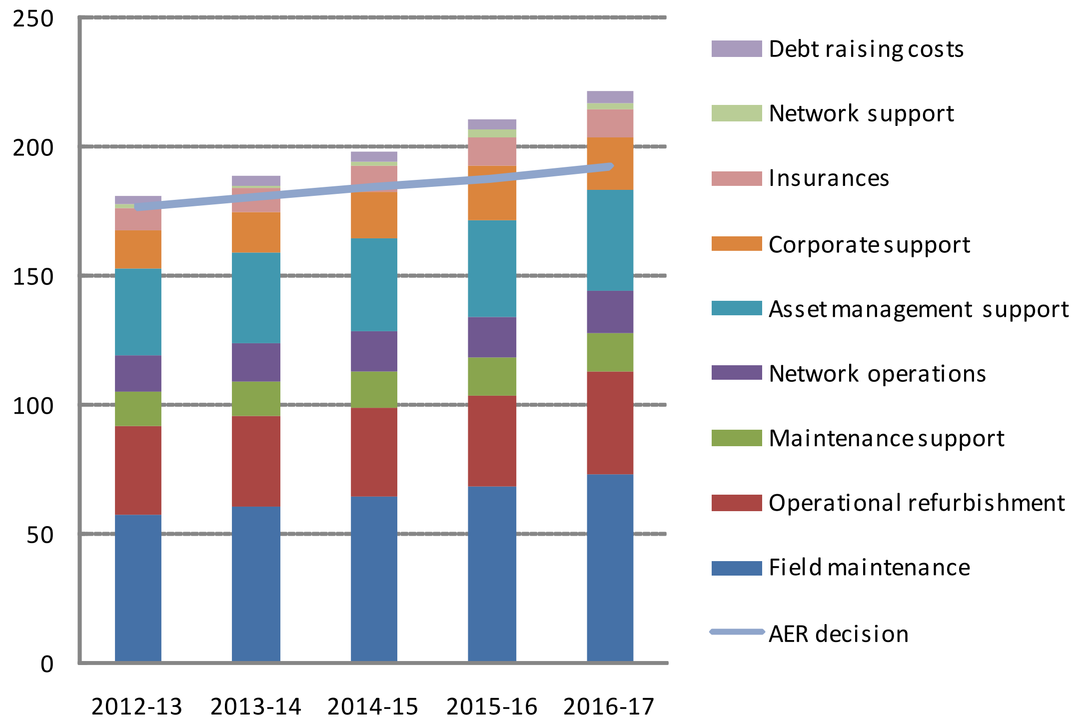
[49] NER, clause 6A.6.6(c).

	AER	–	–	–	–	–	–
Debt raising costs	Powerlink	3.5	3.8	4.1	4.3	4.5	20.3
	AER	3.5	3.7	3.8	3.9	4.1	18.9
Total opex	Powerlink	**181.3**	**188.9**	**198.7**	**211.1**	**221.7**	**1001.8**
	AER	**176.9**	**180.4**	**183.1**	**187.4**	**192.1**	**920.0**

Source: AER analysis; Powerlink, *Revenue proposal*, p. 99.

Figure 7.2 demonstrates the key components of Powerlink's proposed opex in the next regulatory control period are network management, customer service, and regulatory costs.

Figure 7.2 Proposed opex by category ($million, 2011-12)



Source: AER analysis.

7.2.2 Controllable opex

Powerlink forecast its controllable opex using its opex model. The AER was satisfied that this model was a reasonable method of forecasting controllable opex. However, the AER was not satisfied that all of the inputs and assumptions in the model yielded an opex forecast that reasonably reflected the opex criteria. Specifically, the AER made adjustments to the proposed allowances for step changes, real cost escalation and network growth escalation. The AER's draft decision is to provide Powerlink with a controllable opex allowance of $852.5 million, which is a reduction of $70.2 million or 7.6 per cent compared to that proposed by Powerlink.

The AER is satisfied that the adjusted total controllable opex in table 7.3 reasonably reflects the opex criteria, taking into account the opex factors.

Table 7.3 AER draft decision on total controllable opex ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink proposal	167.8	174.9	183.3	193.2	203.6	922.7
Model corrections	0.8	0.9	1.0	0.9	0.6	4.2
Adjustment—step changes	–1.6	–1.9	–1.4	–1.3	–1.3	–7.6
Adjustment—real cost	–3.0	–6.7	–11.8	–17.9	–23.2	–62.6
Adjustment—network growth	0.0	–0.3	–2.4	–2.4	–3.3	–8.3
Adjustment—base year	0.9	0.9	0.8	0.7	0.8	4.1
AER draft decision	**164.9**	**167.7**	**169.5**	**173.2**	**177.1**	**852.5**

Source: AER analysis.

Real cost escalation

Powerlink included $70.8 million ($2011-12) in its forecast opex attributable to labour cost escalation. The AER rejects the allowance proposed by Powerlink for real cost escalators. Instead the AER's draft decision is to approve an opex allowance of $6.7 million ($2011-12) for real cost escalators.

The AER considers that the labour price index, adjusted for productivity improvements provides a more realistic expectation of labour cost changes. The AER's detailed reasons for its decision on labour cost escalators are provided in attachment 1.

Step changes

Powerlink proposed an allowance of $65.8 million for step changes. The AER rejects the allowance proposed by Powerlink for step changes. Instead, the AER's draft decision is to approve an allowance for step changes of $58.2 million.

Step changes represent efficient costs that are not reflected in Powerlink's base opex, such as costs due to changes in regulatory obligations and the external operating environment. The AER accepts Powerlink's proposed step changes for tower painting, new office accommodation costs and part of the proposed land tax. The AER rejects Powerlink's proposed step changes for climate change investigation, additional building maintenance, South West Queensland expansion and part of the proposed land tax.

Network growth escalation

Network growth reflects the additional opex required by Powerlink for network expansion. Powerlink escalated its base year opex by applying network growth escalators which represent the additional opex needed to operate and maintain its growing network.

The AER considers Powerlink's proposed use of forecast total asset values to forecast network growth is largely reasonable. [50] However, the AER considers Powerlink overstated its forecast network growth because the forecast total asset values that Powerlink used included real cost escalation. The AER therefore removed the impact of real cost escalation from Powerlink's network growth factors. It also adjusted the network growth calculation to reflect the AER's draft decision on Powerlink's forecast capex. The AER accepts Powerlink proposed economies of scale factors. The AER's draft decision on Powerlink's network growth factors resulted in a total reduction on Powerlink's proposed total opex by 0.9 per cent or $8.3 million ($2011-12) during the next regulatory control period. The majority of this reduction is due to the the AER's draft decision on Powerlink's forecast capex.

7.2.3 Other opex

In addition to controllable opex, Powerlink proposed opex for insurances, network support payments and debt raising costs.

- Insurance—Powerlink proposed a self insurance allowance of $9.3 million. The AER considers that some adjustments to the proposed insurance allowances are necessary to reflect the NER opex criteria. The AER's draft decision is to provide Powerlink with a self insurance allowance of $7.3 million, which is a reduction of $2.9 million or 22 per cent compared to that proposed by Powerlink.
- Network support—Powerlink proposed an allowance of $8.3 million for network support. The AER rejects the proposed network support allowance of $8.3 million. The AER considered that Powerlink did not provide sufficient evidence for the AER to be satisfied that its proposed network support allowance complies with the NER requirements. Therefore, the AER's draft decision is that it will not provide an allowance for network support.
- Debt raising costs—Powerlink proposed an allowance for debt raising costs of $20.3 million ($2011-12) over the next regulatory control period.[51] The AER has decided not to accept Powerlink's proposed allowance for debt raising costs. The AER's draft decision is to provide an allowance for debt raising costs of $18.9 million which is a reduction of $1.4 million or 6.7 per cent compared to that proposed by Powerlink.

7.2.4 EBSS adjustments in the next regulatory control period

The AER is required to specify in this decision how it will apply the EBSS to Powerlink. The EBSS provides TNSPs with a continuous incentive to reduce opex. It does this by allowing the TNSP to retain efficiency gains for five years before passing them to consumers. It also reduces the incentive for a TNSP to overspend in the opex base year to receive a higher opex allowance in the following regulatory control period.

Excluded cost categories

In accordance with section 2.4.2 of the EBSS and this draft decision, the AER will exclude the following cost categories from forecast and actual opex for the calculation of EBSS carryover amounts:

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[50] Powerlink, *Revenue proposal*, p. 91. The total asset value reflects the undepreciated asset value.

[51] Powerlink, *Revenue proposal*, p. 98.

- network support costs
- recognised pass through events and recognised regulatory change events or service standard events.

In addition, the AER will exclude the following cost categories from the EBSS in the next regulatory control period to meet the requirements of the National Electricity Rules (NER).[52] The exclusion of the following cost categories will provide Powerlink with a continuous incentive, so far as is consistent with economic efficiency, to reduce opex:

- debt raising costs
- self insurance costs
- insurance costs.

The calculation of carryover amounts under the EBSS will include all other opex costs relating to prescribed transmission services.

Rewards and penalties

Under transitional provisions in the NER, Powerlink operated under the electricity transmission EBSS during the current regulatory control period. Powerlink will receive any increments or decrements accrued under the scheme in the next regulatory control period.

The AER is not satisfied the EBSS carryover amounts proposed by Powerlink from the application of the EBSS during the current regulatory control period comply with the requirements in the scheme. The AER considers that the carryover amounts in table 7.4 comply with the relevant requirements.

Table 7.4 AER conclusion on EBSS carryover amounts for 2007-08 to 2011-12 ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
AER decision	–1.0	–0.5	–3.1	0.8	–	–3.8
Powerlink proposal	–0.8	–0.5	–1.1	1.0	–	–1.3

Source: AER analysis.

The AER's detailed reasons for its EBSS decision are provided in attachment 11

52 NER, clause 6A.6.5(b)(1).

8 Corporate income tax

Corporate income tax is levied on Powerlink's taxable income. The estimated cost of corporate income tax forms one of the building blocks for Powerlink's revenue cap for the next regulatory control period.[53]

8.1 Draft decision

The AER does not accept Powerlink's proposed estimated cost of corporate income tax allowance of $124.1 million ($nominal) for the next regulatory control period. The AER's determinations regarding other components of Powerlink's revenue proposal have a consequential impact on the corporate income tax allowance. The AER's determinations on these other components are discussed in the following attachments:

- the roll forward of the opening RAB (attachment 6)
- forecast capex (attachment 3)
- forecast opex (attachment 4)
- cost of capital (attachment 5).

The AER has also considered specific matters that impact on the estimate of depreciation for tax purposes over the next regulatory control period. These include the opening TAB as at 1 July 2012, standard tax asset lives, the allocation of capex to the proposed new asset class of 'Transmission line (LE)', and remaining tax asset lives.

The AER's adjustments result in an estimated cost of corporate income tax allowance of $88.4 million (nominal), as shown in table 8.1. Based on the approach to modelling the cash flows in the PTRM, the AER has derived an effective tax rate of 20.75 per cent for this draft decision.

Table 8.1 AER's draft decision on corporate income tax allowance for Powerlink ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Tax payable	43.0	45.5	52.3	53.5	58.3	252.6
Less: value of imputation credits	27.9	29.6	34.0	34.8	37.9	164.2
Net corporate income tax allowance	15.0	15.9	18.3	18.7	20.4	88.4

Source: AER analysis.
Note: Totals may not add up due to rounding.

53 NER, clause 6A.5.4.

8.2 Summary of analysis and reasons

The AER accepts Powerlink's proposed method to establish the tax asset base (TAB) and the resulting opening value as at 1 July 2012. The AER accepts Powerlink's proposed standard tax asset lives with the exception of the standard tax asset life for equity raising costs. The AER has determined a standard tax asset life of 5 years for equity raising costs. The AER also accepts Powerlink's proposed standard tax asset life of 15 years assigned to a new asset class of 'Transmission lines (LE)' for life extension or refit works. However, the AER considers that this standard asset life is only appropriate for capex associated with surface preparation and painting works allocated to the new asset class. The AER requires capex associated with longer asset lives be reallocated to the existing asset class of 'Transmission Lines (OH-inc wood poles)'.

The AER does 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.

The AER's detailed reasons for its corporate income tax decision are set out in attachment 8.

9 Contingent projects

Contingent projects are network augmentation projects that are significant, may arise in the regulatory control period but are not yet committed and are not provided for in the capex forecast. They are linked to unique investment drivers (rather than general investment drivers such as expectations of load growth within a region) and are triggered by a defined 'trigger event'. If the trigger event occurs during the regulatory control period then the AER will separately assess the contingent project's costs upon application by Powerlink. It is important that the trigger event be adequately defined and that the proposed contingent capex reasonably reflects the capex criteria.

9.1 Draft decision

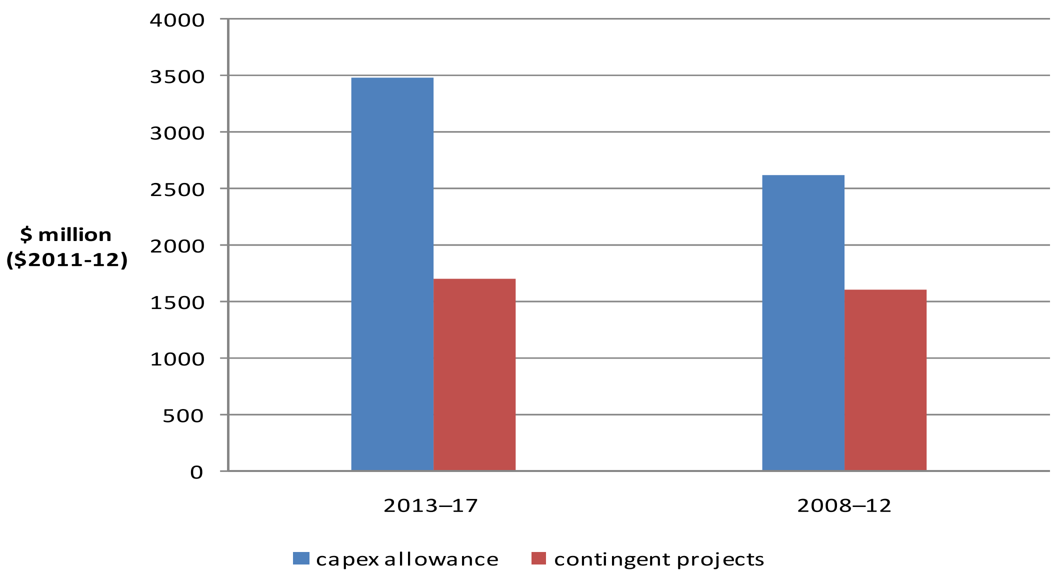
The AER is not satisfied that all 13 contingent projects proposed by Powerlink, with a forecast expenditure of $1701.8 million ($2011-12) meet the NER criteria for contingent projects.

The AER is not satisfied that six of the proposed contingent projects meet the contingent project criteria.

The AER is not satisfied that the proposed trigger events for eight proposed contingent projects were appropriately defined by Powerlink.[54] The AER accepts these eight proposed projects are contingent projects, but has revised the project trigger event definition for each.

Figure 9.1 shows the actual and proposed costs of the contingent projects and the total capex allowance in the current and next regulatory control period.

Figure 9.1 Load driven capex and contingent projects , ($million, 2011-12)



Source: AER analysis.

[54] NER, clause 6A.8.1(b)(4).

9.2 Summary of analysis and reasons

Two of the proposed projects, Western Downs to Columboola and Columboola to Wandoan South, are driven by a potential increase to the mandated security of supply standards (in the respective area). The AER does not accept such a change is probable in the next regulatory control period. In its considerations the AER treated these two proposed contingent projects as one larger proposed contingent project.

The AER does not accept that the NEMLink project is probable in the next regulatory control period and therefore has not accepted NEMLink as a contingent project.

The AER did not accept three of the proposed contingent projects that are driven by customer commitment of load (two in the Surat Basin area and one in Mt Isa). The AER does not accept that these proposed projects are probable in the next regulatory control period.

The AER's draft decision on contingent projects, including the events that would trigger them, are set out in table 12.2. Detailed reasoning for the draft decision is in attachment 12.

Table 9.1 Powerlink's proposed contingent projects and AER draft decision

PROJECT (Powerlink reference)	Proposed cost ($million, 2011-12)	Trigger event proposed by Powerlink	AER decision	Indicative costs ($million, 2011-12)
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 does not accept this as a contingent project.	–
Columboola to Wandoan South 275kV 3rd 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 does 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 does 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	80.7	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	80.7
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
N-2 security to essential loads (CBD)	114.9	Change in reliability standard for supply to essential loads	The AER does not accept this as a contingent project.	–
FNQ 275kV energisation	87.9	Change in reliability standard for supply to FNQ	The AER does not accept this as a contingent project.	–
NEMLink - Queensland component	788.0	Successful application of the regulatory test leading to the recommendation of NEMLink with expenditure during the next regulatory control period	The AER does 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 control period	The AER invited Powerlink to nominate an alternative trigger event	60.6
				513.8

Source: AER analysis.

10 Pricing methodology

A pricing methodology is a methodology, formula, process or approaches that a TNSP uses to allocate the aggregate annual revenue requirement (AARR) to those categories of prescribed transmission services provided by the TNSP and to transmission network connection points of network users. The methodology also determines the structure of the tariffs that a TNSP may charge for each of the categories of prescribed transmission services.

10.1 Draft decision

The AER approves the pricing methodology as proposed by Powerlink for the next regulatory control period.

10.2 Summary of analysis and reasons

The AER is satisfied the proposed pricing methodology:

- gives effect to and complies with the pricing principles for prescribed transmission services
- complies with the additional information requirements of the pricing methodology guidelines.

The AER's detailed reasoning for the AER's draft decision on Powerlink's proposed pricing methodology is set out in attachment 13.

11 Negotiated transmission services

The AER's transmission draft decision imposes controls over the prices and revenues that a TNSP can recover from the provision of prescribed transmission services. The AER does not determine terms and conditions for negotiated transmission services. Under the NER, these services are subject to negotiation between parties, or alternatively arbitration and dispute resolution by a commercial arbitrator. These processes are facilitated through two instruments—a negotiating framework and the negotiating transmission service criteria (NTSC).

11.1 Draft decision

The AER is not satisfied Powerlink's proposed negotiating framework complies with the NER requirements.[55] Therefore, the AER proposes not to approve the negotiating framework as proposed by Powerlink for the next regulatory control period.[56].

11.2 Summary of analysis and reasons

The AER determines the proposed NTSC (published in June 2011) is to apply to Powerlink in the next regulatory control period in accordance with clause 6A.9.4 of the NER. The proposed NTSC gives effect to the negotiated transmission services principles set out in clause 6A.9.1 of the NER.

The reasoning for the AER's draft decision in regard to the negotiating framework and the NTSC that are to apply to Powerlink in the next regulatory control period are further discussed in attachment 14.

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55 NER clause 6A.9.5(c).

56 The AER considers Powerlink's negotiating framework does not fully reflect clauses 6A.9.5(c)(3)(i)-(ii) and 6A.9.5(c)(2) of the NER.

Attachments

1 Real cost escalation

This attachment sets out the AER's decision on Powerlink's proposed labour, materials and land cost escalators. Movements in the cost of these will impact Powerlink's opex and capex over the next regulatory control period. Due to market forces, these costs will not necessarily increase at the same rate as inflation. Powerlink included an allowance for forecast real labour cost increases—that is, cost increases greater than the forecast inflation rate—in both its opex and capex forecasts.[57] It also included an allowance for forecast movements in materials and land costs in its forecast capex.[58]

1.1 Draft decision

The AER is not satisfied Powerlink's proposed real cost escalators reasonably reflect a realistic expectation of the cost inputs required to achieve the opex and capex objectives.[59] It has determined the substitute escalators in table 1.1, which reflect the AER's considerations that:

- real cost forecasts should be updated to reflect the most recent available market information
- the labour price index (LPI), adjusted for productivity using a matching labour productivity measure, provides a better measure of labour cost increases than AWOTE.
- labour cost escalators for the period of Powerlink's current collective agreement should not include the 0.5 per cent productivity payment in that agreement, as proposed by Powerlink, because labour productivity improvements do not increase labour costs
- the Australian Government's stated intention to increase the superannuation guarantee rate will not increase Powerlink's total labour costs (inclusive of superannuation payments) as proposed by Powerlink.
- foreign exchange forward rates produce materials cost forecasts that reasonably reflect the opex and capex criteria.

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[57] Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 65–6.

[58] Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 66–7.

[59] NER, clauses 6A.6.6(c)(3) and 6A.6.7(c)(3).

Table 1.1 **AER determined real cost escalators (per cent)**

	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; Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*, 15 August 2011, p. 72.

1.2 Powerlink's proposal

Powerlink proposed real cost escalation be applied to it labour, materials and land costs for the next regulatory control period (table 1.2).

Table 1.2 Powerlink's expenditure forecasts attributable to real cost escalation ($million, 2011-12)

	Labour	Materials	Land
Opex	70.8 (7.6)	– (–)	6.3 (0.7)
Capex	94.7 (2.9)	120.8 (3.5)	30.6(0.9)

Note: Bracketed figures are the percentage of the total opex or capex forecast.
Source: AER analysis, EMCa report

Powerlink proposed labour cost escalation be applied to both its opex and capex forecasts, to account for Powerlink's existing collective agreement and forecast real labour cost increases.[60] It engaged BIS Shrapnel for advice on the labour cost outlook for the next regulatory control period. BIS Shrapnel recommended forecast growth in average weekly ordinary time earnings (AWOTE) as the best measure for estimating wage cost movements. It recommended the following escalators:

[60] Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, p. 92.

- forecast AWOTE growth for the electricity, gas and water (EGW) industry for internal network-related labour, including a range of skilled labour involved in the construction, maintenance, design and operation of Powerlink's network
- forecast AWOTE growth for the business services industry for internal general labour, including staff that provide administration and corporate services
- forecast AWOTE growth for the construction industry for external labour on construction related projects.[61]

Table 1.3 sets out BIS Shrapnel forecasts of these wage growth measures.

Table 1.3 BIS Shrapnel's real wage growth forecasts (per cent)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Internal—specialist	2.0	1.8	1.9	2.4	2.6	2.1	2.0
Internal—general	1.5	1.2	2.8	3.2	3.0	2.2	3.0
External	1.7	1.8	2.2	3.9	3.2	2.0	2.4

Source: Powerlink, *2013–17 Powerlink Queensland revenue proposal,* 2011,p. 66.

Powerlink also proposed that real cost escalation be applied to its materials and land inputs. It engaged Sinclair Knight Merz (SKM) to provide advice. SKM considered the escalation rates in table 1.4 represented the underlying drivers of network infrastructure plant and equipment costs specific to Powerlink.

Table 1.4 SKM's materials real cost growth forecasts ($USD, per cent)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Aluminium	12.6	3.6	0.8	0.0	–0.4	–0.7	–0.8
Copper	18.2	0.2	–5.1	–6.8	–7.7	–8.3	–8.9
Steel	10.2	3.5	0.6	–3.2	–2.0	–2.3	–2.4
Plant and equipment	–	–	–	–	–	–	–

Source: SKM, *US$ based cost escalation factors for upcoming regulatory period to June 2017*, Appendix I to Powerlink's regulatory proposal, March 2011.

The escalators provided by SKM were for forecast movements of prices in US dollars. Powerlink converted these to movements in Australian dollar prices using KPMG Econtech's foreign exchange forecasts (table 1.5).

61 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 65–6.

Table 1.5 Powerlink proposed USD/AUD foreign exchange forecasts

2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
0.98	0.93	0.87	0.80	0.81	0.82	0.82

Source: KPMG Econtech, *Australian national, state and industry outlook*, March 2011.

Powerlink also obtained advice from Urbis on forecast land value escalation rates. Urbis used historical trend and forecast economic data to inform its view on future land values. It stated that land values in Queensland will increase due to population growth, infrastructure spending and strong performance in the mining sector.[62] Table 1.6 sets out Powerlink proposed land value escalators.

Table 1.6 Powerlink's proposed land value escalators (per cent)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Urban	–2.5	5.5	10.5	14.5	15.5	14.5	12.5
Rural	1.5	8.5	10.5	9.5	9.5	9.5	8.5

Source: *Urbis, Forecast of land value escalation—Queensland*, Appendix J to Powerlink's regulatory proposal, January 2011.

1.3 Assessment approach

Real cost escalation is a key input into Powerlink's capex and opex forecasts. Attachments 3 and 4 outline the AER's approach to assessing Powerlink's total opex and capex forecasts, including the approach to applying labour cost escalators. The AER must accept Powerlink's opex and capex forecasts if satisfied the total forecasts reasonably reflect the opex and capex criteria.[63] For the AER to be satisfied Powerlink's opex and capex forecasts reasonably reflect all the opex and capex criteria, it must be satisfied those forecasts reasonably reflect a realistic expectation of cost inputs required to achieve the opex and capex objectives.[64]

To test the proposed labour cost escalators the AER engaged Deloitte Access Economics to develop forecasts of labour cost changes.[65] For materials the AER developed its own forecasts of materials price changes. Where possible it forecast price changes from prices traded in futures markets, such as for contracts traded on the London Metal Exchange. Where these were unavailable it took forecasts from Consensus Economics, which provides forecasts derived from an average of forecasts from a number of economic forecasters.[66]

[62] Powerlink, *Revenue proposal 2013–2017: Appendix J: forecast of land value escalation—Queensland*, 2011, p. 4.
[63] NER, clauses 6A.6.6(c) and 6A.6.7(c).
[64] NER, clauses 6A.6.6(c)(3) and 6A.6.7(c)(3).
[65] Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*, 15 August 2011.
[66] Consensus Economics, *Energy and metals consensus forecasts*, July 2011.

1.4 Reasons for draft decision

The AER is not satisfied that Powerlink's proposed labour cost escalators reasonably reflect a realistic expectation of labour costs. This is because:

- labour price increases due to labour productivity growth do not increase labour costs
- the LPI adjusted for productivity provides a more realistic expectation of labour cost changes than does increase in AWOTE adjusted for productivity.

Additionally, the AER is not satisfied:

- business industry labour prices are most representative of Powerlink's internal general labour prices
- Powerlink's labour cost escalators reflect current market information
- the Australian Government's intention to increase the superannuation guarantee rate will increase Powerlink's labour costs.

Powerlink's proposed materials cost escalators are based on forecasts produced by SKM. SKM's description of its forecasting model is largely consistent with the AER's own model as are the forecasts. However, the AER is not satisfied with the:

- currency of SKM's forecasts, which were produced in March 2011
- exchange rate forecasts used by Powerlink to convert SKM's forecasts from US dollars into Australian dollars.

Powerlink's proposed land value escalators were based on forecasts produced by Urbis.

The following sections deal with these issues in greater detail.

1.4.1 Treatment of labour productivity effects

Labour price changes are driven by both productivity effects and other effects. Productivity effects drive labour price changes since more productive labour receives higher wages.[67] Other effects include CPI increases and any price changes driven by labour market supply/demand imbalances. The labour cost escalators proposed by Powerlink included increased labour costs related to forecast labour productivity improvements.

The AER considers forecast labour price changes should be adjusted for labour productivity changes. It is not satisfied that Powerlink's proposed labour cost escalators reasonably reflect a realistic expectation of labour costs because they were not adjusted for productivity. The labour cost escalators determined by the AER have been adjusted to remove labour productivity effects.

It is important to make the distinction between labour prices and labour costs. Deloitte Access Economics (DAE) stated:

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67 Professor Jeff Borland, *Labour cost escalation report for Envestra Limited*, 2011, p. 2.

> … labour costs will rise at a different rate [than labour prices] due to the effects of labour productivity growth. Effectively, labour productivity measures the number of units of output an individual employee can produce in a given time period. The more units of output each worker can produce, the fewer workers are required to create a given level of industry output. If productivity is rising, the total cost of labour (the price of each employee multiplied by the number of employees) will rise less rapidly than the individual employee's price.[68]

Broadly labour price changes can be described by three effects:

1. Composition productivity effects reflect increases in workforce productivity due to changes in the skill composition of the workforce. For example, an increased share of high skill workers will increase average workforce productivity and average wage rates per worker. However, because average workforce productivity has increased fewer workers are required to produce the same amount of output and any increase in labour costs will be less than the increase in the average labour price.
2. Worker productivity effects are increases in workforce productivity due to increases in the productivity of individual workers. For example, workers may become more productive from working with better capital equipment. Again, because average workforce productivity has increased fewer workers are required and any increase in labour costs will be less than the increase in the average labour price.
3. Other effects unrelated to productivity. For example, wage increases due to CPI increases or labour supply or demand imbalances. Because these effects are unrelated to productivity the same amount of labour is required to produce a given amount of output and the change in labour price results in a corresponding change in labour costs.

Thus to the extent that labour prices are rising due to increased labour productivity (either compositional productivity or worker productivity) the increase in labour costs will be less than the increase in the labour price. To determine the impact of labour price increases on the total labour cost to produce a constant level of output, therefore, the price impacts of labour productivity effects should be removed from the labour price measure used.

BIS Shrapnel appeared to endorse the removal of productivity effects to determine the impact on total labour costs:

> BIS Shrapnel prefers using AWOTE as the measure that best reflects the increase in wage cost changes (*or unit labour costs, net of productivity increases*) for business and the public sector across the economy. [Emphasis added][69]

It did not appear, however, to adjust its AWOTE labour price forecasts.

1.4.2 The choice of labour price measure

Different labour price measures are available, including average weekly earnings (AWE) and the labour price index (LPI).[70] Powerlink proposed the use of AWOTE, as forecast by BIS Shrapnel, to escalate its forecast labour costs (both opex and capex) for forecast real labour price increases.

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68 Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*, 15 August 2011, p. 102.

69 BIS Shrapnel, *Labour cost escalation forecasts to 2016/17—Australia and Queensland*, Appendix H to Powerlink's revenue proposal, November 2010, p. 23.

70 References to LPI refer to the specific ABS index rather than labour prices indices generally.

The AER is not satisfied that forecast growth in AWOTE reasonably reflects a realistic expectation of the change in labour costs. It considers LPI forecasts, adjusted for productivity effects, most reasonably reflect labour costs during the next regulatory control period.

AWOTE measures average employee earnings from working the standard number of hours per week. It is not strictly a price index (that measures the pure price effect) because the composition of labour is not held constant. It captures composition productivity effects, worker productivity effects and other effects. In contrast the LPI is a Laspeyres type price index. As a Laspeyres type price index the LPI measures the change in the labour costs with the quantity and quality of work performed held constant.[71] It measures the pure price effect, showing how much the same quantity of labour costs in the current period, relative to the base period. The weights used are for the base period and are updated annually to represent job distribution.[72]

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.[73] The ABS publishes a number of productivity measures, including labour, capital and multifactor measures. The labour productivity measures are published annually for the market sector as a whole, as well as at the industry division level (for example, the electricity, gas and water industry). They indicate value added per hour worked. This conventional measure of labour productivity is the appropriate labour productivity measure for adjusting AWOTE.

A quality adjusted measure of labour productivity, on the other hand, is the appropriate measure to adjust the LPI. The ABS recently developed quality adjusted measures of labour input and labour productivity. It released estimates for 1982-83 to 1999-2000 in 2005, and since published yearly statistics from 1994-95.[74] The measure of labour captures the change in the aggregate quality of labour due to compositional changes such as higher education, or longer work experience, so the effect is not ascribed to productivity. Generally, the quality adjusted labour productivity index increases at a slower rate than the conventional labour productivity index, implying improved labour force skill levels over time.

As relative input prices change over time, efficient NSPs 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 because the labour input requirement is endogenous to the production function. To this end, the AER prefers the LPI (adjusted for quality adjusted labour productivity) to AWOTE (adjusted for labour productivity) because:

- the LPI provides a more accurate measure of labour price change (by holding labour composition fixed)
- the quality adjusted labour productivity index provides a better measure of labour productivity because the effective quantity labour input accounts for changes in the skill composition of the labour force.

71 To the extent that some quality changes in the work performed are unquantifiable, the price change would incorporate some of the quality change effect. However, the magnitude of this effect is generally negligible.

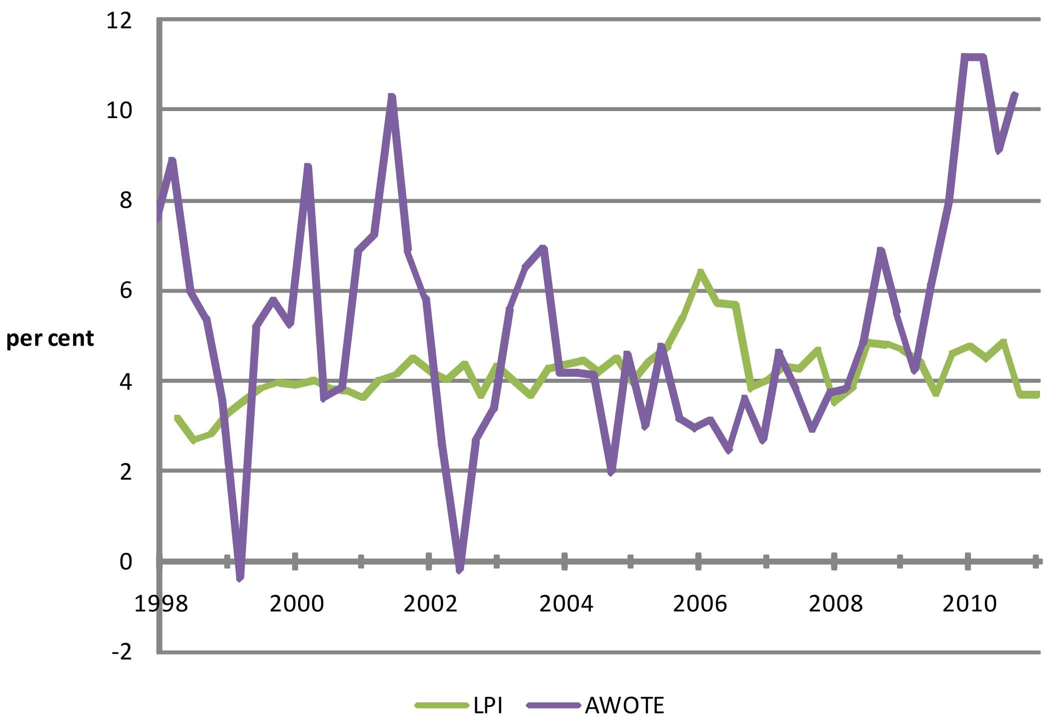
72 ABS, *Labour Price Index: concepts, sources and methods*, Catalogue number 6351.0.55.001, 2004, p. 12.

73 Deloitte Access Economics, *Response to Professor Borland: comments prepared for the AER*, 15 April 2011, p. 3.

74 ABS, *Quality-adjusted labour inputs*, Research paper, Catalogue number 1351.0.55.010, November 2005.

Regarding the first bullet point, the AER has previously noted the AWOTE data series shows greater volatility than the LPI, partly due to the changing composition of the workforce (figure 1.1).[75] While it is possible to remove the volatility from AWOTE (by using a moving average, for example) this still leaves the end point problem.[76] The end point problem exists because there is insufficient data at the end of the series to apply a symmetric filter.[77] For a centred moving average, for example, it is not possible to calculate the average for the last term of the series because the next data point is required and it is not yet known.

Figure 1.1 Annual growth in LPI and AWOTE, electricity gas water and waste services industry, Australia (per cent)



Source: ABS, catalogue 6302.0, table H; ABS, catalogue 6345.0, table 9b; AER analysis.

However, using the LPI has its own difficulties because of the limited availability of quality adjusted labour productivity index data. While the ABS publishes unadjusted labour productivity statistics for the electricity gas water and waste services (EGWWS) industry, its quality adjusted labour productivity index is available only at the overall market sector level. The AER considers, however, the problems with using AWOTE are greater than those with using the LPI. This is because accounting for labour composition effects, and the resultant volatility, makes AWOTE unreliable for forecasting labour costs for the utilities industry. The greater stability of the LPI data series makes it preferable for forecasting labour cost growth.

75 AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, Appendix K, 2010, p. 246.

76 Deloitte Access Economics, *Response to Professor Borland: comments prepared for the AER*, 15 April 2011, p. 5.

77 ABS, *Time series analysis: The process of seasonal adjustment*, viewed 10 October 2011, www.abs.gov.au/websitedbs/d3310114.nsf/4a256353001af3ed4b2562bb00121564/5fc845406def2c3dca256ce100188f8e!OpenDocument.

BIS Shrapnel stated it prefers AWOTE because promoting employees to a higher occupation does not necessarily show up in the LPI, but the employer's total wages bill (and average unit labour costs) is higher, as is AWOTE.[78]

However, the AER does not consider this to be a problem, nor does it agree that the average unit labour costs would increase. To illustrate, the following impacts occur if workers undergo training, increase productivity and are promoted. Assuming wage rates are held constant for both skilled and unskilled labour:

- Labour productivity, total output and total labour cost all increase by the same amount. The total labour cost per unit of output is unchanged because output and total labour cost both increase equally.
- AWOTE also increases by the same amount as labour productivity. Thus the labour productivity adjusted AWOTE does not change, reflecting the constant total labour cost per unit of output.
- The LPI remains constant. Quality adjusted labour productivity (weighted by the base period cost share) is also constant and thus so is the productivity adjusted LPI.

Both labour price measures, therefore, accurately reflect a constant unit labour cost, per unit of output, when adjusted by their matching labour productivity measures. However, as a result of the analysis above, the AER does not agree with BIS Shrapnel that AWOTE should be used to compensate Powerlink for shifts in workforce composition.

Powerlink also stated it preferred the use of AWOTE because it reflected the shift in workforce composition required to meet increasing compliance standards. To meet a rising compliance burden, it required employees to undertake training, and Powerlink stated it would promote these employees to reflect their increased skill levels. However, it noted this increase in skill levels does not produce greater output.[79] While this scenario undoubtedly occurs, the AER does not consider this requires AWOTE be used to forecast labour costs. An increasing compliance burden, such as through increased safety standards, will put downward pressure on labour productivity levels. Either AWOTE or the LPI can capture this impact, so long as the matching labour productivity measure is used to undertake the productivity adjustment.

1.4.3 Internal labour cost escalation

Powerlink employs staff to undertake a variety of tasks from construction and network maintenance to administration and clerical duties.[80] Labour market conditions for these various different jobs may differ.

The AER considers labour cost forecasts for the EGWWS industry most reasonably reflects a realistic expectation of labour costs for all internal Powerlink labour during the next regulatory control period.

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78 BIS Shrapnel, *Labour cost escalation forecasts to 2016/17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010, p. 23.

79 Powerlink, Email, *Response—Request AER/022—Further opex questions*, 18 August 2011.

80 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 65–6.

Powerlink proposed its internal labour costs be escalated using a weighted average of labour cost forecasts for specialised electricity network related labour and general labour.[81] Based on BIS Shrapnel advice, Powerlink proposed the use of EGW industry labour cost forecasts for specialised electricity network related labour, and 'property and business services' (PBS) industry labour cost forecasts for general labour.[82] However, the ABS has previously advised:

> … regardless of the type of job, if the job was selected from a business classified to the electricity, gas, water and waste services industry, the jobs pay movements contributes to this industry.[83]

Thus, the critical factor considered by the ABS when allocating a job to an industry is the nature of the business, not the nature of the work undertaken. The ABS labour price statistics for the EGWWS industry reflect both specialised electricity network related labour and general labour.

The AER also notes that Powerlink proposed labour cost escalation rates based on BIS Shrapnel forecasts for the EGW industry rather than the EGWWS industry. Since late 2009 the ABS has reported AWOTE and LPI data under the ANZSIC 2006 industry classification rather than the ANZSIC 1993 classification. Under the new classification waste services has been included with the electricity gas and water industries. BIS Shrapnel stated that the inclusion of the waste services sub-sector will lead to lower wage growth outcomes for the combined EGWWS industry, which will no longer accurately reflect the occupations in the EGW industry. Consequently BIS Shrapnel estimated the waste services component and excluded it from both its historical data and forecasts.[84]

BIS Shrapnel note that between 1998 and 2009 the LPI for the EGW industry grew by 4.3 per cent per annum as compared to 4.2 per cent for the EGWWS industry.[85] However, the AER has seen no evidence that this difference is statistically significant. In the absence of any such evidence the AER considers it is not necessary to remove the waste services component from EGWWS data. Further, it considers removing the waste services component from the data introduces a potential source of forecasting error since it is necessary to estimate the waste services component.

1.4.4 Comparison of labour cost forecasts

The difference in the labour cost forecasts proposed by Powerlink, and forecast by BIS Shrapnel, and those forecast by Deloitte Access Economics for the AER is not fully explained by labour productivity and the choice of labour price measure. The AER has also considered the two sets of labour costs forecasts in light of the underlying macroeconomic outlook.

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81 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 65–6.

82 BIS Shrapnel, *Labour cost escalation forecasts to 2016-17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010, pp. 29–31, 43.

83 ABS, Email from Kathryn Parlor to Fleur Gibbons, 8 July 2010.

84 BIS Shrapnel, *Labour cost escalation forecasts to 2016-17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010, pp. 30–1.

85 BIS Shrapnel, *Labour cost escalation forecasts to 2016-17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010, p. A-1.

The AER considers the labour cost forecasts prepared by Deloitte Access Economics reasonably reflect a realistic expectation of labour costs over the next regulatory control period.

As seen in figure 1.2 BIS Shrapnel appear to be forecasting a sustained growth cycle in the EGWWS and construction labour markets whereas Deloitte Access Economics is forecasting a slowdown. Deloitte Access Economics note that over the past two decades LPI growth across all industries has outpaced the national average and should continue to do so through until 2012-13.[86] However, Deloitte Access Economics note that:

> … the past gains have been considerable, and permanent shifts in price relativities are rare, because 'the supply side' adjusts—workers shift into those occupations where skill shortages are keenest (and wages are good)...[87]

It also anticipates a supply side response from the world's miners to bring commodity prices down and slow the commodities boom. Accordingly, it considers wage gains in the EGWWS industry will keep pace with national average wages through to 2011-12, but start to lose some relative strength thereafter.[88]

Similarly, for construction, Deloitte Access Economics anticipates a boom in construction demand will see the construction sector LPI generally growing at a faster rate than the national LPI. However, it considers this relative boost to wages will ultimately prove temporary, partly due to a supply side response. It notes the construction sector is one of the most cyclical in Australia, and forecasts an eventual slowdown in the sector dragging LPI growth lower in the later years of its forecasts.[89]

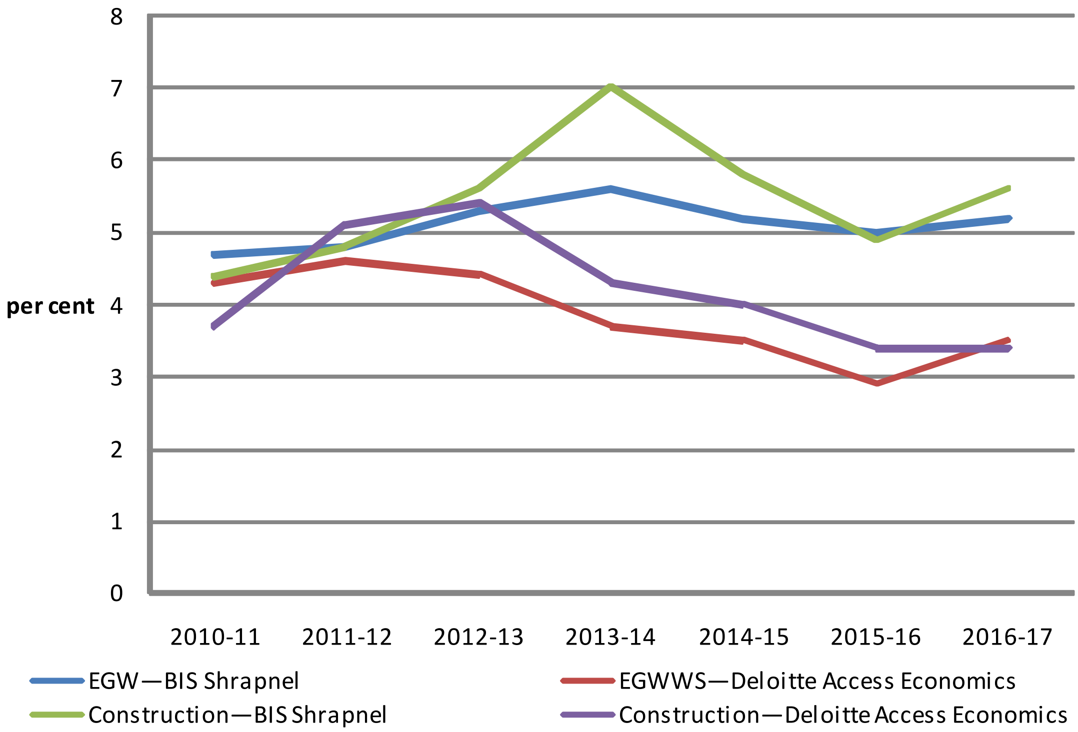
86 Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*. August 2011, p. 72.

87 Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*. August 2011, p. 49.

88 Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*. August 2011, p. 50.

89 Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*. August 2011, p. 64.

Figure 1.2 Comparison of LPI growth forecasts for the Queensland EGWWS and construction industries (nominal, per cent per annum)



Note: BIS Shrapnel EGWWS forecasts do not include the waste services component.
Source: BIS Shrapnel, *Labour cost escalation forecasts to 2016/17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010, p. 2; Deloitte Access Economics, *Forecast growth in labour costs: Queensland and Tasmania*. August 2011, p. 72.

The labour price forecasts in figure 1.2 include both CPI increases and labour productivity effects. These need to be removed to forecast real labour cost growth. Deloitte Access Economics real labour cost growth forecasts can bee seen in table 1.1.[90] Deloitte Access Economics' EGWWS and construction sector real labour cost growth forecasts (that is, internal and external labour) are negative from 2013-14 or 2014-15. At first glance this may appear counterintuitive. However, as noted by Professor Jeff Borland 'wage changes that corresponds to 'labour market fundamentals' should over the long term show a similar rate of change to the rate of change in CPI plus rate of change in labour productivity.'[91] That is, real labour cost growth, which is adjusted for productivity improvements, should increase by CPI over the long term. Under Deloitte Access Economics labour costs forecasts, average real labour costs for the next regulatory control period will be 0.4 per cent less than those in 2010-11 for EGWWS and 0.8 per cent greater for construction. Given labour costs should increase by CPI over the long term, and Deloitte Access Economics' forecasts, the AER is not satisfied that BIS Shrapnel's forecasts of labour cost growth reasonably reflect a realistic expectation of labour costs over the next regulatory control period. The AER is satisfied that Deloitte Access Economics labour cost forecasts do reflect a realistic expectation of labour costs.

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90 Note that the internal labour forecasts in table 1.1 for 2010-11 reflect Powerlink's collective agreement not Deloitte Access Economic's forecasts.

91 Professor Jeff Borland, *Labour cost escalation report for Envestra Limited*, 2011, p. 9.

1.4.5 The use of negotiated wage rate agreements

Powerlink proposed the use of annual wage increases in its collective agreement to escalate labour costs to the end of the current agreement in November 2011.[92]

The AER is satisfied the annual wage increase of 4 per cent included in Powerlink's existing collective agreement reasonably reflects labour cost increases to the end of the agreement in November 2011.[93] It is not satisfied, however, the annual 0.5 per cent productivity allowance included in the collective agreement reasonably reflects the labour costs required to meet the opex and capex objectives.

The AER considers wage rates, negotiated between an NSP and its employees can reasonably reflect a realistic expectation of the labour costs required to achieve the opex and capex objectives. However, it notes two issues:

1. the incentives the NSP faces when negotiating agreements
2. the productivity effects included in the negotiated labour rate increases.

Under the building block incentive regime with an efficiency benefit sharing scheme, NSPs have a continuous incentive to minimise costs (including labour costs) during the regulatory control period because they can retain those cost savings for five years. Consequently, the AER can reasonably assume that agreement wage rates negotiated during the current regulatory control period will reasonably reflect a realistic expectation of the labour costs required to achieve the opex and capex objectives.

However, the incentive to minimise labour costs may be reduced if an NSP is negotiating an agreement to apply during a later regulatory control period. If an NSP is confident that negotiated agreement wage increases will be used to set its opex and capex forecasts in the next regulatory control period, then it would have no incentive to minimise the wage rate increases in that period. For this reason, the AER must investigate the circumstances of a wage agreement covering a future regulatory control period before it can accept that agreement reasonably reflects the efficient costs of a prudent NSP.[94]

As well as considering the incentives that Powerlink faces when negotiating agreements, the AER must also consider the productivity effects included in the negotiated labour rate increases. The annual wage increases negotiated in Powerlink's current collective agreement compensate employees for the increased price of labour and include worker productivity effects.[95] The pay increases in the collective agreement apply to a worker staying in the same pay point and thus do not include compositional productivity effects. As discussed in section 1.4.1, the AER considers Powerlink's forecast total opex and capex should not include labour productivity effects. This is because labour productivity effects increase the labour price but do not increase labour costs. The increase in the labour price due to productivity effects is offset by a reduction in the amount of labour required to produce a constant level of output. Consequently, the worker productivity effects included in the collective agreement's annual

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92 Powerlink, *Powerlink operating expenditure model*.

93 Powerlink, *Working at Powerlink Queensland 2008*, Union collective agreement, 2008, p. 8.

94 Australian Competition Tribunal, *Application by Ergon Energy Corporation Limited (Labour Cost Escalators) (No 3) [2010] ACompT 11 (24 December 2010)*, paragraph 58.

95 Powerlink, *Working at Powerlink Queensland 2008*, Union collective agreement, 2008, p. 8.

wage rate increases should be removed from the labour cost escalation rates. The annual 4.5 per cent wage increase included in Powerlink's collective agreement includes a 0.5 per cent productivity payment.[96]

Given this the AER is satisfied that the annual wage increase of 4 per cent included in Powerlink's current collective agreement reasonably reflects a realistic expectation of the labour costs through to the end of this agreement in November 2011.

1.4.6 Superannuation guarantee rate

The Australian Government has announced that, if agreed to by parliament, it will gradually increase the superannuation guarantee rate from 9 per cent to 12 per cent by 2019-20, commencing in 2013-14.[97] Powerlink proposed their labour costs be escalated to account for this.[98]

The AER considers the intended changes to the superannuation guarantee rate will not affect labour costs. Forecast total opex and total capex should not be escalated for the intended increases in the superannuation guarantee rate.

The AER notes that the *Superannuation Guarantee (Administration) Act 1992 (Cwlth)*, which sets the rate, has not yet been amended to increase the superannuation guarantee rate from 9 per cent.[99] If the increase in the superannuation guarantee rate is passed by parliament it will be implemented gradually. The Australian Government has stated that this is because it is expected that the increase to the superannuation guarantee rate will be offset by a reduction in an employee's take home wages:

> There will be a phased increase to 12 per cent with a three year lead time from announcement. This will allow employers to take the increased SG [superannuation guarantee] contributions into account when negotiating future wage settlements.[100]

Similarly, Dr Ken Henry has stated:

> The analyses that we and the Treasury have seen… have suggested that with respect to past increases in the superannuation guarantee that over time those have… come out of wages rather than profits... The superannuation guarantee is regarded by both employers and employees as a different way of receiving an increase in wages.[101]

Consequently the AER considers that a superannuation guarantee rate increase would not be expected to increase an employer's labour costs.

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96 Powerlink, *Working at Powerlink Queensland 2008*, Union collective agreement, 2008, p. 8.

97 Australian Tax Office, www.ato.gov.au/super/content.aspx?doc=/content/60489.htm&page=19&H19, 4 July 2011, viewed 6 October 2011.

98 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, 2011, pp. 30, 90.

99 Section 19(2).

100 Australian Government, *Superannuation—Increasing the superannuation guarantee rate to 12 per cent*, Fact sheet, p. 2.

101 Dr K Henry, Senate, Economics Legislation Committee, Estimates, 27 May 2010, p. E9, www.aph.gov.au/hansard/senate/commttee/S13174.pdf (accessed 24 October 2010).

1.4.7 Currency of forecasts

Cost forecasts will change as they are updated to reflect changing market data. The AER considers that forecasts reflecting the most current market data most reasonably reflect a realistic expectation of labour cost inputs.

The AER considers Access Economics' labour cost growth forecasts, produced in August 2011 reasonably reflect a realistic expectation of the labour cost inputs required to achieve the opex and capex objectives. It will update labour cost growth forecasts for its final decision (to be made in April 2012) to reflect subsequent changes to labour market conditions.

The AER considers its materials and land cost growth forecasts, produced in September 2011 reasonably reflect a realistic expectation of the labour cost inputs required to achieve the capex objectives. It will update these cost growth forecasts for its final decision.

The NER requires capex and opex forecasts to reasonably reflect a realistic expectation of the cost inputs required to achieve the capex and opex objectives.[102] The macroeconomic outlook, including key labour market factors, has changed since BIS Shrapnel's labour price forecasts were prepared in November 2010.[103] Similarly the macroeconomic outlook has changed since Urbis' land price forecasts were prepared in January 2011 and SKM's materials price forecasts were prepared in March 2011. The AER considers, therefore, 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. The AER has adjusted forecast capex and opex to reflect the AER's forecasts of real cost changes.

Materials cost forecasts 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 because of the close correlation between the two.

1.4.8 Foreign exchange rate forecasts

Both the AER and SKM forecast movements in aluminium, copper and steel prices from forward prices on the London metal exchange (LME) and Consensus Economics long term price forecasts. Both of these are denominated in US dollars and require forecast exchange rates to convert to Australian dollar terms.

Further, the majority of plant imported by Powerlink is purchased in US dollars. It proposed the forecast US dollar exchange rate be adopted to forecast the price of overseas plant and equipment.

The AER is not satisfied that the forecast exchange rates proposed by Powerlink reasonably reflect a realistic expectation of costs during the next regulatory control period. It considers the exchange rate forecasts in table 1.7, based on rates in the forward market, are the most realistic expectation of exchange rates during the next regulatory control period.

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102 NER, clauses 6A.6.6(c)(3) and 6A.6.7(c)(3).

103 BIS Shrapnel, *Labour cost escalation forecasts to 2016/17—Australia and Queensland*, Appendix H to Powerlink's regulatory proposal, November 2010,.

Table 1.7 **AER's conclusion on USD/AUD foreign exchange forecasts**

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Powerlink proposed	0.98	0.93	0.87	0.80	0.81	0.82	0.82
AER decision	1.00	1.04	1.00	0.96	0.93	0.90	0.88

Source: AER analysis; Bloomberg; KPMG Econtech, *Australian national, state and industry outlook*, March 2011.

Powerlink proposed US dollar denominated input prices be converted to Australian dollars using exchange rates forecast by KPMG Econtech.[104] The AER compared these rates to the average rate available in the forward market during the month of August and noted that the proposed rates were lower (table 1.7).

The AER has used forward rates from the month of August because this is close to the date that the long term commodity price forecasts from Consensus Economics were released (25 July 2011). As discussed in section 1.4.7, the AER considers that US dollar materials cost forecasts should be converted to Australian dollars using exchange rates forecast at the same time. The AER notes that the Australian dollar fell in September but has since risen again.

Exchange rates are difficult to forecast, particularly in the short term.[105] Despite this, the AER is not satisfied that the exchange rate forecasts proposed by Powerlink reasonably reflect a realistic expectation of its costs. The exchange rates proposed by Powerlink are lower than the rates available in the forward market, particularly in the earlier years.[106] Given the difficulty in forecasting exchange rates, the AER considers the use of forward exchange rates will produce a realistic expectation of materials costs. The use of forward market rates for foreign currency is also consistent with the approach adopted by both the AER and SKM to forecast real materials cost increases. Both the AER and SKM forecast real cost increases in aluminium, copper and steel using forward prices on the London Metal Exchange and long term forecasts from Consensus Economics.[107]

Consequently, the AER considers that the monthly average forward exchange rates as at August 2011 produce materials cost forecasts that reasonably reflect the opex and capex criteria. The AER will update these rates, as well as commodity price forecasts, in its final decision to reflect the most current rates available.

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104 Powerlink, *Revenue proposal 2013–2017*, 2011, p. 67.

105 See, for example, Meese, R, Rogoff, K, 'Empirical exchange rate models of the seventies: do they fit out of sample?', *Journal of International Economics*, volume 3, 1983, pp. 3–24. More recently, Rogoff, K, *The Failure of Empirical Exchange Rate Models: No Longer New but Still True*, www.economics.harvard.edu/files/faculty/51_EP_Web2001.pdf, accessed 24 October 2011, October 2001.

106 Strictly speaking, forward exchange rates are not exchange rate forecasts. Forward rates reflect the current spot rate and interest rate differentials between the two countries. According to the forward rate unbiasedness hypothesis, if market participants are assumed to be rational and risk neutral, then the forward rate is an unbiased predictor of the expected future spot rate. However, results of empirical testing of the hypothesis have been mixed. [dn: insert reference]

107 SKM, *US$ based cost escalation factors for upcoming regulatory period to June 2017*, Appendix I to Powerlink's regulatory proposal, March 2011, pp. 7–8.

1.4.9 Land value escalation

Powerlink requested Urbis to generate estimates of land value escalators. Urbis has estimated land value growth forecasts using trend analysis and its detailed understanding of the relationships between the real economy, development cycles and the property market.[108] In recent electricity transmission determinations, the AER has used the historic average increase in land value, as published by the ABS, as the forecast land value escalation rates.[109]

The AER is not satisfied that Powerlink's proposed real land value escalators for the period 2012-13 to 2016-17 reasonably reflect a realistic expectation of the cost inputs required to achieve the opex and capex objectives.[110] The AER used the historic land values data published by the ABS for Queensland from 1988–89 to 2009-10 for calculating the forecast real land value escalators for Powerlink for the period 2012-13 to 2016-17.[111]

The AER has recalculated the real urban and rural land escalator for 2010-11 using the Urbis's forecast nominal urban and rural land values and a CPI of 3.3 per cent for 2010-11. The AER accepts Powerlink's proposed real land value escalators for 2011-12. table 1.8 sets out the AER's draft decision on Powerlink's real land value escalators.

Table 1.8 Powerlink's proposal and AER's draft decision on real land value escalators (per cent)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Powerlink proposed							
Urban land	–2.5	5.5	10.5	14.5	15.5	14.5	12.5
Rural land	1.5	8.5	10.5	9.5	9.5	9.5	8.5
AER decision							
Urban land	–3.3	5.5	8.4	8.4	8.4	8.4	8.4
Rural land	0.7	8.5	8.8	8.8	8.8	8.8	8.8

Source: Powerlink, *Regulatory proposal 2013–2017*, 2011, p. 67; AER analysis; ABS, *Australian system of national accounts 2009-10: 5204.0,* table 61.

Note: The AER's urban land escalation rate for 2012-13 to 2016-17 are calculated by averaging the ABS's urban and commercial land value data for Queensland for the period 1988–89 to 2009-10. The AER's rural land escalation rates for 2012-13 to 2016-17 are calculated by averaging the ABS's rural land value data for Queensland for the period 1988–89 to 2009-10. The ABS's land value data is in nominal terms. The AER calculated the forecast real land value escalation rated using a CPI of 2.5 per cent.

The AER considers that the recent flooding and cyclones in Queensland will have a negative impact on both urban and rural land value in a short term. It therefore considers the lower

108 Powerlink, *Revenue proposal 2013–2017: Appendix J: forecast of land value escalation—Queensland*, 2011, p. 4.

109 AER, *Draft decision: ElectraNet transmission determination 2008–2013*, 2007, p. 93; AER, *Draft decision: TransGrid transmission determination 2009–2014*, 2008, p. 258.

110 NER, clause 6A.6.6(c)(3) and 6A.6.7(c)(3).

111 ABS, 5204.0 Australian System of National Accounts, 29 October 2010, table 61.

forecasts proposed by Powerlink for 2010-11 and 2011-12 land escalators are reasonable. However, the AER notes that Powerlink proposed real urban and rural land escalator for 2010-11 are –2.5 per cent and 1.5 per cent respectively.[112] The Urbis's forecast nominal urban and rural land escalator for 2010-11 are zero per cent and four per cent respectively.[113] This implies that Powerlink has used a CPI of 2.5 per cent for 2010-11 for the calculation of real land value escalation for 2010-11. It further notes that the CPI for 2010-11 in Powerlink's Roll Forward Model is 3.3 per cent. It therefore recalculated the real urban and rural land escalator for 2010-11 using a CPI of 3.3 per cent.[114]

The AER is not satisfied that Powerlink's proposed land value escalation rates for the period 2012-13 to 2016-17 reasonably reflect a realistic expectation of growth in land values in Queensland. In recent electricity transmission determinations, the AER used the average of ABS land value data series as the forecast land value escalation rates. [115] To assess the reasonableness of Urbis's forecasts, the AER compared the proposed land value escalators for the period 2012-13 to 2016-17 with the average of historical land value data for the period 1989-90 to 2009-10. Figure 1.3 shows Powerlink's forecast growth in urban land value for the period 2012-13 to 2016-17 are significantly higher than the long-term average growth rate of ABS rural and commercial land values for Queensland. Figure 1.4 shows that 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 notes that Urbis's forecasts has taken into account several forecast economic variables, such as the Queensland gross state product (GSP), employment and population growth. Urbis also conducted review of historical land values for the period 2000 to 2010.[116] Figures 1.5 and 1.6 show an apparent lag between the growth in the economic variables used by Urbis and growth in land values. The AER considers that economic and population growth may impact on the growth in land value. However, it considers that the degree and timing of the flow–on effect from economic and population growth through to land values may be uncertain.

Therefore, the AER considers 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 is because 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. Also, this approach is consistent with that previously applied in the AER's electricity transmission determinations.[117]

The AER thus considers that the long-term historical average of Queensland land values, as reported by the ABS, provides a more realistic expectation of land value escalation rates for

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112 Powerlink, *Regulatory proposal 2013–2017*, 2011, p. 67;

113 Powerlink, *Revenue proposal 2013–2017: Appendix J: forecast of land value escalation—Queensland*, 2011, pp. 2 and 3.

114 The AER notes that it only used the nominal land escalators in its modelling. Therefore, the changes in the real 2010-11 urban and rural land escalators do not have an impact on any of the AER's modelling results.

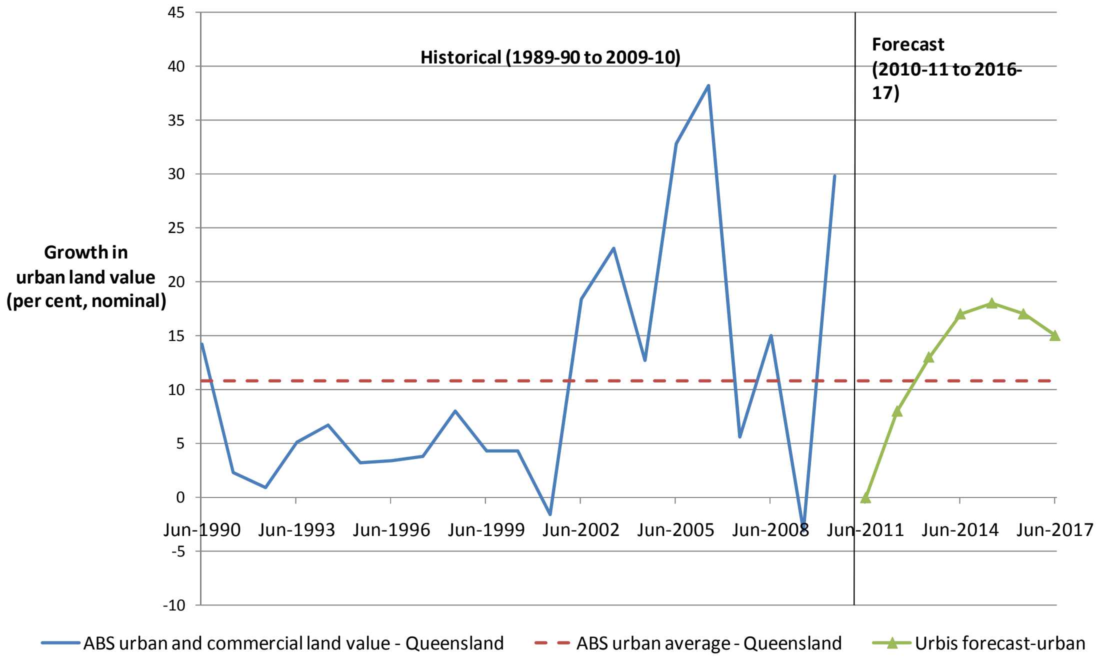
115 AER, *Draft decision: ElectraNet transmission determination 2008–2013*, 2007, p. 93; AER, *Draft decision: TransGrid transmission determination 2009–2014*, 2008, p. 258.

116 Powerlink, *Revenue proposal 2013–2017: Appendix J: forecast of land value escalation—Queensland*, 2011, pp. 4–10.

117 AER, *Draft decision: ElectraNet transmission determination 2008–2013*, 2007, p. 93; AER, *Draft decision: TransGrid transmission determination 2009–2014*, 2008, p. 258.

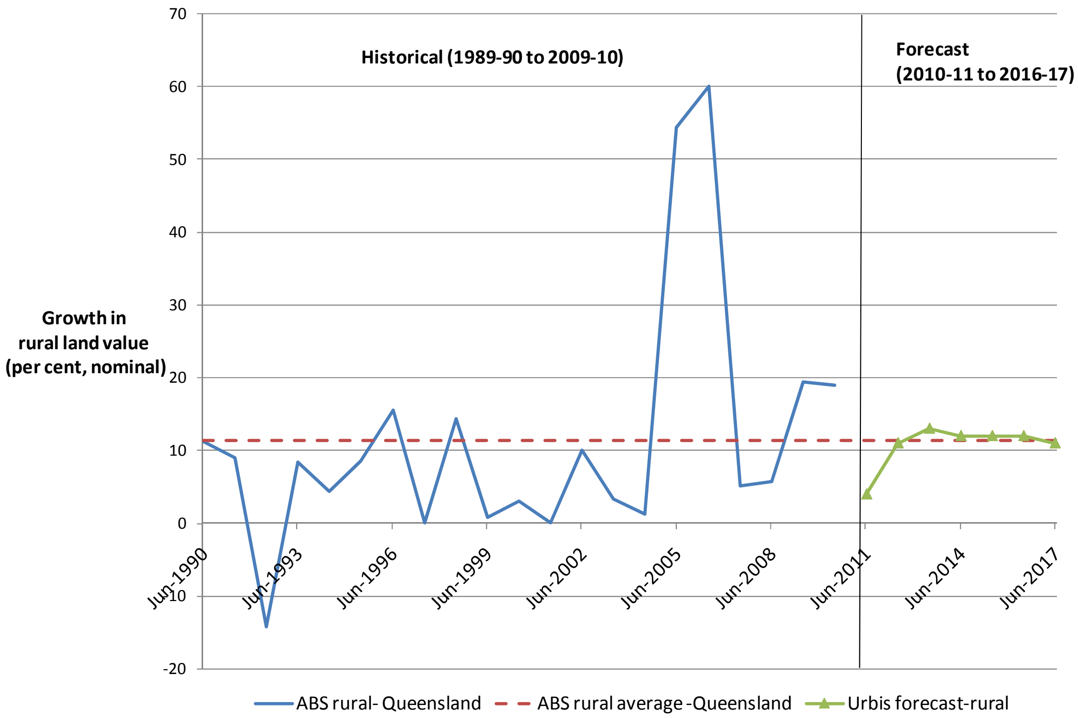
for the period 2012-13 to 2016-17. The AER considers that the land value escalators in table 1.8 reflect the efficient costs a prudent TNSP would require to meet the capex and opex objectives.

Figure 1.3 Comparison of Powerlink's forecast urban land value and ABS long-term average urban land value



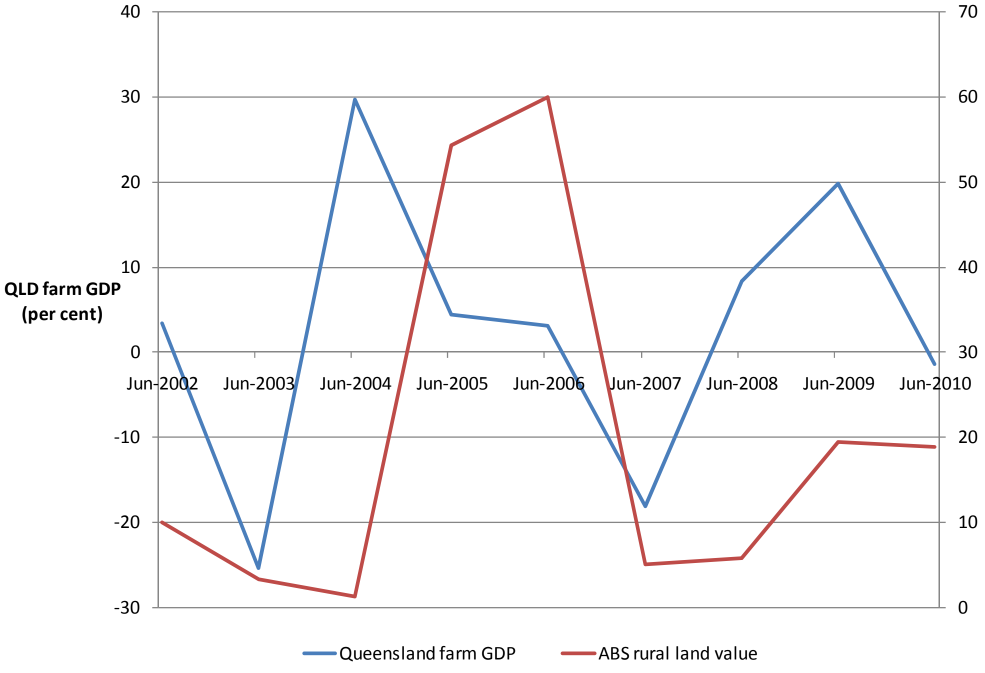
Source: AER analysis.

Figure 1.4 Comparison of Powerlink's forecast rural land value and ABS long-term average rural land value



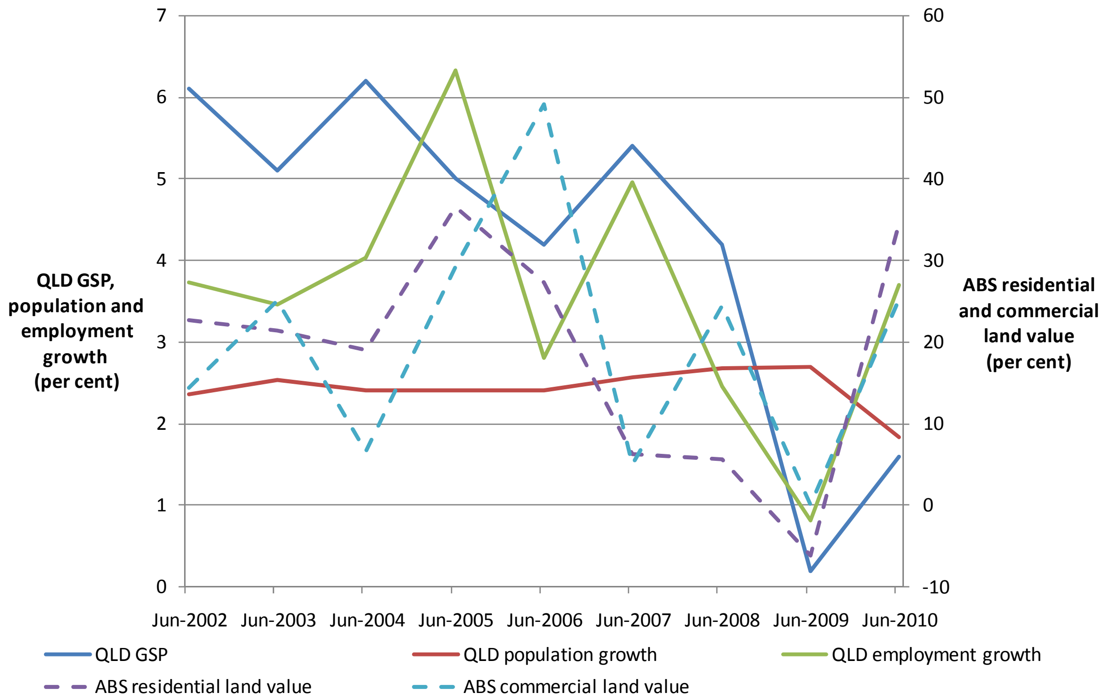
Source: AER analysis.

Figure 1.5 Growth in Queensland farm GDP compared with growth in ABS rural land value



Source: ABS, 5204.0 Australian System of National Accounts, 29 October 2010, table 5 and 61.

Figure 1.6 Growths in Queensland GSP, employment and population compared with growth in ABS residential and commercial land values



Source: ABS, *5204.0 Australian System of National Accounts*, 29 October 2010, Table 61; ABS, *5220.0 Australian National Accounts: State Accounts 2009-10, Novenmber 2010, Table 1;*

ABS, *3101.0 Australian Demographic Statistics*, 29 September 2011, Table 4; ABS, *6202.0 Labour Force—Australia*, October 2011, Table 6.

1.5 Revisions

Revision 1.1: The AER has used forecast movements in the LPI, adjusted for labour productivity improvements, to forecast the change in labour costs from 2011-12.

Revision 1.2: The AER has not applied the 0.5 per cent productivity payment component of the negotiated wage increases in Powerlink's current collective agreement ending in November 2011.

Revision 1.3: The Australian Government's intended superannuation guarantee rate increases have not been included in the applied labour cost escalators.

Revision 1.4: Real cost forecasts have been updated to reflect the most current available market information.

Revision 1.5: Forecast foreign exchange rates have been adjusted to reflect rates in the forward markets.

Revision 1.6: Forecast land values have been escalated by the historic average annual increase in land values, as published by the ABS for Queensland from 1988–89 to 2009-10.

2 Demand forecasting

This attachment sets out the AER's consideration of Powerlink's proposed demand forecast for the next regulatory control period. In this attachment, demand refers to summer peak demand (MW) unless otherwise indicated. Demand is an important input into Powerlink's capital expenditure (capex) forecast for the next regulatory control period, particularly load driven capex. Summer peak demand drives network augmentation projects, which comprise approximately 50 per cent of Powerlink's forecast capex.

The AER engaged Energy Market Consulting associates (EMCa) to advise on Powerlink's demand forecasts, and to assist the AER to develop alternative demand forecasts if the AER is not satisfied that forecasts comply with the NER's requirements.

2.1 Draft decision

The AER considers Powerlink's demand forecast is not a realistic expectation of demand for the next regulatory control period. Table 2.1 sets out the AER's alternative demand forecast. The changes are material and have a large impact on capex. Thus, Powerlink's load driven capex forecast does not meet the alternative demand forecasts. In turn, Powerlink's load driven capex does not meet the capex criteria.[118]

Table 2.1 AER draft decision on Powerlink's peak summer demand forecast—medium scenario 10 per cent PoE (MW)[119]

	2012-13	2013-14	2014-15	2015-16	2016-17
Powerlink	10 252	10 907	11 450	11 984	12 437
AER	9 632	10 090	10 547	10 931	11 146
Powerlink minus AER	620	817	903	1 053	1 291

Source: Powerlink, *Annual Planning Report 2010*, p. 28; EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*, 6 September 2011, p.51.

Note: PoE (probability of exceedence) describes a probability that the temperature adjusted demand will be exceeded one in every two years (50% PoE), one in ten years (10% PoE) and nine in ten years (90% PoE). Powerlink uses 50% PoE summer peak demand for presentation purposes in its revenue proposal and APRs. For planning purposes, Powerlink uses peak summer demand at 10% PoE.[120]

2.2 Powerlink's proposal

Figure 2.1 shows Powerlink's demand forecasts for the next regulatory control period and actual and corrected demand from 2000-01 to 2009-10. Powerlink used demand forecasts in

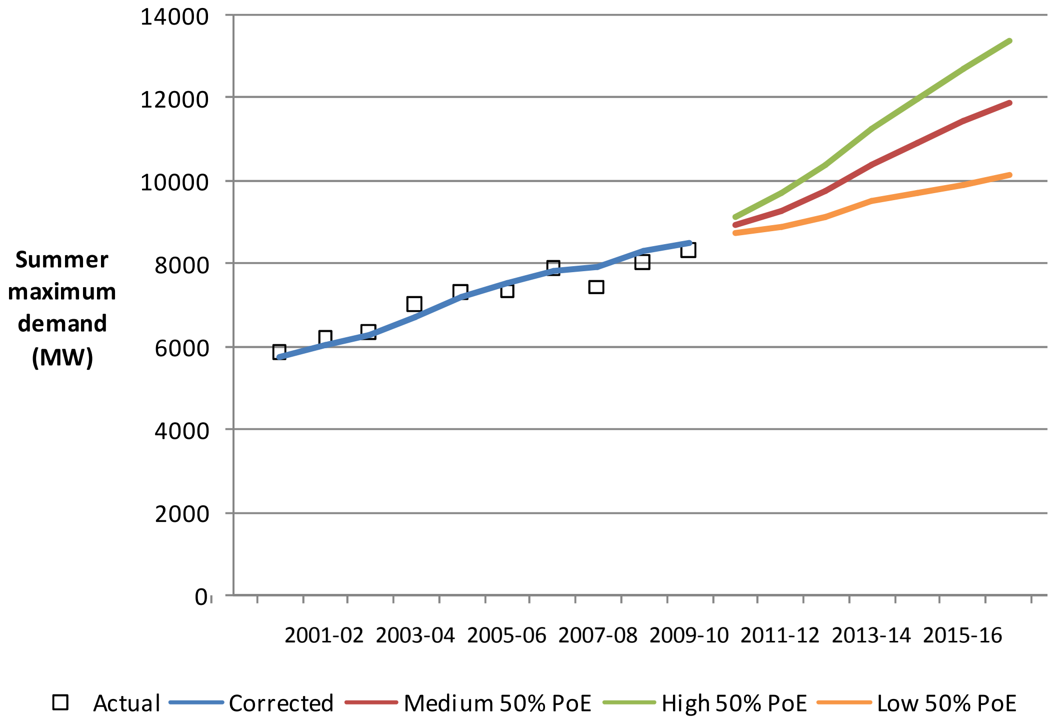
118 NER, clause 6A.6.7(c).

119 Table 2.1 sets out the AER's decision on Powerlink's peak summer demand forecast for the medium scenario at 10 per cent PoE. Any other forecasts that Powerlink uses for planning purposes should be similarly adjusted.

120 Powerlink, *2013–2017 Revenue proposal*, *Appendix F*, *Powerlink planning criteria*, June 2010, p. 7; EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to Australian Energy Regulator*, 6 September 2011, p. 58.

its 2010 Annual Planning Report (APR) as the basis of its revenue proposal, including the capex forecasts.

Figure 2.1 Powerlink's actual and forecast native demand[121]



Source: Powerlink, *Annual Planning Report 2010*, p. 28.

Powerlink forecasted an average annual increase in demand of 4.2 per cent over the next regulatory control period, attributable to:

- the resource industry boom (particularly in the Surat Basin)
- strong population growth[122]
- return to pre-Global Financial Crisis (GFC) economic growth trends[123]
- the continuing penetration of domestic air conditioning.[124]

Powerlink used a 'Bottom up/Top down' approach to demand forecasting. Direct connect customers and the Queensland distribution network service providers (DNSP) Ergon and Energex provided Powerlink with 10 year demand (and energy) forecasts. Powerlink used

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121 Native demand includes the output of embedded exempted and non-scheduled generators. It is effectively the delivered demand when embedded exempted and non-scheduled generators are offline. Therefore native demand is larger than delivered demand. Powerlink focuses on native demand when developing its forecasts as it reflects underlying customer load.
Powerlink, *Annual Planning Report 2010*, pp. 16–18.

122 Powerlink, *2013–2017 Revenue proposal*, 31 May 2011, p. 59.

123 Powerlink, *Annual Planning Report 2010*, p.14.

124 Powerlink, *2013–2017 Revenue proposal*, 31 May 2011, p. 23.

coincidence factors to construct a bottom up state-wide demand forecast.[125] Powerlink then adjusted the bottom up forecast to take account of embedded non-scheduled generation to enable extraction of bottom up delivered and native demand forecasts. The forecast embedded generation is based on historic data.[126]

Powerlink adjusted the bottom up forecasts further by accounting for corrected demand. Powerlink uses weather and diversity corrected demand (as opposed to actual demand) to establish the starting point and the trend for its demand forecasts. This approach ensured mild or extreme summers do not unduly influence the starting point or the forecast trend. It also smoothed the differing historic contributions of each Queensland region when establishing the starting point.[127] The correction process is summarised below.

Following each summer, Powerlink corrected recorded demand to standard (50 per cent PoE) weather conditions.[128] In the North, Central and South West regions, Powerlink corrected recorded demand to standard conditions using a linear relationship between daily maximum demand and daily average temperature.[129] In South East Queensland (SEQ), Powerlink corrected recorded demand using a non-linear function (an S curve) because SEQ is comparatively large and exhibits higher sensitivity to temperature. The S curve also describes a relationship between daily maximum demand and daily average temperature. Powerlink identified average temperature as having good correlation with peak demand. While it investigated the use of additional weather variables such as humidity, Powerlink stated the fit is less reliable than using the single temperature variable.[130]

Powerlink used actual maximum demand for direct connect customers in the bottom forecasting process.[131]

Powerlink then calculated the coincidence factor for each region for each of the preceding ten summers. The coincidence factor for each region is the ten year rolling average from these previous ten summers. Powerlink used these coincidence factors to calculate the state peak demand.[132]

Powerlink engaged the National Institute of Economic and Industry Research (NIEIR) to construct a top-down demand forecast based on econometric modelling. NIEIR reviewed and modelled state, national and global drivers that affect Queensland’s future electricity usage, including:

- Economic growth outlook at various levels (Queensland state and regional outlook, Australian outlook and international outlook)

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125 A coincidence factor is the actual demand at a region at the time of actual state demand peak divided by the actual peak demand for that region. See Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 7.

126 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, pp. 6–8.

127 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 8.

128 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 8.

129 Average temperature is (max + min)/2.
Powerlink divides its network into five regions: North, Central, South West, South East and direct connect customers.

130 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 10.

131 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, pp. 10–11.

132 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 11.

- Population trends and projections
- Air-conditioning and demand sensitivity to temperature for each geographic area.

Powerlink separated demand forecasts from its large direct connect customers from the NIEIR demand forecasts. This included the coal mining and LNG pumping loads that make up a significant portion of Powerlink's demand forecasts.[133]

Powerlink communicated with NIEIR and the Queensland DNSPs to reconcile differences between the top-down and bottom up forecasts. [134]

2.3 Assessment approach

In assessing Powerlink's forecast capital expenditure, the AER must be satisfied it reasonably reflects the capex criteria. One of the criteria requires that forecast capex reasonably reflects a realistic expectation of demand.[135] If the AER is not satisfied Powerlink's forecast capex reflects a realistic expectation of demand, the AER must not accept Powerlink's forecast and must use a substitute forecast capex.[136]

The NER does not provide guidance regarding the assessment of demand besides the reference to 'a realistic expectation' of demand. To form a view on the reasonableness of Powerlink's demand forecasts, the AER assessed:

- Powerlink's methods and models. A key objective is to assess whether or not there is any unreasonable bias in Powerlink's demand forecasting processes. The AER focused its assessment on Powerlink's:
  - temperature and diversity correction methods. As discussed in section 2.4.2, Powerlink used corrected demand to establish the starting point for its demand forecast. Past corrected demand is also an input into the trend of the demand forecasts.
  - assumptions on key inputs such as population and electricity prices to assess whether they are reasonable and in line with forecasts from independent sources.
- Queensland historic demand trends and their relevance to Powerlink's demand forecasts
- Powerlink's forecasting performance (comparing past forecasts with actual demand)
  - The AER acknowledges demand forecasting is not a precise science. However, assessing forecasting performance can indicate whether Powerlink's demand forecast is biased upward or downward.

The AER's assessment of Powerlink's forecast demand relied on various sources including Powerlink's revenue proposal and responses to information requests, EMCa's analysis and submissions to the revenue proposal.

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133 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 12.

134 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, pp. 5–13.

135 NER, clause 6A.6.7(c)(3).

136 NER, clauses 6A.6.7(d) and (f).

2.4 Reasons for draft decision

The AER considers Powerlink's demand forecast is not a realistic expectation of demand for the next regulatory control period. The AER identified two key issues it considers contributed an upward bias to the starting point and to the subsequent trend of Powerlink's demand forecast:

- Temperature correction method
  - The AER considers Powerlink's use of the S curve in correcting demand in SEQ is not appropriate. 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.
  - The AER considers Powerlink's use of the relationship between daily maximum demand and daily average temperature to correct demand is not appropriate. The AER found daily maximum demand is more highly correlated with daily maximum temperature. The AER thus considers the latter relationship is more appropriate for use in temperature correction.
- Assumptions and inputs to models
  - The AER considers certain inputs to Powerlink's top down forecast (such as population) are considerably higher than forecasts from other sources. The AER is concerned such inputs produced an upward bias to Powerlink's top down demand forecast.
  - Conversely, the AER considers other inputs to Powerlink's top down forecast (such as electricity prices) are considerably lower than forecasts from other sources. The AER also considers Powerlink did not appropriately recognise falling energy intensity trends when calibrating its econometric models. The AER is concerned such inputs and assumptions also biased Powerlink's top down demand forecast upward.

Sections 2.4.2 and 2.4.3 discuss these issues in more detail.

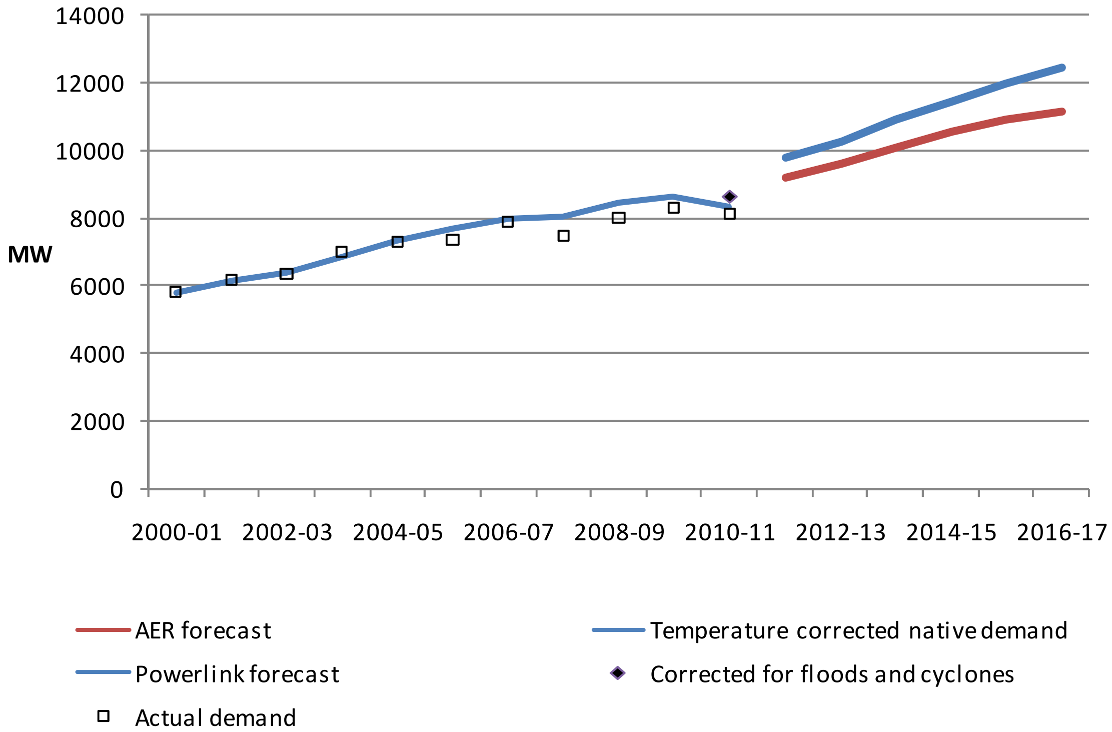
Section 2.4.4 compares Powerlink's past demand forecasts with actual demand. It shows Powerlink consistently over-forecasted demand in the current regulatory control period. This section also discusses submissions regarding demand, and Powerlink's responses to those submissions. Many submissions consider Powerlink's demand forecast is not consistent with consumption and demand trends.

For these reasons, the AER substituted an alternative demand forecast for the next regulatory control period (table 2.1). The AER considers its alternative demand forecast is a realistic expectation of demand.[137] Figure 2.2 compares Powerlink's and the AER's forecast demand for the next regulatory control period. This figure also shows actual and corrected demand between 2000-01 and 2010-11 (the latter of which includes demand corrected for the floods and cyclones). Figure 2.3 shows the difference between Powerlink's and the AER's forecast

[137] NER, clause 6A.6.7(c)(3).

as a percentage of the AER's forecast. The AER considers Powerlink's demand forecast is materially different to the AER's demand forecast. The AER therefore used its alternative demand forecast to assess whether Powerlink's forecast capex reasonably reflects the capex criteria (see section 3.4.5).[138]

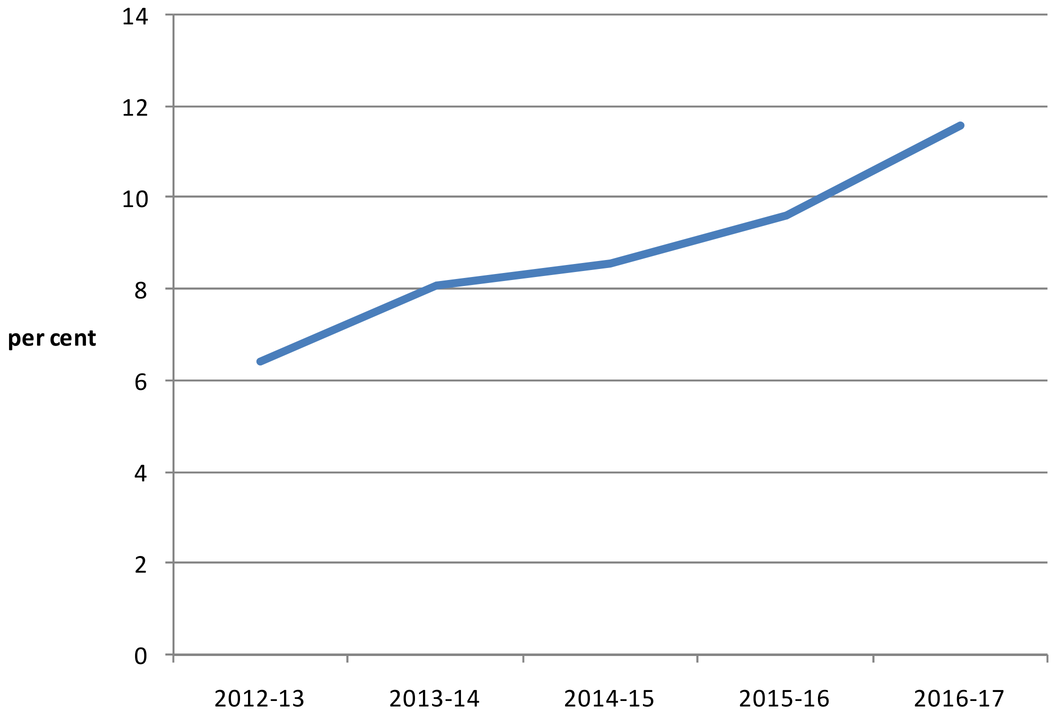
Figure 2.2 Powerlink's and the AER's demand forecast (10 per cent PoE) with past actual and corrected native demand



Source: Powerlink, *Annual Planning Report 2010*, p. 28; Powerlink*, Annual Planning Report 2011*, pp. 3 and 30; EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*, 6 September 2011, p.51.

138 NER, clause 6A.7.6(c)(3).

Figure 2.3 Powerlink minus AER demand forecast (as a percentage of the AER demand forecast)



Source: Powerlink, *Annual Planning Report 2010*, p. 28; EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*, 6 September 2011, p. 51.

2.4.2 Temperature correction

The AER recognises that adjusting actual demand for weather and diversity is reasonable in principle and is common practice among network service providers in the NEM. It ensures that one-off events do not unduly bias demand forecasts. For example, Queensland's actual demand for the 2010-11 summer would not be representative because of the floods and cyclones that occurred that summer. Thus using actual demand for the 2010-11 summer as the starting point would bias the forecasts.[139] The AER's analysis, however, points to systemic issues with Powerlink's temperature correction methods. These issues result in an upward bias to Powerlink's demand forecast.

Powerlink's S curve for the south east region

Powerlink used an S curve to correct actual demand in the South East region. Figure 2.4 shows the S curve for 2010-11 with the 50 per cent PoE reference temperature of 30 degrees Celsius (degrees C). That is, Powerlink corrects actual demand in the South East region to

139 Powerlink corrected 2010-11 summer maximum demand for floods and cyclones in the 2011 APR. Powerlink's revenue proposal, however, used demand forecasts from the 2010 APR, which was published prior to the floods and cyclones. The AER has used the 2011 APR (and previous other APRs) as a cross check to Powerlink's revenue proposal.

the standard temperature of 30 degrees C. The reference temperature for 10 per cent PoE is 32.2 degrees C.[140]

The AER considers that using the S curve to correct demand leads to an upward bias. The AER considers it is appropriate to use a linear relationship between temperature and demand in SEQ, consistent with the process in the other Powerlink regions.

Figure 2.4 depicts how Powerlink corrects actual demand to the relevant reference temperature. The blue arrow represents the upward correction to actual demand when actual temperature was approximately 29 degrees C. It shows that the upward adjustment to demand for temperatures less than the 50 per cent PoE reference temperature occurs at the steeper section of the S curve. Upward adjustments are thus greater than downward adjustments for proportional deviations from the reference temperature.[141]

The AER considers Powerlink did not sufficiently justify its reasons for using the S curve for SEQ or its specifications (such as the bounds of 20 and 34 degrees C).[142] EMCa investigated the relationship between demand and average temperature for SEQ using data from the summers between 2000 and 2011. EMCa stated the S curve does not provide a clearly improved fit to data compared to a linear relationship.[143]

The data also does not support the 20 degree and 34 degree bounds Powerlink used.[144] The bounds effectively make the steep sections of the cubic S curve steeper. The AER is concerned this exacerbates the upward bias which it considers is already present in the S curve.

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140 EMCa, *Demand forecast review*, 6 September 2011, p. 9.

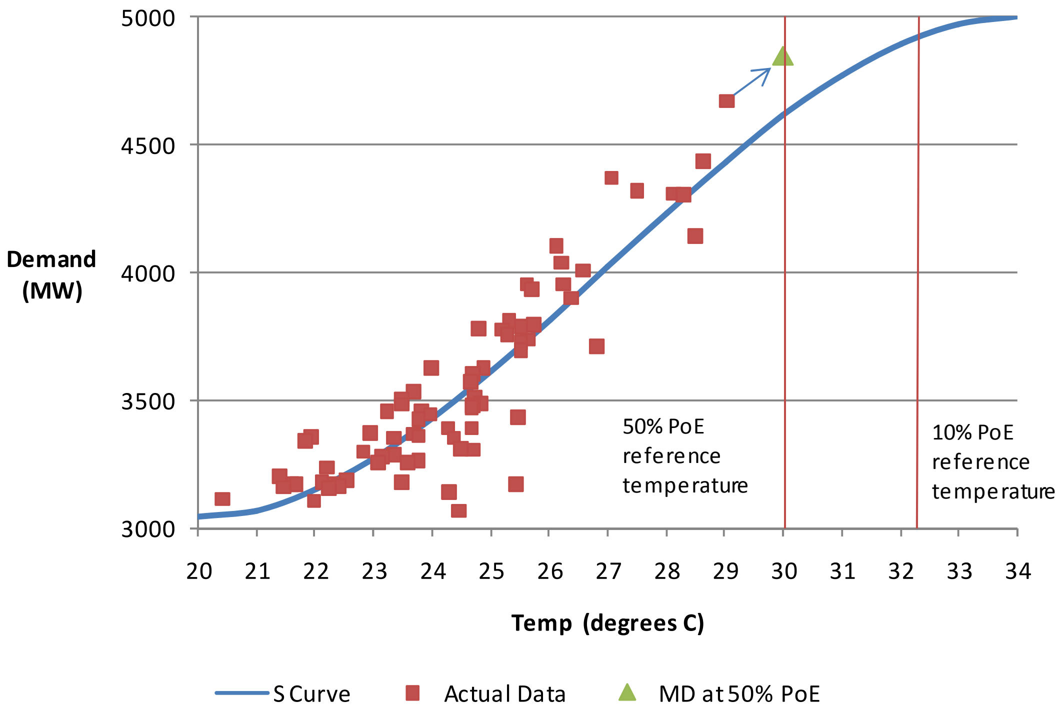
141 EMCa, *Demand forecast review*, 6 September 2011, p. 27.

142 Powerlink, *Demand and energy forecasting description and methodology*, June 2010, p. 10.

143 EMCa, *Demand forecast review*, 6 September 2011, p. 27.

144 EMCa, *Demand forecast review*, 6 September 2011, pp. 27–28.

Figure 2.4 Powerlink S curve for 2010-11



Source: Powerlink, *Response to information request EMCa/DFR008 requested at meeting 12 July 2011*, received 13 July 2011; Powerlink, *Annual Planning Report 2011*, p. 87.

Note: The S curve in the 2010 APR is very similar to this figure. See Powerlink, *Annual Planning Report 2010*, p. 93.

Powerlink's use of average temperatures

Powerlink corrects actual demand to standard temperature to establish the starting point for its demand forecasts. To do this, Powerlink uses the relationship between daily maximum demand and average temperature for each region (except for direct connect customers).

The AER considers this approach is not appropriate because average temperatures may not reflect the full impact on demand compared to maximum temperature. The AER considers it is more appropriate to use a relationship between peak demand and maximum daily temperatures rather than average daily temperatures.

EMCa tested peak demand's relationship with maximum and average temperatures, respectively, and found a higher correlation (R^2) between peak demand and actual maximum temperature. This occurred despite the greater influence of outliers when using maximum temperature, which lower R^2. EMCa stated two recent studies also support the use of maximum temperature for temperature adjustment.[145]

EMCa stated the use of average temperatures results in a steeper slope to a linear regression line. This in turn results in a higher demand (MW) adjustment per degree C compared to maximum temperatures.[146] Because actual temperatures have been below average for

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145 EMCa, *Demand forecast review*, 6 September 2011, pp. 27–28.

146 EMCa, *Response to information request AER/034 of 13 September*, received 14 September 2011.

several years, Powerlink has been correcting demand upward, including the starting point of the revenue proposal's demand forecasts (see figure 2.13). It appears these upward corrections have been greater because Powerlink used average temperatures in its correction process.

2.4.3 Assumptions and inputs to models

Powerlink engaged NIEIR to provide a top down demand forecast. Powerlink uses the top down forecast as a cross check to the bottom up forecasts direct connect customers and the Queensland DNSPs provide.

Powerlink did not provide NIEIR's model, so the AER and EMCa were not able to assess the functional forms that derive forecasts from historical demand data and drivers.[147] However, the AER and EMCa were able to assess NIEIR's inputs and assumptions behind the top-down forecasts. The AER considers certain inputs and assumptions to the models would introduce an upward bias and therefore affect the validity of the top down forecasts.

The following sections describe issues with these inputs and assumptions in more detail.

Population

EMCa observed that the macroeconomic variables NIEIR used appear to be on the upper end of accepted forecast ranges.[148] The AER considers this particularly applies to population, a key driver of demand, and this would introduce an upward bias to the top down forecast.

Figure 2.5 compares Queensland population forecasts from NIEIR, KPMG, Queensland Government Budget and the Australian Bureau of Statistics. The NIEIR forecasts represent its base case scenario (akin to a 'medium' scenario). While forecast population growth rates appear consistent among the forecasters, NIEIR begins from a noticeably higher base. NIEIR's population forecast remains noticeably higher than the other forecasts for the whole of the next regulatory control period. This figure appears to confirm EMCa's view that NIEIR's macroeconomic variables are on the upper end of the forecast range. The AER is concerned the use of these inputs would bias the demand forecast upward.

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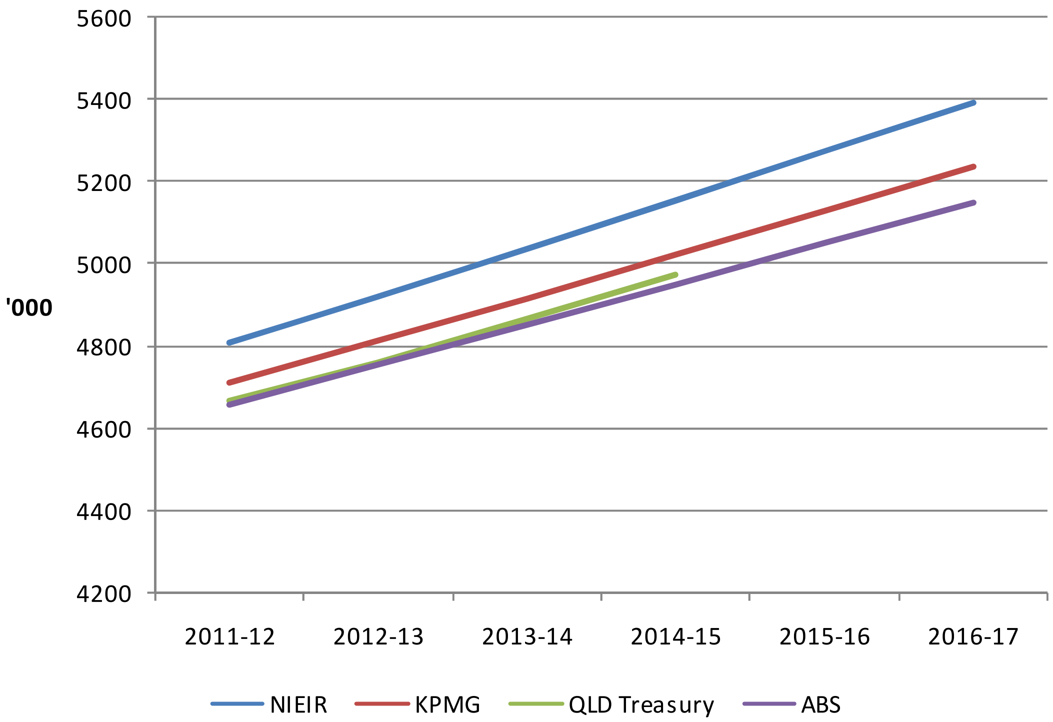
147 EMCa, *Demand forecast review*, 6 September 2011, p. 19.

148 EMCa, *Demand forecast review*, 6 September 2011, p. 43.

Figure 2.5 Queensland population forecasts ('000)



Source: NIEIR, *Long run economic and electricity load forecasts to 2024–25 for the Queensland electricity network*, April 2010, p. 29, CONFIDENTIAL; KPMG data from Powerlink, *Response to information request EMCa DFR1 of 23 June 2011*, received 27 June 2011; Queensland Government Budget, *State budget 2011-12*, *Budget strategy and outlook*, *Budget paper no. 2*, 2011, pp. 36–38; ABS 3222.0, 4 September 2008.

Note: The AER derived 'QLD Treasury' population forecasts by applying Queensland Government Budget's population growth rate forecasts to historic ABS population data. The AER understands Queensland Government Budget used ABS demographic statistics for its population forecasts.

Electricity prices

The AER considers NIEIR's assumptions about electricity price rises are on the lower end of forecast ranges. Depending on the functional form of NIEIR's models, the AER considers NIEIR's assumption would bias the demand forecast upward.

Confidential information deleted. On the other hand, the Queensland Energy Minister expects retail price rises of 10 per cent per year.[149]

EMCa's analysis suggests price rises for the next regulatory control period would be more in line with the Queensland Energy Minister's forecasts.[150] The Australian Energy Market Commission (AEMC) forecasts Queensland residential electricity prices will rise by

[149] Future Sustainability, *Queensland electricity prices soar June 2011*, 1 June 2011. www.futuresustainability.com.au/news_details/news/queensland_electricity_prices_soar_june_2011

[150] EMCa, *Demand forecast review*, 6 September 2011, p. 35.

32.3 per cent from 2009-10 to 2012-13.[151] This translates to a rise of 8.1 per cent per year and also aligns more closely with the Queensland Energy Minister's forecasts.

Temperatures

NIEIR calculates temperatures associated with 10 per cent, 50 per cent and 90 per cent PoE using 50 years of temperature data from the Queensland distribution regions. Confidential information deleted.

Energy sector assumptions—sectoral growth

Figure 2.6 shows the breakdown by sector of NIEIR's energy forecasts. It is not clear to the AER whether NIEIR's growth rate assumptions for the commercial sector are justified. The AER considers these assumptions would have introduced an upward bias to Powerlink's demand forecasts.

EMCa also expressed concern regarding NIEIR's assumption of high growth rates for the commercial sector. EMCa stated this is counterintuitive considering economic activity outside of the mining sector is relatively flat.[152]

The Queensland Government Budget expects GSP to grow by around five per cent per year in 2011-12 and 2012-13 before levelling off at four per cent per year for the next two years. It appears activities in the mining sector are the main contributor to these forecast growth rates:

> Economic growth is forecast to strengthen to an above average 5¼% in 2012-13. Business investment is forecast to grow another 21¾%…with strong resources activity complemented by some recovery in retail and office construction. Higher investment is expected to lead to stronger migration and population growth, supporting a further rise in dwelling investment...growth in consumer spending is forecast to return to an above average rate, following four years of below average growth. Capacity expansions should see resource exports rise further in 2012-13, while a lower A$ by this time will support manufacturing and services exports.
>
> Economic growth is projected to remain strong, averaging 4% in 2013-14 and 2014-15... Domestic capacity expansions and strong growth in emerging Asia are expected to support resource exports. Further, while the completion of some major resource projects may see a slower rate of investment growth late in the projection period, exports growth is likely to be boosted as these projects commence production. While interest rates are likely to remain restrictive, household demand is expected to be supported by stronger population growth, a tight labour market and rising incomes.[153]

Figure 2.6 NIEIR energy forecasts by sector

Confidential information deleted.

Energy and demand trends

Queensland has demonstrated decreasing energy intensity over the past decade. The AER considers Powerlink did not sufficiently take into account the change in energy intensity when deriving its demand forecast.

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[151] AEMC, *Future Possible Retail Electricity Price Movements: 1 July 2010 to 30 June 2013*, Final report, 30 November 2010, p. iv.

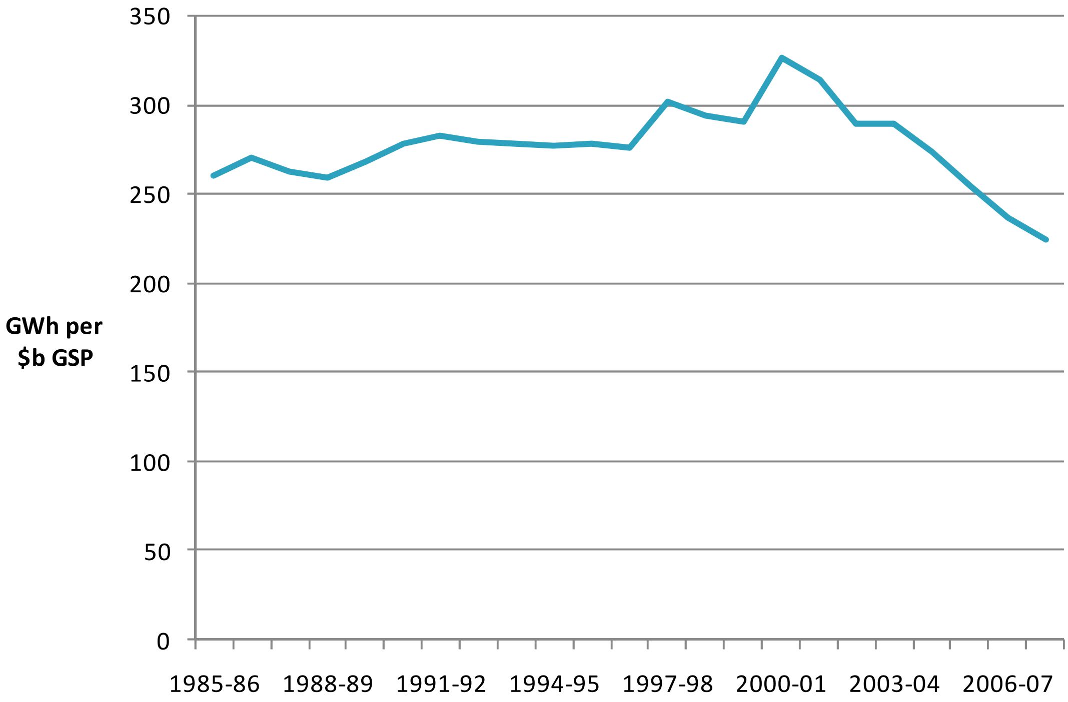
[152] EMCa, *Demand forecast review*, 6 September 2011, p. 37.

[153] Queensland Government Budget, *State budget 2011-12*, *Budget strategy and outlook*, *Budget paper no. 2*, 2011, pp. 35–38.

Figures 2.7 and 2.8 show a trend of decreasing energy intensity in Queensland in the last 10 years. This has coincided with increasing real retail prices over the same period (see figure 10 in EMCa's demand forecasting review). EMCa stated:

> Our examination of the long term trend with Queensland energy consumption suggests a changing relationship between energy and drivers may have occurred during the last 10 years and that this may continue to change in the future... Our experience with the analysis of longer term trends with these explanatory variables has revealed that the relationships change over time especially when there are shifts in economic conditions, consumer behaviours and or sustained changes in real prices.[154]

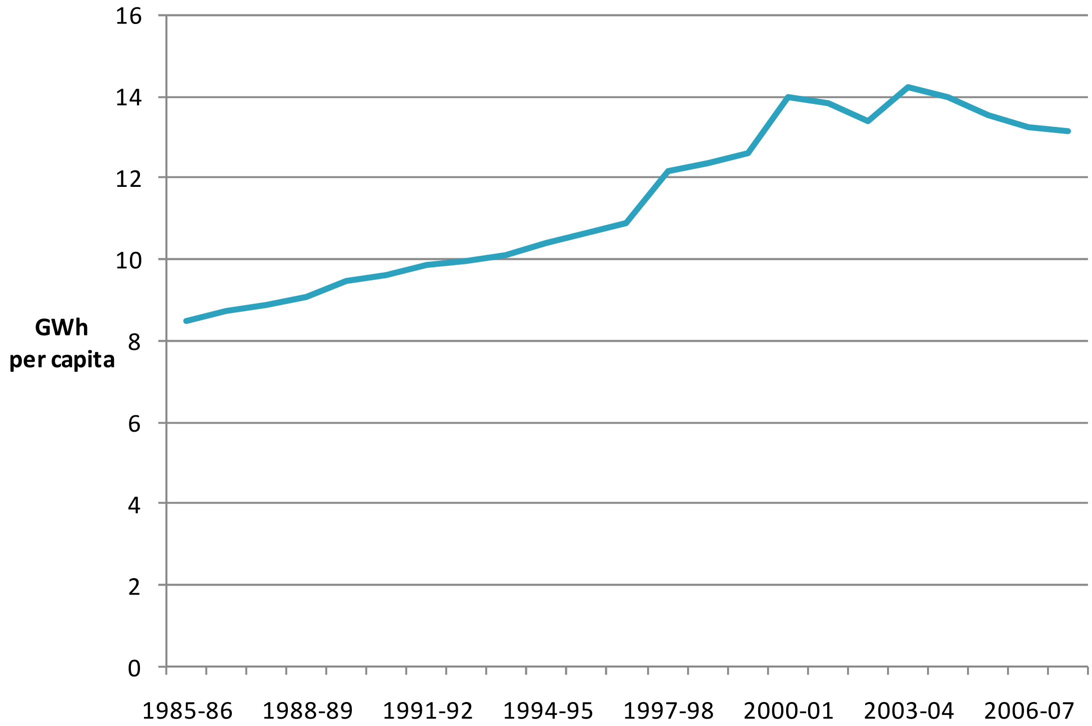
Figure 2.7 Queensland energy per unit GSP



Source: EMCa, *Demand forecast review*, 6 September 2011, p. 20.

[154] EMCa, *Demand forecast review*, 6 September 2011, p. 19.

Figure 2.8 Queensland energy per capita



Source: EMCa, *Demand forecast review*, 6 September 2011, p. 20.

This pattern of falling energy intensity is not unique to Queensland. The Total Environment Centre (TEC) and the Energy Users Association of Australia (EUAA) stated electricity consumption growth has reduced considerably in the past three years.[155] TEC submitted, 'most analysts are projecting that average energy consumption and peak demand has plateaued and is now reducing.'[156] Ausgrid reported demand for electricity by NSW households has fallen by two per cent for each of the past four years.[157]

The EUAA and the Powerlines Action Group Eumundi Inc (PAGE) stated this is partly due to consumers moderating their electricity usage due to higher prices, and to improved insulation and other energy efficiency measures. The increased penetration of household solar PV systems has also contributed. PAGE stated Powerlink did not incorporate these trends in its demand forecasts.[158]

Figures 2.9 to 2.11 support the view that electricity consumption and peak demand growth in the National Electricity Market (NEM) is falling. Figure 2.9 shows electricity distributed by transmission network service providers (TNSPs) in the NEM peaked in 2006-07 and has been

155 TEC, *Submission to the AER*, *Powerlink revenue determination 2013–2017*, *Response to Powerlink's initial revenue proposal*, August 2011, p. 8; EUAA, *Submission to the Australian Energy Regulator on Powerlink's regulatory proposal 2012–2017*, August 2011, p. 9.

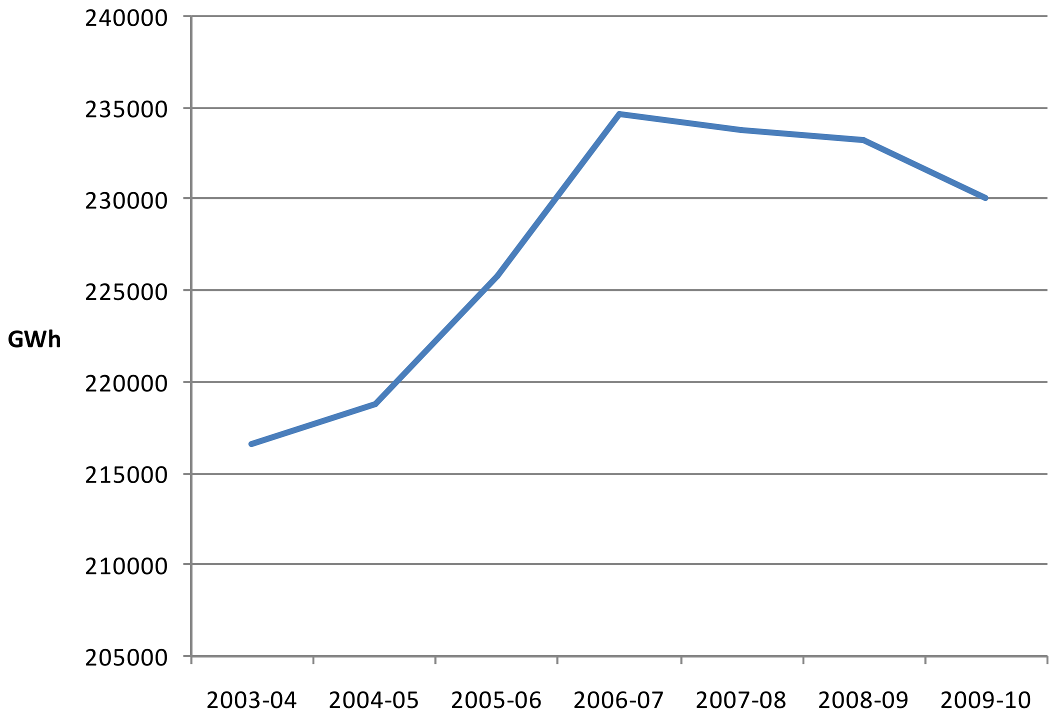
156 TEC submission, August 2011, p. 8.

157 7 News, *Power consumption makes historic drop*, 15 August 2011.

158 EUAA submission, August 2011, p. 9; PAGE, *Submission to the AER review of the Powerlink revenue reset application for 2012 to 2017*, 12 August 2011, p. 3.

declining ever since.[159] Figure 2.10 shows the year on year percentage change in electricity distributed and peak demand among the TNSPs in the NEM. Both metrics appear to be on a downward trend since the middle of the last decade. Figure 2.11 shows the year on year percentage change in electricity consumption in the NEM states from 1961-62. It supports the view that electricity consumption growth is falling in both the long term and in the last five years or so.

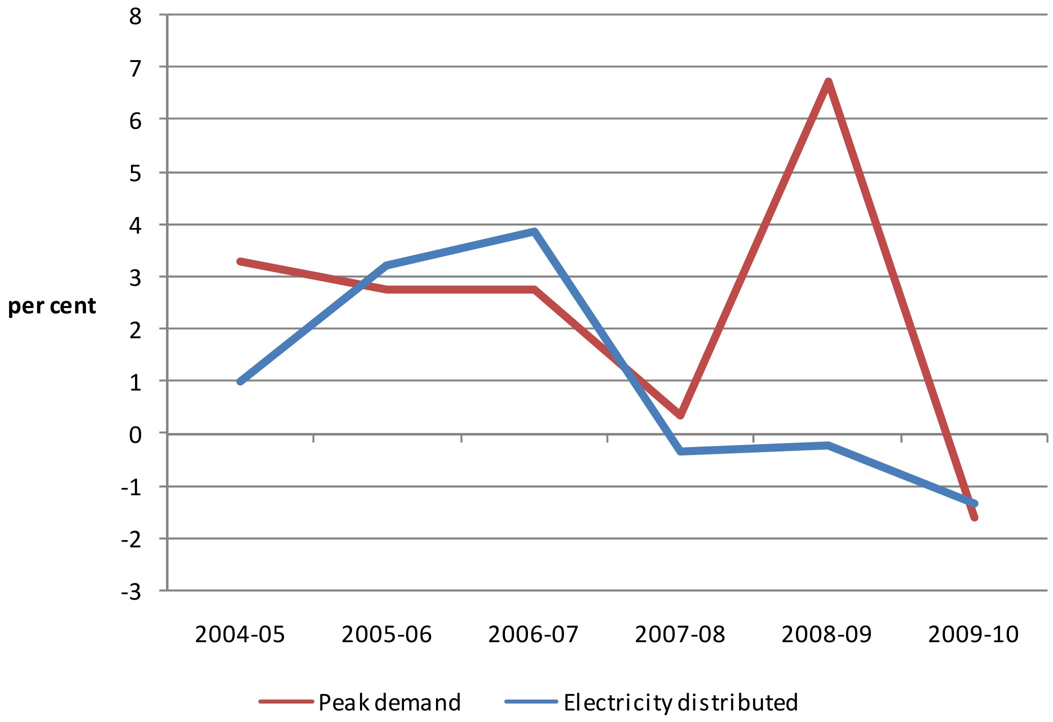
Figure 2.9 Electricity distributed by TNSPs in the NEM (GWh)



Source: AER

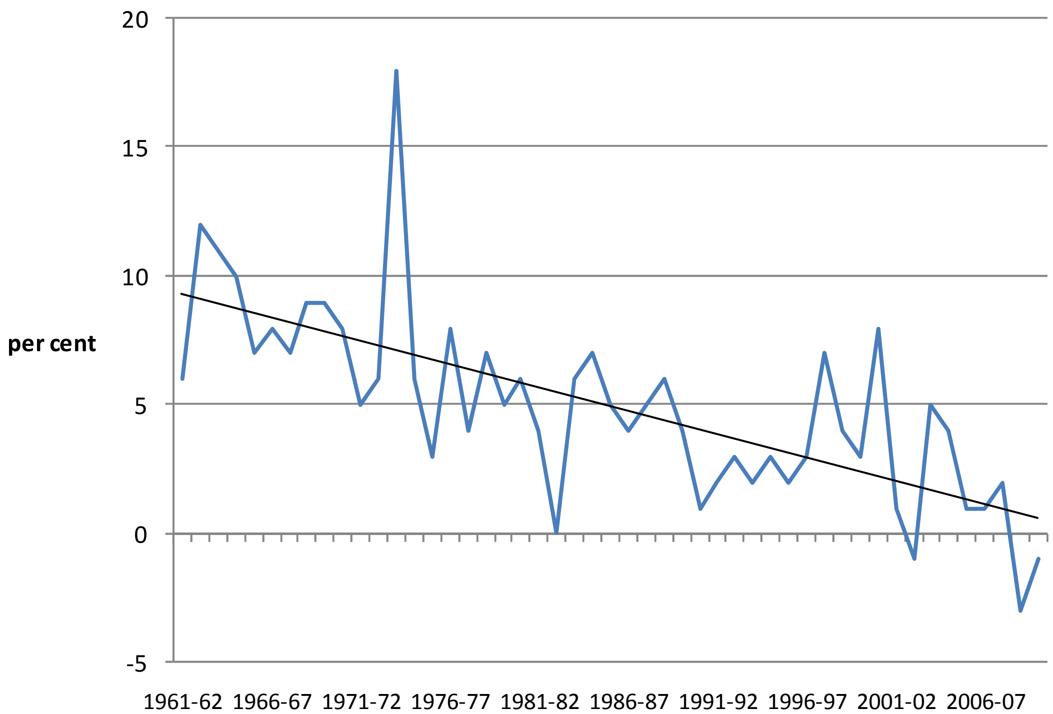
[159] The TNSPs in the NEM up to 2009-10 are ElectraNet, Powerlink, SP AusNet, Transend, Transgrid and Ausgrid (formerly EnergyAustralia).

Figure 2.10 Peak demand and electricity distributed among TNSPs in the NEM (per cent change)



Source: AER

Figure 2.11 Long term electricity consumption in NEM states (per cent change) with trend line



Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian energy statistics—Energy update 2011*, *Table I—Australian consumption of electricity by state*.

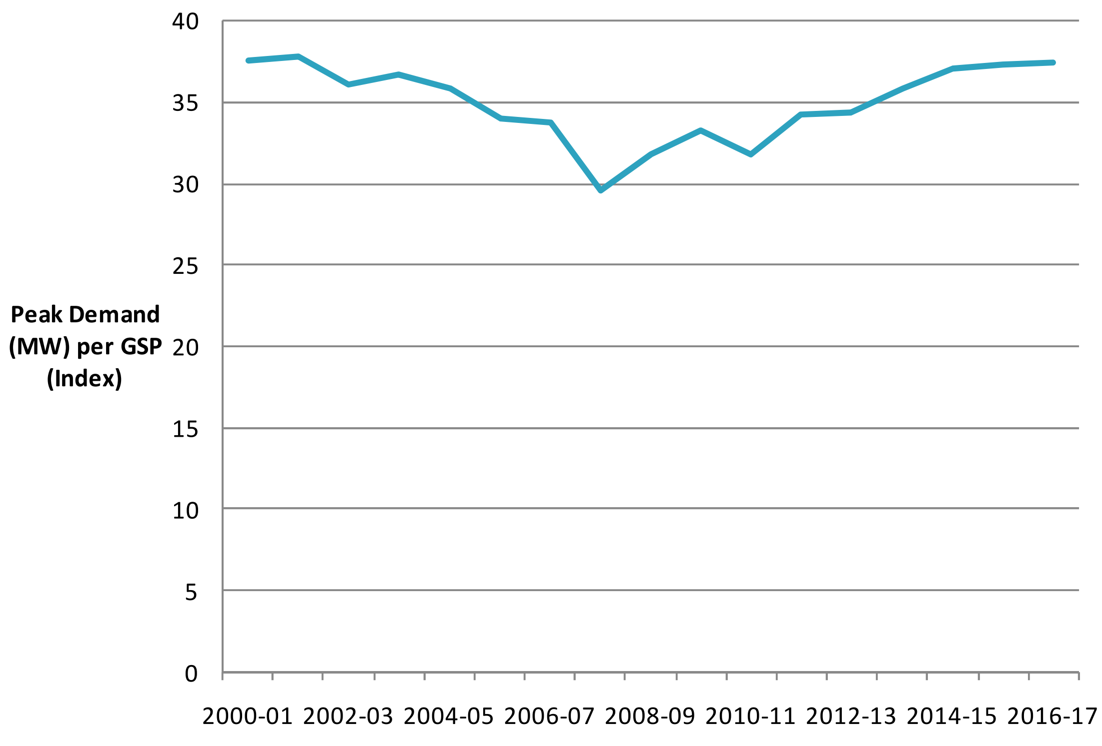
EMCa stated Powerlink did not demonstrate recognition of these patterns in calibrating econometric models for their demand forecasts.[160]

Wesfarmers Limited (Wesfarmers), TEC and EUAA commented that the 2011 APR shows Powerlink's forecasts are out of step with current trends.[161]

Powerlink stated it would be erroneous to treat historical demand trends as evidence of a paradigm shift in consumption growth patterns. Powerlink states the lower demands in 2009-10 and 2010-11 was partly due to the GFC and the Queensland floods and cyclones.[162]

Figures 2.12 and 2.13 appear to support Wesfarmers', TEC's and EUAA's comments. Figure 2.12 shows Powerlink forecast an increase in state peak demand per unit GSP (from 2010-11 onward) despite what appears to be a decreasing trend in the preceding decade, not just post–GFC and floods and cyclones. Figure 2.13 compares the medium and low growth 50 per cent PoE demand forecasts in the 2010 APR with those in the 2011 APR.[163] The 2011 APR's medium load growth forecast is slightly below that in the 2010 APR. The trend line for corrected demand aligns more closely with Powerlink's low load growth forecasts.

Figure 2.12 Queensland state peak demand per unit GSP



160 EMCa, *Demand forecast review*, 6 September 2011, p. 19–20.

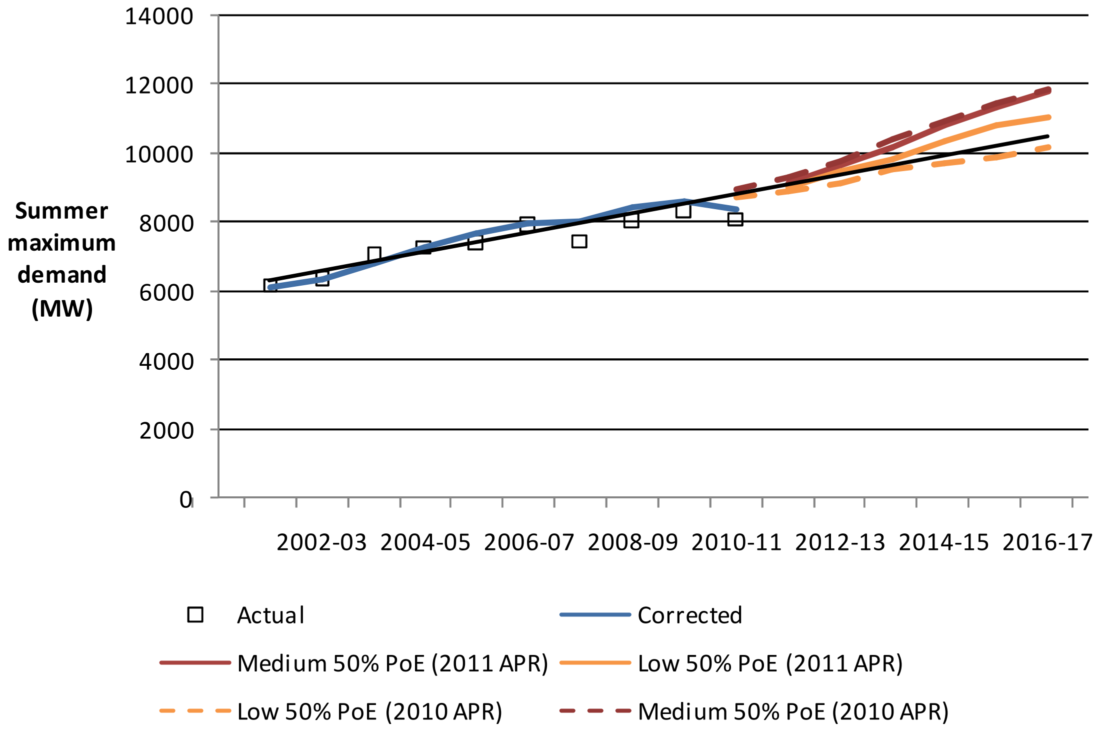
161 TEC submission, August 2011, p. 8; EUAA submission p. 9; Wesfarmers, *Submission to the Australian Energy Regulator in relation to the Powerlink regulatory proposal 2013–2017*, 22 August 2011,p.3.

162 Powerlink, *Response to submissions on Powerlink's 2013–17 revenue proposal*, 30 August 2011, p. 2.

163 The 2011 APR was published after Powerlink submitted its revenue proposal to the AER.

Source: EMCa, *Demand forecast review*, 6 September 2011, p. 21.

Figure 2.13 Powerlink 2010 APR vs 2011 APR



Source: Powerlink, *Annual planning report 2011*, p. 30; Powerlink, *Annual planning report 2010*, p. 28.
Note: The trend line is for corrected demand.

Air conditioning

Powerlink stated 76 per cent of Queensland households have air conditioning, with 16 per cent of these households intending to buy additional air conditioning in the near future. Powerlink stated the full impact of the recently installed air conditioning load has not been realised because of the recent cool summers. Powerlink then stated the 'stinking hot and humid' summers will recur and Powerlink has to plan for this eventuality.[164]

The AER considers Powerlink already planned for this eventuality in the previous transmission determination. Increasing uptake of air conditioning was a major factor in Powerlink's demand forecast for the current regulatory control period and, in turn, its capex proposal. In its initial proposal, Powerlink stated maximum demand:

> … is forecast to increase at an average annual rate of 4% p.a. from 7424MW in 2004-05 to 10959MW in 2014-15. However, this 10-year average masks the accelerated summer demand increase forecast for the near future. This accelerated demand growth is attributable to the expected continuing rapid increase in penetration and usage of domestic air conditioners and

164 Powerlink, *2013–2017 Revenue proposal*, 31 May 2011, p. 23.

strong population growth, which have been evidenced in recent years, particularly in South East Queensland.[165]

In its revised proposal, Powerlink forecast higher demand growth than its initial proposal. Powerlink attributed this partly to a more prolonged increase in new domestic air conditioning installations than forecast in the initial proposal, plus a strong trend toward upgrading older installations.[166]

The AER accepted Powerlink's demand forecast and determined a capex allowance that it considered accorded with the requirements of the NER and the NEL.[167] The AER thus considers Powerlink's network has the capacity to accommodate the recently installed air conditioning load in the current and next regulatory control periods—even if this load was not realised due to cooler summers. Powerlink estimated air conditioning-related demand for the 2010-11 summer was 240MW below that during average summer peak conditions. This was because that summer was very wet and did not have the hot periods associated with peak demand.[168] For comparison, EMCa estimated Powerlink could still have met demand in the current regulatory period even if actual demand exceeded forecasts by up to 450MW because Powerlink uses the 10 per cent PoE forecast for planning purposes.[169]

In addition, EMCa stated there is evidence the summer peak air conditioning load growth has been declining since 2004.[170] Similarly, Powerlink stated air conditioning uptake will continue but at an increasingly slower rate as the saturation point is approaching.[171]

The AER discussed decreasing energy intensity in Queensland and other NEM states in previous sections. Several submissions stated this is partly due to consumers moderating their electricity usage due to higher prices, and to improved insulation and other energy efficiency measures. The increased penetration of household solar PV systems has also contributed to decreasing energy intensity.[172] The AER considers these factors have contributed and would contribute to mitigating demand on Powerlink's network from air conditioning usage.

2.4.4 Past demand forecasting performance

This section compares actual demand with Powerlink's previous demand forecasts. This comparison appears to support the view that Powerlink's methods and processes produce demand forecasts with an upward bias.

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165 Powerlink, *Queensland transmission network revenue proposal for the period 1 July 2007 to 30 June 2012*, 3 April 2006, p. 60.

166 Powerlink, *Supplementary revenue proposal—Attachment 2006 demand forecast*, 15 December 2006, p. 1.

167 AER, *Decision*, *Powerlink Queensland transmission network revenue cap 2007-08 to 2011-12*, 14 June 2007, chapter 4; AER, *Draft decision*, *Powerlink Queensland transmission network revenue cap 2007-08 to 2011-12*, 8 December 2006, chapter 4.

168 Powerlink, *2011 Annual planning report*, p. 16

169 EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*,6 September 2011, p. 15.

170 EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*,6 September 2011, p. 35.

171 Powerlink, *Response to information request EMCa DFR 1 of 23 June 2011*, received 27 June 2011, p. 3. Confidential.

172 EUAA submission, p. 9; PAGE submission, p. 3.

The AER is concerned about Powerlink's recent history of consistently over-forecasting demand. The discussion in previous sections suggests Powerlink's methods and processes introduce an upward bias to its demand forecasts, including the forecasts for the next regulatory control period. The AER thus does not consider Powerlink's demand forecasts for the next regulatory control period reflect a realistic expectation of demand.[173] Capex forecasts are developed to meet a particular demand forecast. Therefore, excessive demand forecasts also suggest excessive capex forecasts. This implies customers would pay more for a secure reliable supply of electricity than is otherwise necessary. Such an approach is not consistent with the national electricity objectives (NEO).[174]

Figure 2.14 compares Powerlink's forecast and actual demand in the current and previous regulatory control periods. Actual demand has been below Powerlink's forecasts for each year of the current regulatory control period.[175] EMCa estimates Powerlink could have deferred at least $700 million of capex over the current regulatory control period because of the over-forecast.[176]

Further, Powerlink uses the 10 per cent PoE forecasts for capital planning purposes (the green line in figure 2.14). Powerlink could have met demand in the current regulatory control period, even if actual demand exceeded the 50 per cent PoE medium growth forecasts by up to 450MW per annum.[177]

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173 NER, clause 6A.6.7(c)(3).

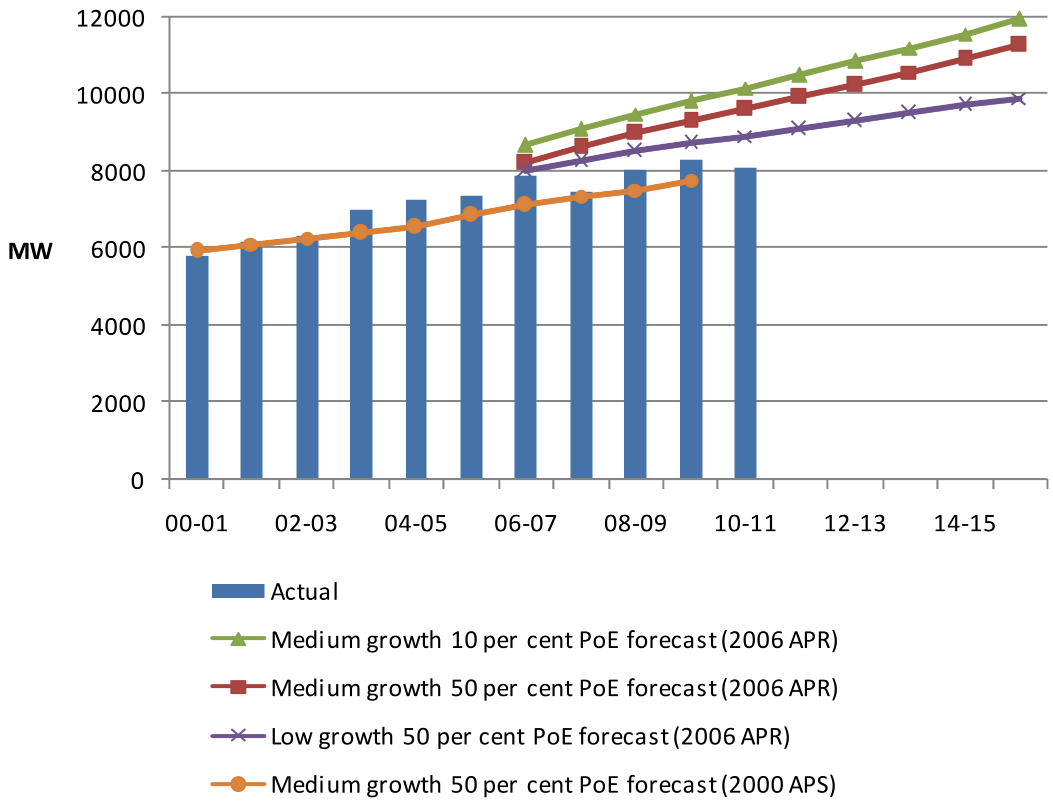
174 NEL, part1, section 7.

175 Figure 2.13 shows Powerlink has made positive temperature adjustments for every summer starting 2004-05. Corrected demand thus underestimates the extent of the over-forecast.

176 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to Australian Energy Regulator*, 6 September 2011, p. 31.

177 EMCa, *Powerlink revenue determination 2013–17, Demand forecast review*, *Report to Australian Energy Regulator*, 6 September 2011, p. 15.

Figure 2.14 Powerlink's native demand



Source: Powerlink, Annual Planning Reports for 2006, 2010 and 2011; Powerlink, *Annual Planning Statement 2000*.

Note: Powerlink used the 2005 Annual Planning Review (APR) demand forecasts in its proposal for the 2007 AER transmission determination. Powerlink subsequently submitted a revised capex proposal using the demand forecasts in the 2006 APR. Powerlink used the 2000 Annual Planning Statement (APS) in its proposal for the previous regulatory control period.

PAGE stated 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. [178]

Figure 2.15 compares actual and corrected native demand with demand forecasts for several of Powerlink's APRs from 2005 to 2011.[179] EMCa points out the forecasts commence with a step increase in the first year followed by high growth paths. Each path has considerably over-estimated the eventual actual and corrected peak demands.[180] This pattern appears to continue in Powerlink's revenue proposal (figure 2.1). Despite the pattern of over-forecasting, EMCa found no evidence Powerlink systematically reviews the accuracy of its demand forecasts.[181]

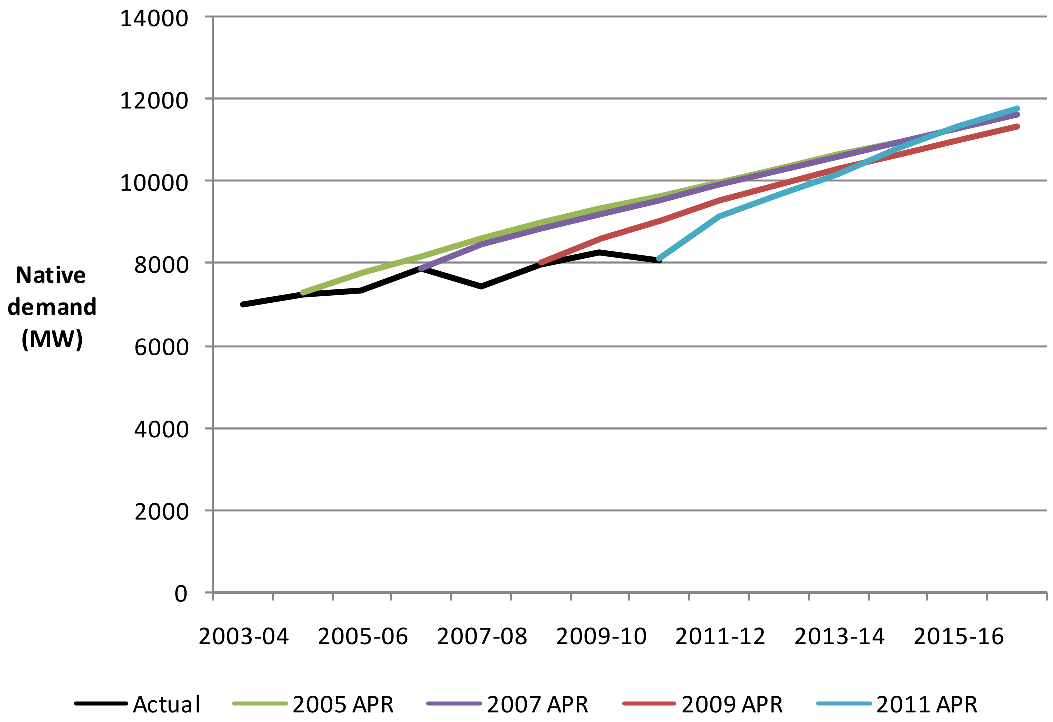
178 PAGE submission, 12 August 2011, pp. 2 and 9.

179 This is based on figure 6 of EMCa's demand forecast review.

180 EMCa, *Demand forecast review*, 6 September 2011, pp. 16–17.

181 EMCa, *Demand forecast review*, 6 September 2011, pp. 17–18.

Figure 2.15 Powerlink APR demand forecasts



Source: Powerlink, Annual Planning Report, years as indicated.

The Australian Energy Market Operator (AEMO) provided demand forecasts in its 2011 Electricity Statement of Opportunities (2011 ESOO) as a sensitivity. AEMO's analysis suggested Queensland's demand could be between 240MW and 620MW lower than the 2011 APR demand forecasts.[182] Powerlink stated AEMO does not independently produce forecasts for Queensland.[183]

AEMO stated Powerlink's energy and demand projections have been consistently high.[184] Powerlink pointed to appendix B of the 2011 ESOO where AEMO stated energy and demand forecasts in Queensland have been accurate at the local level for major load centres. Recent increases in diversity between major load centres cause inaccuracies in the overall forecast.[185] The AER considers the increase in diversity between load centres only partially explains Powerlink's demand forecasting inaccuracy. The AER considers Powerlink's demand forecasting processes has a systemic upward bias. Section 2.4 details the AER's reasons for this conclusion.

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182 AEMO, *RE: Powerlink revenue proposal 2012-13–2016-17*, 12 September 2011, pp. 1–2.

183 Powerlink, *Response to the Australian Energy Market's submission on Powerlink's 2013–17 revenue proposal*, 29 September 2011, p. 1.

184 AEMO, *Electricity statement of opportunities for the National Electricity Market 2011*, *Appendix B—Assessment of energy and demand projections*, 9 September 2011, p. B–1.

185 Powerlink, *Response to the Australian Energy Market's submission on Powerlink's 2013–17 revenue proposal*, 29 September 2011, p. 2.

2.4.5 Alternative demand forecast

Section 2.4 set out the AER's concerns around Powerlink's proposed demand forecast. As a result, the AER was not satisfied that Powerlink's demand forecast represented a realistic forecast of demand.[186] In accordance with the NER, the AER has not accepted Powerlink's demand forecasts and the AER must develop an alternative forecast.[187]

The AER engaged EMCa to develop alternative demand forecasts for Powerlink for the next regulatory control period. EMCa prepared alternative demand forecasts using three methods to identify a range of possible outcomes.[188] The first two methods excluded mining and industrial loads from the data and forecasts. This ensured that EMCa's alternative forecasts relate only to underlying demand, with mining and industrial load forecasts assumed to be reasonable. The mining and industrial load forecasts were then added back to the alternative forecasts.

- Method 1—using temperature adjusted demand at the state level. EMCa regressed this data against a range of demand drivers to determine goodness of fit and coefficients. EMCa then added back the mining and industrial load forecasts to obtain a state total.

- Method 2—using unadjusted demand at the regional level. EMCa regressed this data against the same demand drivers plus the coincident daily maximum temperatures for each region. EMCa then added back the mining and industrial load forecasts to obtain a state total.

- Method 3—EMCa performed trend analysis using Powerlink's historical weather and diversity corrected peak demand data.[189]

The AER considers EMCa's demand forecasting method and assumptions are robust. The AER thus considers EMCa's alternative demand forecast is a realistic expectation of demand.[190] The AER sets out the reasons for its conclusions below.

Methods 1 and 2 used a linear regression of demand against population, electricity prices and (for method 2) temperature.[191] EMCa selected a linear regression because of the straight forward relationship between peak demand and its drivers, based on its experience. EMCa recommended method 2 as the basis for its alternative demand forecast.

EMCa performed exploratory work to arrive at models with parameters that explain the drivers of peak demand.[192] EMCa did not include GSP in either method 1 or 2 because it had little explanatory power. EMCa concluded it is most likely that other variables such as population

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186 NER, clause 6A.6.7(c)(3).

187 NER, clause 6A.6.7(d) and 6A.12.1(c)

188 EMCa explored other methods for producing alternative demand forecasts. The three described in their demand forecast review are the three most plausible methods. EMCa, *Response to information request AER/034 of 13 September 2011*, received 14 September 2011.

189 EMCa, *Demand forecast review*, 6 September 2011, p. 45.

190 NER, clause 6A.6.7(c)(3)

191 EMCa, *Demand forecast review*, 6 September 2011, p. 47.

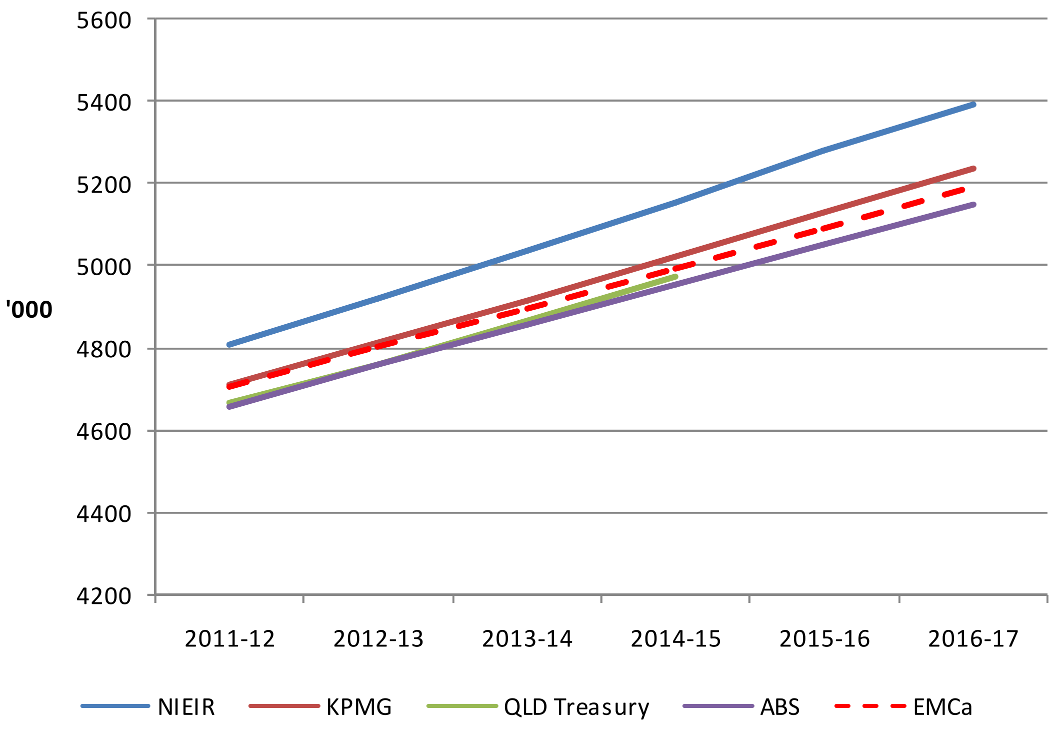
192 EMCa, *Response to information request AER/039 of 22 September 2011*, received 22 September 2011.

accounted for much of the effect of GSP.[193] Both methods 1 and 2 use linear regressions with R^2 of approximately 0.9.[194]

High correlation within a model, in itself, does not suggest a 'good' model. However the AER considers EMCa's method 2 is appropriate for other reasons. Specifically, it relates actual peak demand to the demand drivers by region. The AER considers this method captures the differing effects of the drivers at a geographic level that Powerlink itself uses in its demand forecasting processes. It also eliminates the use of corrected demand, which the AER considers has an upward bias (see section 2.4.2).

In addition, the AER considers EMCa used appropriate inputs to its models. EMCa assumes electricity prices rise, on average, by 7.5 per cent from 2011-12 to the end of the next regulatory control period. This is approximately the mid-point of the range of forecasts the AER discussed in section 2.4.3. Figure 2.16 shows EMCa's population assumption is in line with the other forecasts shown previously in figure 2.5, where Powerlink's forecast is an outlier.[195]

Figure 2.16 EMCa's population forecast compared to other forecasts



Source: NIEIR, *Long run economic and electricity load forecasts to 2024-25 for the Queensland electricity network*, April 2010, p. 29, CONFIDENTIAL; KPMG data from Powerlink, *Response to information request EMCa DFR1 of 23 June 2011*, received 27 June 2011; Queensland Government Budget, *State budget 2011-12*, *Budget strategy and outlook*, *Budget paper no. 2*, 2011, pp. 36–38; ABS 3222.0, 4 September 2008; EMCa, *Response to information request AER/041 of 26 September 2011*, received 27 September 2011

193 EMCa, *Demand forecast review*, 6 September 2011, p. 47.

194 EMCa, *Response to information request AER/041 of 26 September 2011*, received 27 September.

195 EMCa, *Response to information request AER/041 of 26 September 2011*, received 27 September.

2.5 Revisions

Revision 2.1: Section 2.1 sets out the AER's alternative demand forecasts for the next regulatory control period.

3 Capital expenditure

Powerlink is required to submit a building block proposal to the AER that forecasts a total capital expenditure (capex) for the 2012-13 to 2016-17 regulatory control period.[196] The AER must assess this forecast to decide whether it either accepts Powerlink's proposed forecast capex allowance or, if not, the AER must determine a substitute forecast. This attachment outlines the AER's draft decision, its reasoning and its approach to assessing the reasonableness of Powerlink's proposed capex forecasts and the substitute forecast. The substitute forecast is the minimum adjustment necessary for Powerlink to meet the National Electricity Rules (NER) criteria.

3.1 Draft decision

The AER does not accept the forecast total capex of $3488 million proposed by Powerlink for the next regulatory control period.[197] The AER is not satisfied the proposed forecast total capex reasonably reflect the capex criteria.[198] The AER considers that some elements of Powerlink's total forecast capex proposal are overstated. It has estimated a substitute total forecast capex that it considers would reasonably reflects the NER requirements.[199]

Table 3.1 summarises the AER's estimate of total capex required by Powerlink over the next regulatory control period. The AER estimates a total forecast capex of $2360 million over the next regulatory control period. This amount represents a reduction of $1128 million from Powerlink's proposed total forecast capex (32 per cent). All costs in this attachment are presented in $million mid-year 2011-12 unless otherwise specified. The aggregation of the adjustments provides a total adjustment that is less than the sum of individual adjustments; this is because some of the adjustments are interdependent. For example, if the adjustment for the reduced demand forecast is applied first, then the subsequent adjustment for the three per cent cost estimation risk factor is considerably smaller. The order in which the individual line item adjustments are applied does not affect the total necessary adjustment to Powerlink's proposal. The AER's reduced cost escalation has also been applied.

The minimum adjustment to Powerlink's proposed forecast capex required to meet the capex objectives is $1128 million ($2011-12) and the total forecast capex for Powerlink (once the adjustment has been applied) is $2360 million ($2011-12). Note that all costs in this attachment are presented in $million mid-year 2011-12 unless otherwise specified.

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[196] NER, clause 6A.10.1.

[197] NER clause 6A.14.1(3)(ii).

[198] NER clause 6A.6.7(c).

[199] NER clause 6A.14.1(3)(ii).

Table 3.1 Individual and aggregate proposed capex adjustments ($million, 2011-12)

	Individual adjustment (reduction)	Aggregate adjustment (reduction)	Cumulative adjusted total capex
Powerlink forecast capex			3 488
Demand forecast adjustments	554	554	2 934
500kV projects—committed and uncommitted	544	301	2 634
Carbon price trajectory	135	78	2 556
Cost estimation risk factor	70	48	2 508
Efficiency program	45	34	2 474
Subtotal—Powerlink escalators	1348	1015	2 474
Total—AER reduced escalators		**1128**	**2 360**

Source: AER and EMCa calculations based on data provided by Powerlink on 13 October 2011, which included revised non-network figures.

Note: Powelink's proposal includes $4 million of disposals and totals may not add due to rounding and inclusion of this amount.

3.2 Powerlink's proposal

Powerlink proposed a total capex of $3488 million ($2011-12), which is an increase of 13 per cent per cent on the current regulatory control period. Table 3.2 sets out Powerlink's proposed capex forecast.

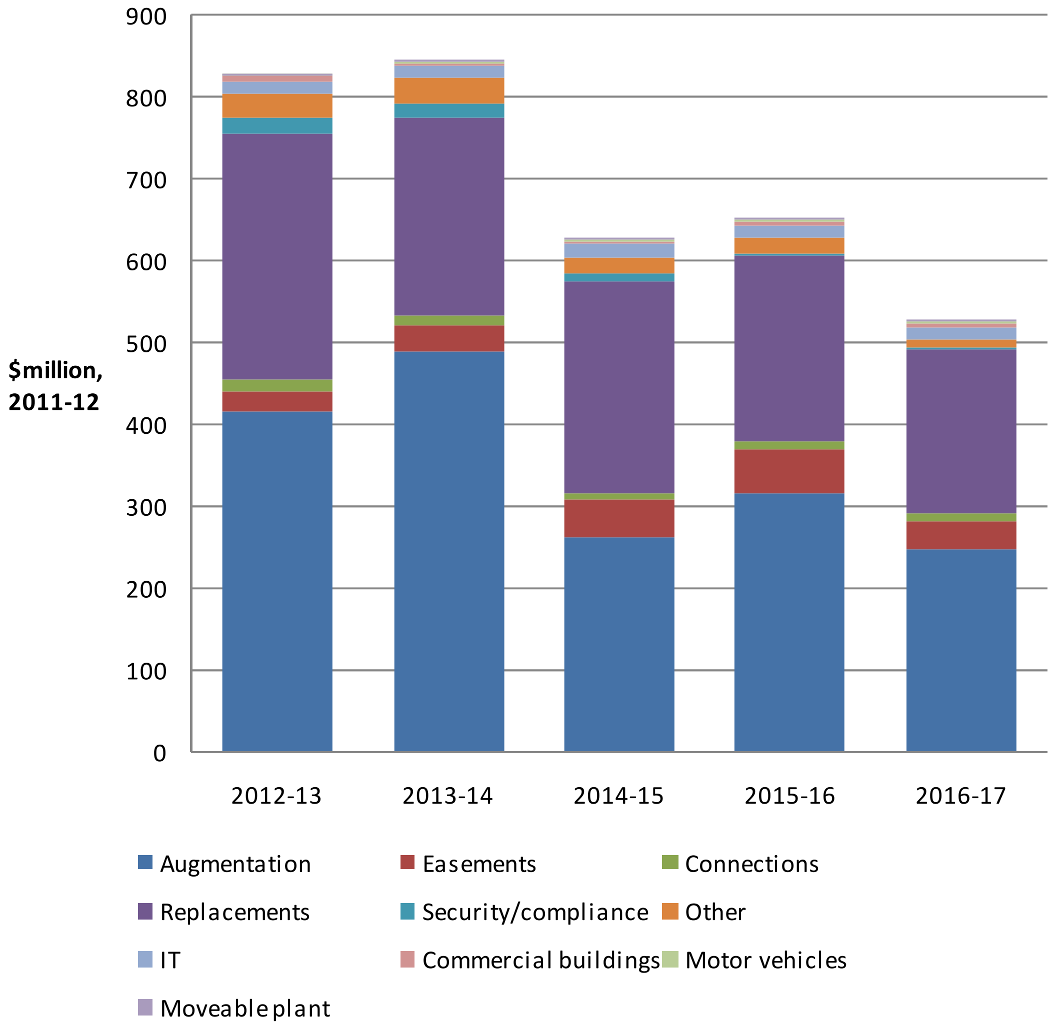
Load driven augmentations of $1729 million ($2011-12) are the largest category of capex, followed by replacement capex of $1229 million ($2011-12). Figure 3.1 shows Powerlink's forecast capex by category by year.

Table 3.2 Powerlink's proposed capex forecast by category ($million, 2011-12)

Project category	Sub-category	$million, 2011-12
NETWORK		
Load driven	Augmentation	1 729.6
	Easements	189.4
	Connections	55.1
Non-load driven	Replacements	1 229.0
	Security/compliance	50.7
	Other	109.9
	Total network	3 363.8
NON-NETWORK		
Business IT	IT	78.1
Support	Commercial buildings	18.1
	Motor vehicles	14.8
	Moveable plant	9.1
	Total non-network	120.1
Total capex		3 483.9

Source: Powerlink proposal p. 72. Does not include disposals. Data provided on 13 October 2011 included different figures for non-network costs, the revised total is $3488 million.

Figure 3.1 Powerlink's proposed capex forecast by category by year ($million, 2011-12)



Source: Powerlink proposal p.72.

3.3 Assessment approach

The AER must accept Powerlink's proposed total forecast capex if satisfied that it reasonably reflects the capex criteria. The AER must form a view on Powerlink's proposed forecast capex as a whole, not as individual projects or programs.[200] However, because the total proposed forecast is separated into expenditure components, the AER assesses these components to make its decision on the total amount.

The forecast must reflect the efficient costs that a prudent operator in Powerlink's circumstances would need to incur, based on a realistic expectation of the demand forecast and the cost inputs to achieve the capex objectives.[201] The AER considers efficient costs are

200 NER, clause 6A.6.7(f).

201 NER, clause 6A.6.7(c). Clause 6A.6.7(a) specifies the capex objectives.

the costs that a prudent operator is expected to incur, not a premium above otherwise efficient costs to balance risk.[202]

In deciding whether Powerlink's proposed total forecast capex reasonably reflects the capex criteria, the AER must have regard to the capex factors.[203] Although the AER considered each capex factor when assessing Powerlink's proposed total forecast capex, not all factors were relevant for assessing each capex component.[204]

In making its assessment, the AER has regard to the overarching National Electricity Objective (NEO) as well as the revenue and pricing principles set out in the National Electricity Law. For instance, having regard to the NEO, the AER took the view that a prudent operator in the circumstances of Powerlink would seek cost efficiencies through continuous improvements, and that customers ultimately share in these benefits (a key feature of incentive regulation). This also provides Powerlink with a reasonable opportunity to recover at least its efficient costs in accordance with the revenue and pricing principles. This is pertinent because no efficiency benefit sharing scheme (or similar) is applied to capex. The issue becomes important when actual capex incurred for a regulatory control period exceeds the benchmark set by the AER (capex overspends). In this case, the transmission network service provider (TNSP) can benefit in subsequent years by earning a return on an increased regulatory asset base.

Given the incentives to overstate expenditure, the AER reviewed Powerlink's proposal carefully. The proposed capex of $3488 million ($2011-12) exceeds that of the previous regulatory control period by 13 per cent. The AER reviewed Powerlink's supporting material including its reasoning and, where relevant, business cases, regulatory test/regulatory investment test analysis, audited regulatory accounts, changed legislative or regulatory obligations, or other drivers. This information helped the AER identity the need for the forecast capex over the next regulatory control period and, in turn, whether the forecast therefore reasonably reflected the capex criteria.

In making its assessment of Powerlink's efficient costs, the AER considered a mix of top down and bottom up approaches. It assessed Powerlink's historic capex and determined the key drivers for forecast capex. This included analysis of Powerlink's:

- asset management polices
- capital governance arrangements
- business management systems and operations
- strategic planning, including policy development
- business processes improvement initiatives

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202 Some distribution network service providers posited the 'prudency premium' hypothesis during the 2011–15 Victorian Electricity Distribution Review. See AER, Final Decision—Victorian Distribution Determination 2011–15, October 2010, pp. 396–8.

203 NER, clause 6A.6.7(d).

204 Powerlink's capex forecast is recovered via the depreciation and return on capital in the building block regime. It covers new investments and the replacement of ageing assets to keep the high voltage transmission system operating effectively.

- investment justification processes
- assessment of major risks identified for the next regulatory control period, and the risk management practices and polices adopted to mitigate those risks.

By examining key documents, processes and assumptions, and comparing historical expenditure to that proposed, the AER can better understand the key drivers behind Powerlink's need to augment and replace its network.

Powerlink's capital governance and asset management approaches, including its investment decision making process, are set out in section 3.4.1. Where the AER had concerns with the proposal or any of the governance arrangements employed by Powerlink, it reviewed the input costs and assumptions for projects or programs.

The AER engaged Energy Market Consulting associates (EMCa) to provide a technical review of Powerlink's proposal, as well as a review of the demand forecast.

In addition to the information provided by Powerlink, AER considered the issues raised in 10 submissions (InterGen's submission was received late and will be considered in the final decision) and two responses from Powerlink. The most recent NTNDP[205] and the submission from AEMO were also considered.[206]

Although the AER made an assessment of Powerlink's overall proposal for a total forecast capex, it was still necessary to analyse some specific projects proposed by Powerlink when making that assessment. It was important to conduct more detailed analysis of the expenditure for some specific projects in order for the AER to be satisfied that Powerlink's overall approach to forecasting (including its planning and management strategies and policies) reasonably reflected the capex criteria. The AER and EMCa selected 25 projects amounting to approximately 50 per cent of Powerlink's forecast capex, across a mix of augmentation, replacement and non-network projects, for more specific analysis. The AER did not attempt to determine which specific capex projects should go ahead.[207] Rather, the AER sought to understand the factors and issues that Powerlink considered when planning its network under probabilistic planning scenarios.

3.4 Reasons for draft decision

The AER[208] does not accept Powerlink's total capex forecast for the following reasons. The issues considered by the AER in coming to this conclusion are set out in this section. In summary, the AER:

- does not accept Powerlink's demand forecast because Powerlink's proposed demand forecast is not a realistic expectation of demand for the next regulatory control period. The AER substituted its own (reduced) demand forecast

205 2010 National Transmission Network Development Plan (NTNDP).
206 NER, clause 6A.6.7(e)(11).
207 The regulatory regime gives discretion to Powerlink as to how it spends or allocates its annual revenue.
208 NER, clause 6A.14.1(2)(ii).

- does not accept Powerlink's proposed load driven augmentation in the capex forecast (driven by the reduced demand forecasts). Based on its alternative demand forecast, the AER substituted a reduced forecast capex (reduced by $554 million ($2011-12)) that is reasonably required to meet the capex objectives

- does not accept $544 million ($2011-12) of the proposed augmentation capex for the incremental cost[209] of building the network to 500kV but operating the network at 275kV because the proposed program of incremental expenditure has not been sufficiently justified

- does not accept Powerlink's assumptions of an aggressive carbon price trajectory in the probabilistic planning methodology. The AER substituted a revised weighting to these scenarios which reduced the forecast capex by $135 million ($2011-12)

- does not accept the proposed cost estimation risk factor methodology and an amount of $70 million ($2011-12)

- incorporated a $45 million ($2011-12) reduction to reflect efficiency gains that Powerlink could achieve if it implemented improved business practices

- accepts Powerlink's non-load driven capex, including the replacement capex

- reduces Powerlink's labour and material costs escalation

- amends the trigger events for proposed contingent projects and rejects some contingent projects outright

- reduces the allowance for equity raising costs

- accepts Powerlink's pricing methodology

3.4.1 Capital governance framework

The AER is not required to make a decision to accept or reject a TNSP's capital governance framework. However, the AER does assess whether a TNSP's capital governance framework forms a reasonable basis to produce a capex forecast.

The AER considers Powerlink's capital governance framework (the 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. Section 3.4.6 sets out the AER's consideration of these issues.

The AER and EMCa nevertheless identified issues with particular areas of Powerlink's framework, namely:

- Information flow between asset manager and asset owner

[209] The difference between building the 275kV network and building the 500kV network.

- Focus on individual projects.

As a consequence, the AER considers that Powerlink could achieve efficiencies in its capex program by addressing these. The AER's detailed reasons for its draft decision on Powerlink's capital governance framework and the efficiency adjustment are set out in this section.

Powerlink operates under an Asset ownership/Asset management/Service provider (AO/AM/SP) business model. Teams in the asset management function drive strategies that support the full life cycle of Powerlink's assets including:

- planning and asset investment
- operation and maintenance
- replacement and disposal.[210]

Powerlink's asset management strategy (the strategy) describes the components of the framework. Two key elements of the strategy are the use of asset life cycle and asset management cycle to manage assets, and to establish capital projects and the capex forecast.[211] The strategy also summarises aspects of Powerlink's asset management practices including:

- Powerlink's statutory, economic and community obligations
- asset life cycle, including risks and liabilities
- efficient allocation of resources
- performance monitoring and mechanisms to improve the management of plant and assets.[212]

As part of its assessment, the AER reviewed whether the framework is based on sound principles and is effectively coordinated across the organisation. This review, in turn, informed the AER whether the framework provides a reasonable basis for developing forecast capex. The review included assessing:

- Powerlink's long-term network development strategies
- Powerlink's policies and procedures for:
    - identifying network constraints, replacement of assets and non-network needs
    - developing investment proposals once a need is established

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210 Powerlink, *2013–2017 Revenue proposal*, *Appendix D—Powerlink asset management strategy*, 31 May 2011, p. 9.

211 Powerlink, *2013–2017 Revenue proposal*, *Appendix D—Powerlink asset management strategy*, 31 May 2011, pp. 5–6.

212 Powerlink, *2013–2017 Revenue proposal*, *Appendix D—Powerlink asset management strategy*, 31 May 2011, p. 4.

- analysing alternative investment options and identifying the most cost effective option, including demand management

- the integration and consistency of policies and procedures across investment categories.

EMCa assisted the AER in reviewing the framework including capex strategies, policies and procedures. EMCa's detailed assessment of a sample of capital projects informed the review of the framework.[213]

In addition, EMCa commented on the extent Powerlink applied the framework in the current regulatory control period and whether Powerlink had modified its approach over time.

The AER considers the structure of the framework is consistent with good industry practice. In general, the AER considers Powerlink implements its capital governance structure appropriately when developing, approving and implementing individual projects.

This is supported by EMCa, which noted the combined use of the asset management cycle and asset life cycle is aligned with current industry standards and that Powerlink implements these cycles in practice.[214]

In its detailed project review, EMCa considered Powerlink applied the framework consistently for most projects. Of the 25 projects reviewed, EMCa found potential issues with the application of the framework with respect to the 500kV network (three projects) and one easement acquisition expenditure.[215]

Powerlink also introduced improvements to the framework in the current regulatory control period including portfolio management, project monitoring and cost estimation improvement. Powerlink proposes to improve management of easement approvals and land assets in the next regulatory control period.[216]

For these reasons, the AER considers Powerlink's the framework provides a reasonable basis for developing forecast capex.[217]

While the AER does not accept or reject a TNSP's capital governance framework, the AER and EMCa nevertheless identified issues with particular areas of the framework. The following sections outline these issues.

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213 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. 62–68.

214 EMCa, *Powerlink revenue determination: Technical review, Forecast capital expenditure and service targets, Report to AER*, 6 September 2011, p. 37.

215 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. 64, 67.

216 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, annex 12.

217 The assessment of the framework (and its conclusions) does not extend to the inputs and assumptions Powerlink used to develop specific components of the forecast capex (such as demand, Powerlink's probabilistic planning method and so on). The AER assesses these specific components in other sections of this draft decision.

The AER understands the Asset Management Policy outlines Powerlink's overall corporate objectives to deliver transmission services. The Asset Management Strategy then outlines the linkages between these objectives and Powerlink's asset management practices.[218]

The Asset Management Policy is a document of less than one page. EMCa stated it contains limited information and is not likely to be used as a working guide and reference within the organisation.[219] EMCa considers a significant guiding reference document that gives direction from the asset owner to the asset manager is important in an AO/AM/SP structure. This is particularly true for organisations that own and manage high value capital assets. Such organisations would require a broad strategic view to guide policies at the asset level.[220]

EMCa thus 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.[221] Section 3.4.6 sets out the AER's consideration of the 500kV network.

It appears Powerlink focuses more on individual projects and less on the strategies or programs that underpin them. The AER understands the asset manager at Powerlink provides the asset owner with a single capex key performance indicator, plus reports on capital projects of $20 million and above.[222] There is no requirement for the asset owner to formally approve the strategies that underpin individual capital projects. Rather, the approval of strategies is implicit when the asset owner approves individual projects.[223]

The focus on individual projects has resulted in improved capital project management.[224] However, EMCa suggested Powerlink may also benefit by monitoring, measuring and reporting performance at an aggregate level. For example, viewing expenditure by program or expenditure category may indicate where Powerlink can optimise resource allocation.[225]

Efficiency adjustment

The AER has included a $45 million ($2011-12) efficiency adjustment to Powerlink's forecast capex on the basis that Powerlink could improve the efficiency with which it undertakes its investment program. This is supported by EMCa who considered that Powerlink had the potential to improve the efficiency of its capex costs by formally instituting a performance improvement program. EMCa suggest that this might include measures such as gains from

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218 Powerlink, *2013–2017 Revenue proposal*, *Appendix D—Powerlink asset management strategy*, 31 May 2011, pp.3–4; EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. A13–A14.

219 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. A13.

220 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. 37.

221 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. 37.

222 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. A10–A11.

223 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. 38–39.

224 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, pp. 39–40.

225 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. 40.

resource smoothing, proactive facilitation of viable non network solutions, smart grid initiatives and focused identification of synergies between projects.

EMCa note that, while Powerlink does not appear to have such a program and does not yet appear to be realising these potential gains, Powerlink have achieved a reduction in historical expenditure by comparison with its allowance.

Based on its experience with past transmission reviews and assessments of network service provider costs in various jurisdictions, EMCa considers that an efficiency adjustment ought to be applied to Powerlink's proposed capex. EMCa recommended a one per cent reduction in forecast capex in the second year of the regulatory control period followed by a two per cent annual reduction thereafter. This efficiency adjustment results in a reduction in capex of approximately $45 million ($2011-12).

3.4.2 Probabilistic planning approach

The AER considers Powerlink's probabilistic planning approach is a sound forecasting methodology. This approach is also a useful tool for establishing a view on Powerlink's risk exposure across a range of scenarios. However, the accuracy of the output of the probabilistic planning approach depends on the input assumptions used to construct the various scenarios. The AER is not satisfied that Powerlink's preferred input assumptions produce a forecast capex that reasonably reflects the capex criteria[226] as required under the NER.

The AER also considers Powerlink should revise its probabilistic planning model to reflect updated information on lower demand forecasts and low carbon reduction scenario based on carbon reduction targets set by the Australian Government; this is discussed in section 3.4.3.

The assumptions, inputs and output of Powerlink's probabilistic planning approach have implications on the proposed load driven capex, which represents 56 per cent of Powerlink's proposed total capex.

The load demand forecast is the most significant factor that influences the outcome of Powerlink's probabilistic planning. Assumptions made about load demand forecast have implications for the forecast load driven capex proposed by Powerlink. As part of its review of Powerlink's proposed capex, the AER must thus assess whether assumptions, inputs and output of Powerlink's probabilistic planning approach are reasonable. When assessing Powerlink's total forecast capex, the AER is required to consider demand forecast and cost inputs, among other things.[227]

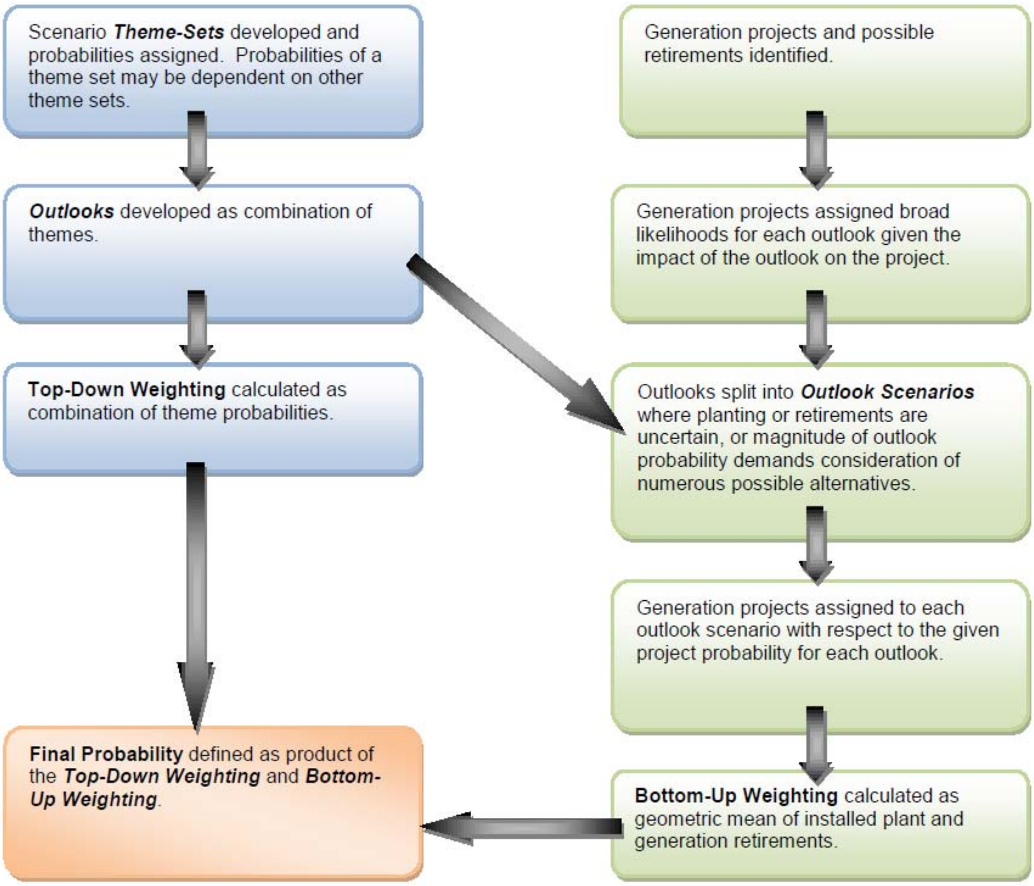
Powerlink used a probabilistic planning approach to develop its forecast load driven capex because uncertainty surrounds generation developments and load growth in Queensland over the next regulatory control period. The overall objective of the approach is to develop a probabilistic weighted average expenditure profile for load driven capex. Powerlink used this expenditure profile as an input to develop its proposed total capex for the next regulatory control period. It also engaged ROAM Consulting (ROAM) to help develop aspects of its

226 NER clause 6A.6.7.

227 The AER must consider whether the total forecast capex reasonably reflects the capex criteria as a whole: see NER, clause 6A.6.7.

probabilistic model, particularly, the assessment of market development scenarios. Figure 3.2 summarises ROAM's approach.

Figure 3.2 Method for assessing market development scenarios



Source: ROAM Consulting, *Report to Powerlink: generation scenarios for 2012 revenue reset application*, May 2010, p. 3.

The main processes associated with Powerlink's probabilistic planning approach are:

- the identification of major themes (key capex drivers)–external factors that the electricity market has no control over, but to which it will respond. The themes identified for the next regulatory control period are: load growth, carbon price trajectory and LNG industry expansion. Combinations of these themes create outlooks, where by each outlook defines a possible future for Queensland to which the electricity market will respond. Table 3.3 shows the market development scenario themes.
- the allocation of probabilities to each theme. The most independent theme is considered first, with probabilities ascribed to the possibilities for that theme.
- the development of 20 market development scenarios based on combinations of the possibilities (including planting options) and the probabilities that each scenario will eventuate. Table 3.4 shows different scenarios and associated outlook probabilities.
- the identification of limitations on the Queensland transmission network that would arise if the market development scenarios eventuates.

- the development of options to address the limitations with each scenario.

Table 3.3 ROAM market development scenarios themes

Themes	
Load growth	
Low	Low economic outlook demand forecast. Representative of the lower 10 per cent probability band over the forecast period
Medium	Medium economic outlook demand forecast. Representative of the most probable outcome over the forecast period
High	High economic outlook demand forecast. Representative of the upper 10 per cent probability band over the forecast period
Carbon price trajectory	
–5%	5 per cent reduction in emissions from 2000 levels by 2020
–10 to –15%	10–15 per cent reduction in emissions from 2000 levels by 2020
–25%	25 per cent reduction in emissions from 2000 levels by 2020
LNG industry expansion	
MOD	Moderate LNG expansion. Denotes the assumed development of around one to five production facilities or trains
AGG	Aggressive LNG expansion. Denotes that 4-8 LNG trains are assumed to be developed over the next decade

Source: ROAM Consulting, *Report to Powerlink: Generation scenarios for 2012 revenue reset application*, May 2010, p. 3.

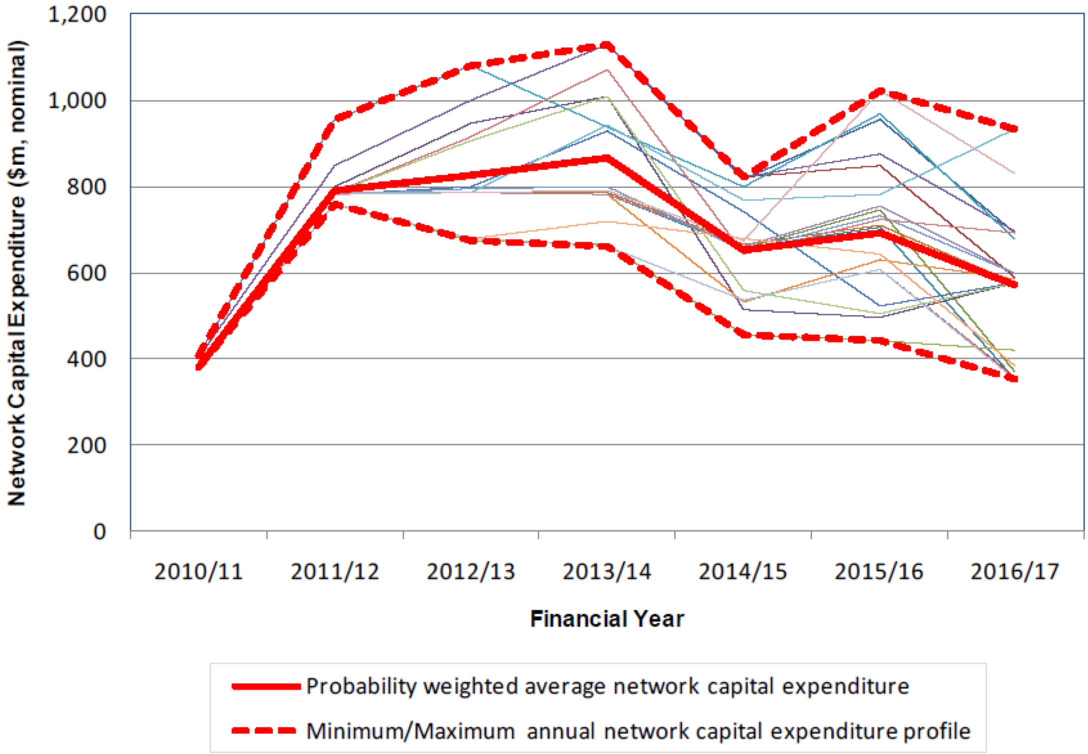
Table 3.4 ROAM market development scenarios themes : outlook probabilities

Scenario	Outlook number	Outlook name	Probability
1	1	5%-H-AGG [Planting A]	1.520%
2	2	5%-H-MOD [Planting A]	3.55%
3	3	5%-M-AGG [Planting A]	4.72%
4	3	5%-M-AGG [Planting B]	4.70%
5	4	5%-M-MOD [Planting A]	10.49%
6	4	5%-M-MOD [Planting B]	6.91%
7	4	5%-M-MOD [Planting C]	4.58%
8	5	5%-L-AGG [Planting A]	1.22%
9	6	5%-L-MOD [Planting A]	2.84%
10	7	10–5%-H-AGG [Planting A]	2.91%
11	8	10–15%-H-MOD [Planting A]	2.91%
12	9	10–15%-M-AGG [Planting A]	8.95%
13	9	10–15%-M-AGG [Planting B]	8.84%
14	9	10–15%-M-AGG [Planting C]	5.51%
15	10	10–15%-M-MOD [Planting A]	6.56%
16	10	10–15%-M-MOD [Planting B]	10.18%
17	10	10–15%-M-MOD [Planting C]	5.56%
18	11	10–15%-L-AGG [Planting A]	2.91%
19	12	10–15%-L-MOD [Planting A]	2.91%
20	15	25%-M-AGG [Planting A]	1.24%

Source: ROAM Consulting, *Report to Powerlink: generation scenarios for 2012 revenue reset application*, May 2010, p. 20.

Powerlink costed options to address limitations with each of the 20 scenarios to estimate the capex requirement for each year of the next regulatory control period. Figure 3.3 shows the capex profile for all scenarios during the next regulatory control period. The probabilistic weighted average network capex (bold non-broken line) represents Powerlink's expected capex requirement for the next regulatory control period. It sums up to the proposed capex amount of $3483.9 million ($2011-12).

Figure 3.3 Powerlink: network capex profile ($million, nominal)



Source: Powerlink, *2013–2017 Revenue proposal*, May 2011, p. 69.

The AER engaged EMCa to review Powerlink's probabilistic planning approach, particularly to:

- describe the probabilistic approach in detail
- determine the reasonableness of the assumptions and inputs used within the model (for example, economic growth expectations, load growth forecasts, generation scenarios and expected customer connections)
- describe the scenarios and probabilities of the model, and assess whether they are reasonable in regard to realistic expectation of inputs and good industry practice.

For its review, EMCa:

- developed good understanding of the method and the approach
- considered how the approach aligned to the objective set by Powerlink
- examined the inputs to assess if they were applicable and comprehensive
- examined the method to determine which inputs had most influence on the end results
- examined the reasonableness of the assumptions and inputs
- examined the market development scenarios and probabilities to determine their reasonableness

- reviewed the transmission plans resulting from the probabilistic market scenarios to determine whether they were reasonable and appropriate
- conducted a high level test of the method to examine whether:
  - the probabilistic planning approach provided an undue bias compared to a more deterministic planning approach
  - the contingent project filtering from the scenario planning was effective
- considered whether any adjustment to the approach would offer an improved outcome or other benefits.

EMCa found Powerlink's probabilistic planning approach is generally sound tool for measuring capex in light of the capex criteria set out in clause 6A.6.7 of the NER. EMCa also found the approach is a useful tool for establishing a view on Powerlink's risk exposure across the range of scenarios.

- Powerlink's probabilistic planning approach is appropriate, based on sound forecasting approach and has been refined over a number of years.
- However, the AER is not satisfied the medium growth scenarios adopted in Powerlink's probabilistic planning result in a capex forecast that reasonably reflects the capex criteria.
- The medium growth scenarios adopted by Powerlink are inconsistent with the AER's view on a realistic expectation of the demand forecast and cost inputs required to achieve the capex objectives. As a result, the AER is inclined to accept the low growth probability scenarios for the purpose of making an assessment in accordance with clause 6A.6.7 of the NER.

3.4.3 Carbon price trajectory

Section 3.4.2 sets out the AER's consideration of Powerlink's probabilistic planning method. ROAM developed 20 scenarios for Powerlink using planting schedules for combinations of three themes. The carbon price trajectory (CPT) theme proposes three carbon emissions reduction targets the Australian Government may commit to in the next regulatory control period.

The AER considers 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 is thus not satisfied the capex forecast reasonably reflects the efficient cost of a prudent TNSP in Powerlink's circumstances.[228]

The AER reduced Powerlink's load driven capex for the next regulatory control period by $135 million, which is the stand alone reduction.

[228] NER, clause 6A.6.7(c)(2).

Powerlink proposed three options for the Australian Government's carbon pollution reduction target: 5 per cent, 10–15 per cent and 25 per cent reduction below 2000 levels by 2020.[229] ROAM Consulting stated the CPT targets, in combination with other factors, contribute to the likelihood of retirements in each scenario.[230] Table 3.5 sets out the probabilities that ROAM Consulting assigned to each option. Powerlink used these probabilities as part of deriving its capex proposal, particularly load driven capex.

Table 3.5 Carbon price trajectory probabilities

CPT target (per cent reduction from 2000 levels by 2020)	Probability of occurrence
5 per cent	40 per cent
10–15 per cent	57.5 per cent
25 per cent	2.5 per cent

Source: ROAM Consulting, *Generation scenarios for 2012 revenue reset application*, 7 May 2010, p. 11.

The AER considers the probabilities that Powerlink assigned to the higher CPT scenarios are not appropriate because:

- the Australian Government committed unconditionally to only the 5 per cent reduction target and has not altered its position for several years. Its commitment to the higher CPT scenarios is conditional on action by other countries. The potential action of other countries on this matter, and its implications for Powerlink's network for the next regulatory control period, is highly uncertain.
- Powerlink did not provide sufficient evidence the Australian Government will commit to higher targets.

The AER considers it is appropriate to exclude the higher CPT scenarios from Powerlink's probabilistic model. This consideration is based on the most recent and known Australian Government decisions.

The AER, with the assistance of EMCa, calculated an alternative load driven forecast using Powerlink's probabilistic model. This calculation was identical to the way Powerlink calculated its capex forecast, except the AER excluded the higher CPT scenarios. As a result, the AER will reduce Powerlink's forecast load driven capex by $135 million ($2011-12).[231]

The following sections discuss the AER's considerations in more detail.

Australian government commitments

The AER considers the carbon reduction scenarios in Powerlink's probabilistic planning should reflect the most recent and known Australian Government decisions. The Australian

[229] This section refers collectively to the 10–15 per cent and 25 per cent reduction scenarios as the higher CPT scenarios.

[230] ROAM Consulting, *Generation scenarios for 2012 revenue reset application*, 7 May 2010, p. 8.

[231] EMCa, *Powerlink revenue determination: Technical review*, 6 September 2011, p. 61.

Government has committed unconditionally to the five per cent reduction target and has not altered this position for several years.

In December 2008, the then Australian Government committed to reducing carbon emissions by 5 per cent below 2000 levels by 2020. It indicated it may commit up to a 15 per cent reduction by 2020, depending on the scale of global action.[232] On 27 January 2010, the then Australian Government submitted its commitments to the United Nations Framework Convention on Climate Change's Copenhagen Accord (the 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.[233]

The current Australian Government reiterated this commitment at the December 2010 Climate Conference in Cancun (the Cancun Conference).[234]

The outcomes of the Cancun Conference (and previous climate change conferences) are not legally binding under international law.[235] It is thus unclear what form such commitments will take in terms of legislation, schemes and other instruments. The effects on Powerlink's network are also unclear. The original intention was for the Carbon Pollution Reduction Scheme (CPRS) to be the main element of Australia's carbon emissions reduction efforts. However, Bills for the CPRS failed to pass the senate on two occasions. The then Australian Government deferred the CPRS to at least 2013 'due to the slow progress of global emissions control efforts'.[236] Since then, the current Australian Government proposed the Clean Energy Legislative Package (commonly referred to as the carbon tax) in place of the CPRS. On 8 November 2011, the Senate passed the carbon tax which will start on 1 July 2012.[237] In the Explanatory Memorandum to the carbon tax, the current Australian Government confirmed its unconditional 5 per cent target and conditional 15 to 25 per cent targets previously made in the Accord and the Cancun Conference.[238] Therefore, the AER considers that only the 5 per cent target reflects the likely scenario during the next regulatory control period. The AER therefore adopted this scenario in setting Powerlink's capex for this draft decision.

EMCa stated recent Australian Government announcements on emissions taxes and other measures provide greater certainty regarding the CPT scenarios. The Australian Government's 2011 Climate Change Plan set the same targets as those submitted to the Cancun Conference. EMCa considers the Australian Government's commitment is not likely

232 Australian Government, *Carbon pollution reduction scheme: Australia's low pollution future*, volume 1, December 2008, p. iv.

233 Australian Government, *Australia's submission to Copenhagen Accord*, 27 January 2010.

234 Department of Climate Change and Energy Efficiency, *National targets*, www.climatechange.gov.au/en/government/reduce/national-targets.aspx, updated 12 August 2011.

235 www.climatechange.gov.au/government/international/post-2012-architecture.aspx

236 Parliament Library, *Carbon pollution reduction scheme*, www.aph.gov.au/library/pubs/ClimateChange/governfance/domestic/national/cprs.htm, updated 22 October 2010.

237 http://www.climatechange.gov.au/government/clean-energy-future.aspx

238 The Parliament of the Commonwealth of Australia (Senate), *Clean Energy Bill 2011*, *Revised Explanatory Memorandum*, 2010-2011 p. 11.

to deliver carbon reductions above five per cent.[239] It is thus pragmatic to simplify Powerlink's modelling by discarding the higher CPT scenarios.[240]

No evidence of commitment to higher targets

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

The AER asked Powerlink to justify the probabilities in table 3.5, particularly the high probability assigned to the 10–15 per cent reduction scenario. It also asked for evidence of global action that would trigger the Australian Government's commitments to the higher CPT scenarios in the next regulatory control period.[241]

Powerlink responded that the probabilities in table 3.5 were appropriate at the time of the revenue proposal, and it engaged ROAM Consulting to update the CPT theme set probabilities. Table 3.6 summarises ROAM Consulting's revised CPT probabilities. Powerlink advised these revised probabilities lead to a capex reduction of $37.7 million over the next regulatory control period.[242]

Table 3.6 Revised carbon price trajectory probabilities

CPT target (per cent reduction from 2000 levels by 2020)	Probability of occurrence
5 per cent	80 per cent
10–15 per cent	10 per cent
25 per cent	10 per cent

Source: ROAM Consulting, *Revised CPT probabilities*, 2 September 2011, p. 4.

ROAM Consulting stated 89 countries have made international pledges to limit their emissions at the Cancun Conference. These countries include major developing countries such as China, India and Brazil, and advanced economies including the European Union, Japan and the United States. ROAM Consulting pointed to a recent Productivity Commission report that identified over 1000 carbon policy measures in a review of nine countries.[243] It stated:

> it is difficult to determine whether the conditions defined in Australia's pledge for moving to a 10–15% target have been met, but it could certainly be argued strongly that this is the case. Therefore, although a 5% target remains a likely outcome, a 10–15% is also considered a possibility over the relevant timeframe.[244]

The United Nations held workshops in Bonn on 9–10 June 2011, as mandated at the Cancun Conference. The Climate Action Tracker stated 'there were no new announcements that

239 EMCa, *Powerlink revenue determination: Technical review*, 6 September 2011, p. 74.

240 EMCa, *Powerlink revenue determination: Technical review*, 6 September 2011, p. 61.

241 AER, *Information request AER/028 of 29 August 2011*.

242 Powerlink, *Response to information request AER/028 of 29 August 2011*, received 6 September 2011, p. 1. Confidential.

243 ROAM Consulting, *Revised CPT probabilities*, 2 September 2011, p. 2.

244 ROAM Consulting, *Revised CPT probabilities*, 2 September 2011, p. 3 .

would increase the level of ambition and thereby help to close the emission gap.'[245] The Australian Government had not announced any move towards the higher CPT scenarios at the time of the draft decision.

Powerlink did not justify the revised weightings assigned to the higher CPT scenarios. In revising the CPT probabilities, ROAM Consulting noted Australia's pledge at the Cancun Conference:

> Australia will reduce its greenhouse gas (GHG) emissions by 25 per cent compared with 2000 levels by 2020 if the world agrees to an ambitious global deal capable of stabilizing levels of GHGs in the atmosphere at 450 ppm carbon dioxide equivalent (CO2 eq) or lower. Australia will unconditionally reduce its emissions by 5 per cent compared with 2000 levels by 2020 and by up to 15 per cent by 2020 if there is a global agreement which falls short of securing atmospheric stabilization at 450 ppm CO_2 eq under which major developing economies commit to substantially restraining their emissions and advanced economies take on commitments comparable to Australia's.[246]

The AER considers it is reasonable to at least assign a lower probability to the 25 per cent reduction given it is a more stringent target than 10–15 per cent. This is especially relevant given the time it is taking for governments to agree to carbon reduction targets.[247] ROAM Consulting itself stated it is challenging for world leaders to agree to appropriate international action.[248]

It is arguable the higher CPT scenarios should be assigned non-zero probabilities given the Australian Government's conditional commitment at the Cancun Conference. However, such assignments would be arbitrary given the uncertainty regarding other countries' future carbon reduction commitments, as discussed above. There is also the question of whether or not commitments to the Accord become legally binding. 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 will affect Powerlink's network. An Energy Consumers Group operating in Queensland stated the cost impacts of carbon policies on Powerlink would be gradual and would be minimal in the early years.[249]

The AER is also concerned about Powerlink's application of the revised probabilities in the probabilistic model, particularly the probability for the 25 per cent target. The 25 per cent target appears in only one scenario in the probabilistic model: the '25 per cent-M-AGG' scenario (or scenario 20), which assumes the 25 per cent target, medium load growth and aggressive LNG expansion. Powerlink's original proposal assigned a 1.24 per cent probability to this scenario.[250]

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245 Climate Action Tracker, *Emissions and CO_2 concentrations at record highs: developed countries ambitions stalled while developing countries gearing up to act*, Climate Action Tracker Update, 16 June 2011, p. 2.

246 ROAM Consulting, *Revised CPT probabilities*, 2 September 2011, p. 1.

247 The Cancun Conference is one of a series of post-Kyoto Protocol meetings on reducing greenhouse gas emissions. The Kyoto Protocol was adopted on 11 December 1997 and entered into force on 16 February 2005. See http://unfccc.int/kyoto_protocol/items/2830.php.

248 Powerlink, *Generation scenarios for 2012 revenue reset application*, Appendix E, May 2010, p. 11.

249 The Energy Consumer Group, *Queensland electricity transmission revenue reset*, *Powerlink application*, *A response by the Group*, August 2011, p. 47.

250 ROAM Consulting, *Generation scenarios for 2012 revenue reset application*, 7 May 2010, p. 21.

According to AER analysis, the revised CPT probabilities would result in Powerlink assigning a probability considerably less than 10 per cent to scenario 20. Powerlink presumably assigned a 10 per cent probability to scenario 20 on pragmatic grounds. ROAM Consulting included only one scenario associated with the 25 per cent target on the basis that the other possible scenarios had less than 1 per cent probability of occurring.[251] Powerlink therefore developed capex plans for only one scenario with the 25 per cent CPT target.[252] It appears scenario 20 is associated with a higher deterministic load driven capex forecast. Artificially assigning a 10 per cent probability to scenario 20 appears to produce an upward bias in the probabilistic model and explains at least some of the disparity between Powerlink's revised capex adjustment and the AER's reduction ($135 million).[253]

As discussed above, the AER considers the CPT scenarios in Powerlink's probabilistic planning should reflect the most recent and known Australian Government decisions. The AER considers Powerlink's revised CPT probabilities, especially the revised weighting to the 25 per cent target, are not appropriate.

ROAM Consulting pointed to recent Treasury modelling that investigated the emissions and economic effects of adopting the five per cent and the 25 per cent reduction targets.[254] The report, however, appears to be a description of scenario modelling performed for the Australian Treasury regarding a potential carbon tax. It is not in itself a commitment to the higher CPT scenarios.

3.4.4 Cost estimation risk factor

Powerlink applies a cost estimation risk factor to unapproved (that is, yet to receive board or delegate sign-off) capital projects. This is for risks that Powerlink considers are beyond its control at the time of making its initial capex forecasts for the next regulatory control period.

The AER rejects Powerlink's proposed three per cent cost estimation risk factor. This reduces Powerlink's forecast capex by $70 million ($2011-12) during the next regulatory control period.

Powerlink estimates its capital costs using Base Planning Objects (BPO). For each unit of plant or equipment, the BPO models the amount of steel, aluminium, copper and labour and the number of individual plant items etc, needed to represent the unit of plant or equipment.[255] Other costs associated with land, including soil type and terrain factors, are also included. The BPOs are updated annually to reflect new and emerging information, leading to more precise estimates on future projects.

Having forecast capex requirements over the period, Powerlink developed forecast costs from its BPOs. It calculated the BPOs from a mix of competitively tendered external providers' costs and internal service delivery procurement.

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251 ROAM Consulting, *Generation scenarios for 2012 revenue reset application*, 7 May 2010, p. 13.

252 Powerlink, 2010 Grid plan, volume 1, 30 March 2011, p. 10.

253 EMCa, *Response to information request AER/042 of 27 September 2011*, received 27 September 2011.

254 ROAM Consulting, *Revised CPT probabilities*, 2 September 2011, p. 3; Australian Government (Treasury), *Strong growth, low pollution*, *Modelling a carbon price*, 2011, chapter 5.

255 Powerlink, *Response to EMCa/010, additional information request—BPOs*, 21 July 2011, p. 1.

Powerlink applied the cost estimation risk factor to its capital accumulation model for unapproved network projects only. These projects have not yet received formal board or delegate approval but are included in its capex forecast for the next regulatory control period.

Powerlink commissioned Evans and Peck to provide an opinion on the expected risk distribution of its capital projects over the next regulatory control period and to estimate the cost estimation risk factor. Evans and Peck stated[256]:

> The intent of the cost estimation risk factor is to recognise the asymmetric nature of risk associated with delivering capital projects. The risk factor recognises that even though estimates are made to determine the most likely cost of a project, there is a greater probability that costs will increase than decrease.

Evans and Peck assessed 50 historic Powerlink projects, and weighted historic costs—both forecast and actual (out–turn)—in the current regulatory control period. It found:

- Lines projects had cost overruns of 4.5 per cent
- Substation projects cost overruns were 1.5 per cent
- Easements did not have statistically significant cost estimation overruns but nevertheless had a line risk factor of 4.5 per cent applied.[257]

It recommended Powerlink apply a three per cent cost estimation risk factor (across all project types: lines, substations and easements) to accommodate asymmetrical risk. Powerlink's regulatory proposal seeks to apply a three per cent cost estimation risk factor to unapproved capital projects in the next regulatory control period.

The AER must be satisfied the total forecast capex reasonably reflects the capex criteria, not each individual program and project constituting that total. That is, the NER requires the AER to be satisfied that, overall, total costs are prudent and efficient, and meet a realistic expectation of the demand forecast and cost inputs.[258]

These three criteria are complementary and designed to identify the level of efficient expenditure that a prudent operator, in the circumstances of Powerlink, would need to meet the capex objectives.

In deciding whether Powerlink's forecast capex reasonably reflects the capex criteria, the AER considered the capex factors, the National Electricity Objective (NEO)[259] and the Revenue and Pricing Principles (RPP).[260] The RPP require the AER to provide a network service provider with a reasonable opportunity to recover at least the efficient costs the operator incurs in providing direct control services.[261] The AER considers that transmission prices should be cost reflective in order to provide the Transmission Network Service Provider (TNSP) with the opportunity to recover the costs it incurs in providing prescribed transmission

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256 Evans and Peck, *Powerlink, Cost Estimation Risk Factor*, *Appendix G*, May 2011, p. 3.
257 Evans and Peck, *Powerlink, Cost Estimation Risk Factor*, *Appendix G*, May 2011, p. 3.
258 NER, clause 6A.6.7(c)(1) to (3).
259 NEL s.7.
260 NEL, s.7A.
261 NEL s.7A(1).

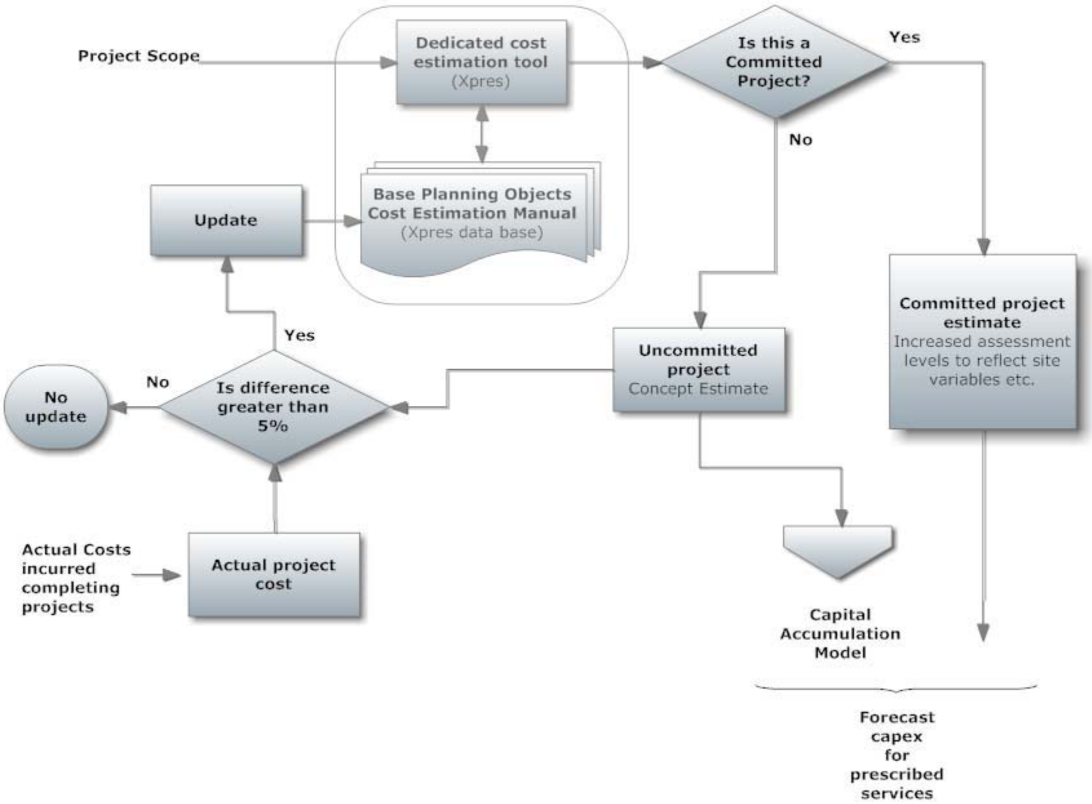
services. The AER has previously interpreted 'efficient costs' to mean the expected costs based on outcomes in a workably competitive market.[262]

Not every capex factor will be relevant to every program or project that constitutes Powerlink's forecast capex.[263] Rather, the AER had regard to those capex factors relevant to the forecast project costs being proposed. This included the information provided in Powerlink's regulatory proposal, including an analysis of input costs and analysis undertaken by AER's consultant, EMCa.

As part of the incentive regime under the NER, a TNSPs role is to forecast its future capex costs to meet the capex objectives.[264]

Figure 3.4 outlines Powerlink's continuous cycle of updating its unit costs, as described to the AER and its consultant, EMCa.

Figure 3.4 Powerlink cost estimation process



Source: EMCa, *Powerlink revenue determination technical review: Forecast capital expenditure and service targets*, September 2011 p. 49.

The AER considers this annual BPO update an appropriate tool for improving Powerlink's base cost estimating procedures. Such an outcome reasonably reflects the capex criteria.[265] It

262 AER, *Victorian electricity distribution network service providers: Distribution determination 2011–2015*, October 2010, p. 397.

263 NER, clause 6A.6.7.

264 NER, clause 6A.6.7(a).

265 NER, clause 6A.6.7(c)(1)–(3).

is also illustrative of Powerlink managing its risk of inflated costs through an improved cost estimating process.

EMCa's findings support these conclusions. EMCa found that the adjustments Powerlink made to its BPOs would have been incorporated in forecast capex for the next regulatory control period because:

- The current regulatory control period commenced 1 July 2007 and Powerlink's estimating manual was revised three years later, in July 2010
- Powerlink advised that where an input moved significantly between reviews, the input is updated and the estimating manual is updated accordingly.[266]

EMCa concluded that the continuous BPO update cycle, outlined in figure 3.4, should allow for a satisfactory cost estimation process without the need to resort to additional cost estimation risk factors.[267]

The Evans and Peck report noted the likelihood that actual costs were more likely than not to be higher than lower compared to initial forecast, hence the need for a cost estimation risk factor. However, the AER does not consider that service providers will be worse off without resort to a cost estimation risk factor. The materials costs escalator and labour cost escalator provide for real increases in Powerlink's materials and labour, respectively. Non-labour and non-materials costs are best reflected in Powerlink's cost estimation processes in figure 3.4. It suggests the BPOs are updated for actual knowledge of costs differences due to inherent risks from past projects. This mitigates the need to apply an additional cost estimation risk factor to uncommitted projects because past knowledge about similar projects, including for instance working in undisturbed geographic locations, will (or should) have been factored into the BPO updates. Furthermore, the AER observes Powerlink's annual BPO updates adequately capture known costs from past projects. Powerlink uses these to forecast future project expenditure.[268] The divergence of future costs from past actual experience is a risk Powerlink is best placed to manage.

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

In conclusion, the AER considers applying a three per cent cost estimation risk factor to uncommitted projects removes some cost discipline on Powerlink. It provides Powerlink with a premium above the efficient costs of achieving the capex objectives. The AER considers that

266 EMCa, *Powerlink revenue determination technical review: Forecast capital expenditure and service targets*, 6 September 2011, p. 50.

267 EMCa, *Powerlink revenue determination technical review: Forecast capital expenditure and service targets*, 6 September 2011, p. 51.

268 EMCa, *Powerlink revenue determination technical review: Forecast capital expenditure and service targets*, 6 September 2011, pp. 48–49.

such an outcome does not give effect to and is not consistent with the capex objectives, NEO[269] and RPP in the National Electricity Law.[270]

3.4.5 Capex adjustments due to alternative demand forecast

The AER must accept a transmission network service provider's (TNSP's) capital expenditure (capex) forecast if it is satisfied it reasonably reflects the capex criteria.[271] The AER considers Powerlink's demand forecast is not a realistic expectation of demand. The AER thus substituted a demand forecast it considers is a realistic expectation of demand for the next regulatory control period (see attachment 2 for the AER's consideration of Powerlink's demand forecast for the next regulatory control period).

This section sets out the AER's adjustments to Powerlink's forecast load driven capex resulting from the alternative demand forecasts. Load driven capex includes augmentation capital expenditure (capex), which contributes 50 per cent to Powerlink's total forecast capex for the next regulatory control period. Connections and easement expenditure are also part of load driven capex.

The AER has considered other aspects of the revenue proposal that affect Powerlink's forecast load driven capex independently of the demand adjustment. The AER considers these in the following sections:

- 500kV adjustments in section 3.4.6
- Carbon price trajectory in section 3.4.3
- Cost estimation risk factor in section 3.4.4
- Efficiency adjustment in section 3.4.1.

The AER considers Powerlink's proposed demand is not a realistic expectation of forecast demand. Therefore the AER will reduce load-driven capex by $554 million.

Powerlink developed its load driven capex forecast using a probabilistic approach, with assistance from ROAM Consulting.[272] This approach uses 20 scenarios based around Powerlink's high, medium and low load growth (demand) forecasts in the 2010 annual planning report (APR).[273] Powerlink developed load driven capex plans to address each scenario. Powerlink then derived the forecast load driven capex using these plans and the probabilities associated with each scenario.[274]

Powelink proposed $3,483.9 million in total capex for the next regulatory control period.[275] Augmentation capex contributes $1729.6 million—approximately 50 per cent of total capex

269 NEL s.7.

270 NEL s.7A.

271 NER, clause 6A.6.7(c).

272 Powerlink, *2010 Grid plan*, *Volume 1*, 30 March 2011, p. 5.

273 Powerlink, *2010 Grid plan*, *Volume 1*, 30 March 2011, pp. 8, 10.

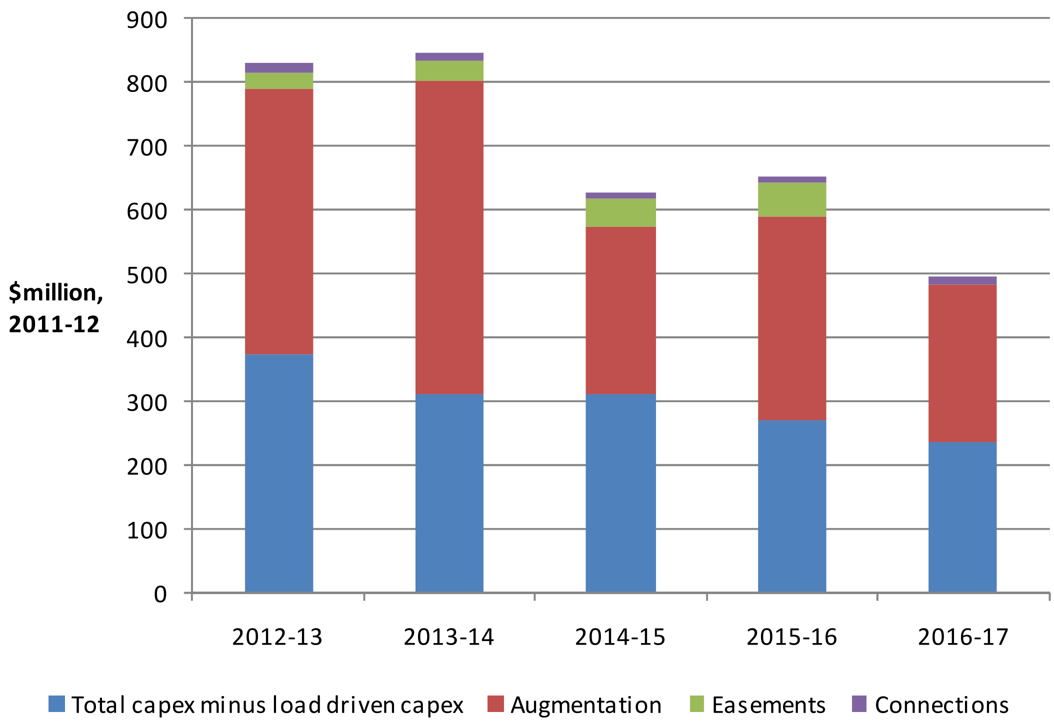
274 Powerlink, *2013–2017 Revenue proposal*, 31 May 2011, pp. 56–57.

275 All dollar amounts are denominated in $2011-12, unless otherwise indicated.

proposal. Powerlink proposed easements and connections capex for the next regulatory control period of $189.4 million and $55.1 million, respectively.

Figure 3.5 shows the annual contribution of Powerlink's proposed load driven capex to the total capex proposal.

Figure 3.5 Contribution of Powerlink's load driven capex to total capex



Source: Powerlink, *Pro-forma Statements*, 31 May 2011.

Attachment 2 details the AER's consideration of Powerlink's demand forecast for the next regulatory control period. The AER did not accept Powerlink's demand forecast and substituted an alternative demand forecast it considers is realistic for the next regulatory control period.[276]

The AER's alternative demand forecast is lower than Powerlink's forecast for each regulatory year of the next regulatory control period. This, in turn, results in a reduction to Powerlink's forecast capex for the next regulatory control period.

The alternative demand forecast would result in deferral of projects to latter years of the next regulatory control period. Some projects appearing later in each scenario would be deferred to the regulatory control period beginning 2017–18. Powerlink's probabilistic method confirms this: EMCa observed that in moving from high demand to medium demand scenarios, many load driven projects are deferred. The same is true in moving from the medium demand to low demand scenarios.[277]

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[276] NER, clause 6A.6.7(c)(3).

[277] EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to Australian Energy Regulator*, 6 September 2011, pp. 58–59.

In the probabilistic method, ROAM Consulting assigned the highest probability (approximately 80 per cent) to the medium load growth forecast (and approximately 10 per cent to the low growth scenario and 10 per cent to the high growth scenario).[278] Section 3.4.2 contains the AER's consideration of Powerlink's probabilistic approach.

EMCa produced an alternative load driven capex forecast by applying the alternative demand forecast to Powerlink's methods and models. Figure 3.6 shows EMCa's alternative demand forecast is between Powerlink's medium and low load growth forecasts (closer to Powerlink's low load growth forecast). EMCa assigned different weights to load growths in Powerlink's models proportionate to the demand adjustment. EMCa advise that it assigned a 70 per cent weighting to Powerlink's low load growth, and 30 per cent to the medium growth.[279] EMCa then ran Powerlink's models using these weightings to derive the alternative load driven capex.

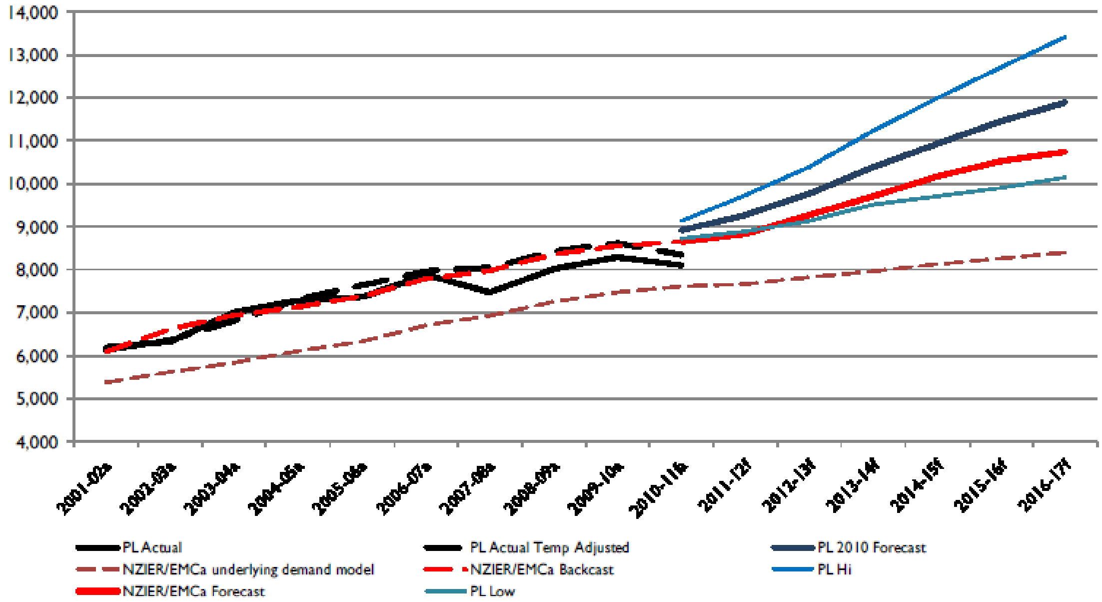
The AER considers EMCa's approach to adjusting load driven capex (due to the demand adjustment) is reasonable. Firstly, the capex adjustments are based on the alternative demand forecast which the AER considers is realistic for the next regulatory control period. Also, the detailed analyses Powerlink performed to arrive at its load driven capex proposal are implicit with this approach. These include load flow analyses, identification of potential limits to the network, and identification of project options to address those limits. EMCa simply readjusted the weightings in the probabilistic method to reflect the AER's alternative demand forecast. The AER's alternative load driven capex (like Powerlink's load driven capex forecast) is not based on a specific deterministic project plan. Rather, it provides a capex path that is reasonable for the set of scenarios.[280]

278 ROAM Consulting, *Report to Powerlink*, *Generation scenarios for 2012 revenue reset application*, 7 May 2010, p. 13.

279 These are indicative figures. The actual weighting in a particular regulatory year depends on the proportionate difference between EMCa's alternative demand forecast and Powerlink's medium and low load growth forecasts, respectively, for that year.

280 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to Australian Energy Regulator*, 6 September 2011, pp. 58–60, 73.

Figure 3.6 EMCa/AER demand forecast compared to Powerlink's demand forecasts (MW, 50 per cent PoE native demand)



Source: EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to Australian Energy Regulator*, 6 September 2011, p. 57.

3.4.6 Load driven capex review

The AER considered Powerlink's governance framework (discussed in section 3.4.1). In this review, as in the review of load driven capex (and a selection of representative projects) the AER identified issues in the way Powerlink applied the governance framework in relation to the 500kV network.

Powerlink proposed four major network development projects to 'established a 500kV transmission network into south east Queensland'.[281] Powerlink intends to augment its existing 275kV network and operate these network augmentations for the time being at 275kV. However, Powerlink proposes to build this infrastructure with capability to be operated at 500kV at some point in the future. A large proportion of the proposed capital cost of the four 500kV capable projects is the inclusion of costs to enable the assets to operate at 500kV in the future. Augmenting the 275kV network with '500kV capable' infrastructure almost doubles the cost of these projects.[282]

- The AER considers the appropriate total adjustment to capex is a reduction of $544.3 million ($2011-12)[283]. This is a 62 per cent reduction compared to Powerlink's proposed forecast capex of $879.1 million ($2011-12) for these projects.

The $544.3 million ($2011-12) reduction comprises a:

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281 Powerlink, 2013-2017 Revenue proposal, 31 May 2011, p. 13.

282 Powerlink advised a ratio of 1:1.95 between 275kV and 500kV to EMCa [email from Paul Sell, *Follow up response re AER/034*, 7 September 2011]. Therefore the 275kV equivalent cost can be derived from the 500kV cost by dividing by 1.95. This applies to the cost of the project, excluding easements.

283 All monetary units in the attachment are in base year 2011-12 unless otherwise specified.

- $428.3 million ($2011-12) reduction for the incremental cost to construct a 500kV capable infrastructure over and above the cost to build to 275kV for the four projects.
- $116.0 million ($2011-12) for the cost of the build to 275kV for two (of the four) 500kV capable projects, given the reduced demand forecast proposed by EMCa and accepted by the AER.

Powerlink may wish to consider whether these projects should be more appropriately classified as contingent project(s) in its revised revenue proposal.[284]

Table 3.7 sets out the AER's recommended capex adjustments for each of the four projects.

Table 3.7 Capex adjustments for 500kV capable projects ($million, 2011-12)[285]

Project	Powerlink proposed capex[a]	275kV build	Increment	AER adj. (reduct'n)	Approved capex	Reason for adjustment
Halys–Blackwell[b]	357.8	183.5	174.3	174.3	183.5	Increment $174.3
Halys–Western Downs (1st line)	295.1	151.3	143.8	143.8	151.3	Increment $143.8
Halys–Greenbank	157.1	80.6	76.5	157.1	–	Increment $76.5 Defer[c] $80.6
Halys–Western Downs (circuits 5 and 6)	69.1	35.4	33.7	69.1	–	Increment $35.4 Defer[c] $33.7
TOTAL	**879.1**	**450.8**	**428.3**	**544.3**	**334.8**	

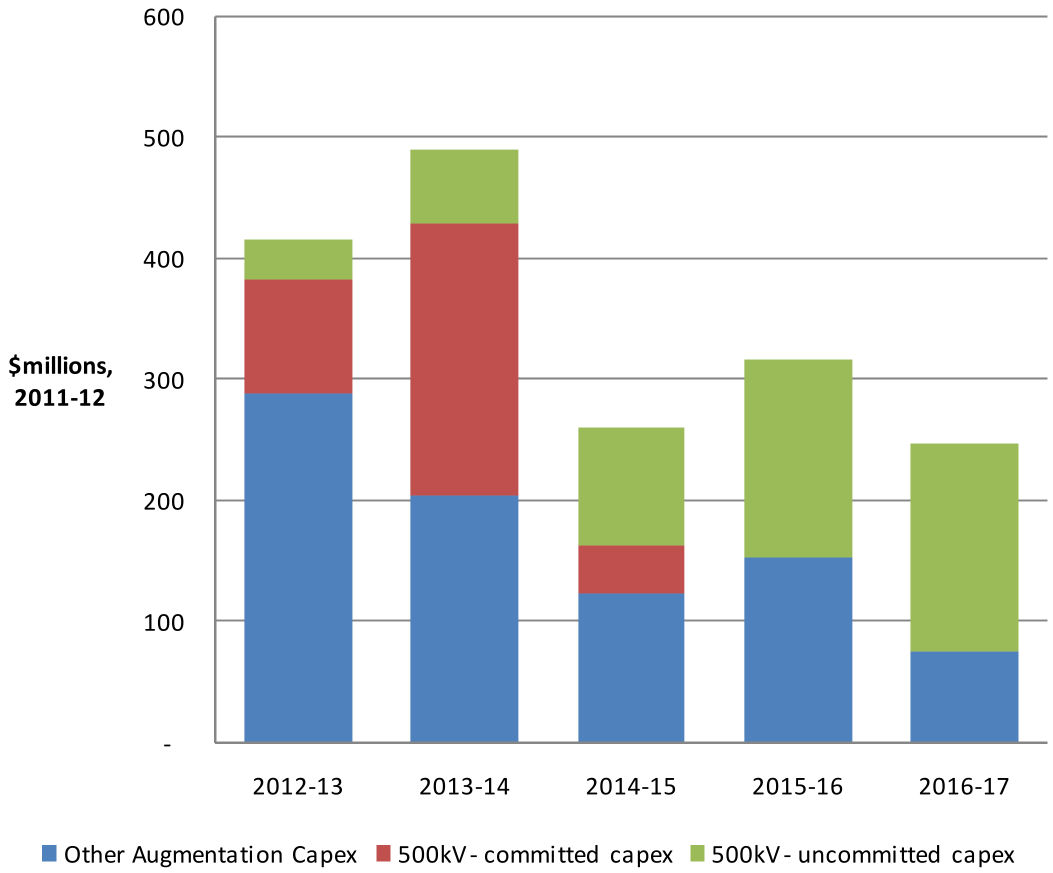
(a) Probability weighted in the next regulatory control period.
(b) This project has received Powerlink's board approval and has had a regulatory test applied.
(c) Assuming the EMCa reduced demand forecast.
Source: Powerlink, *Pro-forma information statement*, 31 May 2011.

Powerlink proposed four projects that will augment its 275kV network with capability to operate at 500kV but which Powerlink intends to operate at 275kV for at least the next two regulatory control periods. These projects all involve the construction of a 500kV double circuit line, initially operated at 275kV.

Figure 3.7 sets out the forecast capex for the 500kV capable projects (committed and uncommitted) relative to other network augmentation capex.

284 NER, clause 6A.6.7(e)(10) and clause 6A.8.1.
285 Not including easements.

Figure 3.7 Proposed 500kV projects and other augmentation capex, ($million, 2011-12)



Source: AER calculations based on Powerlink, *Pro-forma information statement*, 31 May 2011.

The total probability weighted capex for these four 500kV capable projects during the next regulatory control period is $879.1 million ($2011-12).[286] A significant proportion of the capital cost of these four projects is for the capability of the assets to operate at 500kV in the future. The cost to build and operate these four projects as a dedicated 275kV network is $450.8 million ($2011-12). The additional (incremental) cost to build these four projects with the capability of operating at 500kV is $428.3 million ($2011-12).

The first of the four projects—construction of a 500kV double circuit line between Halys and Blackwall by summer 2014-15[287]—underwent a regulatory test in 2009 and is now a committed project (that is, Powerlink's board has approved the project for construction).[288] The remaining three projects are uncommitted capex projects; as with other uncommitted

[286] The probability weighted forecast capex proposed by Powerlink is the capex project costs weighted according to the probability of occurrence. It excludes the cost of easements.

[287] Commissioning date of 2013-14 was reported Powerlink's Regulatory test (*Maintaining a reliable electricity supply to southern Queensland*, 2009, p. 5) and deferred to 2014-15 in Powerlink's *Annual planning report*, 2011, p. 47.

[288] Powerlink, Regulatory test, *Maintaining a reliable electricity supply to southern Queensland*, 2009.

capex projects they have not yet undergone a regulatory investment test for transmission (RIT-T).[289]

Powerlink's revenue proposal stated these three uncommitted projects are required to achieve the capex objectives[290] and the projects key drivers are:

- To provide adequate transmission capacity out of the Bulli zone to meet demand in the Queensland region (excluding the load in the Bulli zone).[291] [292]
- To provide adequate transmission capacity into south east Queensland such that mandated reliability of supply obligations can be met.[293]
- In its 2009 regulatory test, Powerlink stated that the double circuit line between Halys and Blackwall (the committed project) is required because:
  - 'the forecast growth in electricity demand outlined in [Powerlink's load forecasts][294] will increase loadings on the high voltage network between Bulli and south west zones, and between south west and south east Queensland. Without action to augment supply, the capability of both these grid sections will be insufficient to reliably meet forecast demand following critical contingencies'.[295]
- The AER must accept Powerlink's forecast of required capex if satisfied that the total forecast capex reasonably reflects the capex criteria.[296] The AER's assessment of total forecast capex examined whether the expenditure reasonably reflects the capex criteria. The AER reviewed Powerlink's forecast capex program and, specifically, the four 500kV capable projects with a focus on their business justification, need, timing and cost estimation. The AER, with the assistance of EMCa, also reviewed Powerlink's capital governance program in the context of these projects.
- The AER's analysis of the 500kV capable projects considered whether (and which) easements had been purchased and the level of economic analysis that Powerlink had undertaken and provided to its board.[297] For clarity, the cost of easements has been excluded from AER's analysis (unless otherwise stated); the AER recognises transmission network service providers may have a need for long term strategic acquisition of easements.

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289 The regulatory investment test for transmission (RIT-T) replaced the 'Regulatory test' on 1 August 2010. The requirements for the RIT-T and application guidelines are set out in clause 5.6.5B of the Electricity Rules.

290 NER, clause 6A.6.7(a).

291 Powerlink, *2013-2017 Revenue proposal*, Appendix M, 31 May 2011, p. 7.

292 Powerlink, *2013-2017 Revenue proposal*, Appendix M31 May 2011, p. 26.

293 Powerlink, *2013-2017 Revenue proposal*, Appendix M, 31 May 2011, p. 9.

294 Powerlink's load forecast have subsequently been updated in Powerlink's 2011 Annual planning report and this project deferred by one year. Further deferrals may occur under the AER's revised demand forecast.

295 Powerlink Regulatory test, *Maintaining a reliable electricity supply to the southern Queensland*, 2009, p. 15.

296 NER, clause 6A.6.7(c).

297 Easements are included in Powerlink's network, load driven capex and are therefore assessed by the AER under NER, clause 6A.6.7. See also Powerlink, 2013–2017 Revenue proposal, 31 May 2011, Table 8.7.

The AER engaged EMCa to assist with its review of Powerlink's forecast future demand and to evaluate the impact of any revised demand forecast on the timing of the 500kV capable projects.[298]

- The AER distinguished between projects that are at different planning stages, when considering whether the costs meet the capex criteria:

- Uncommitted projects: three of the four 500kV projects have not yet been tested in the regulatory test or RIT-T assessment process but Powerlink's board has approved the 'concept estimate' cost and considers that these projects meet the capex criteria.

- Committed projects: the double circuit line between Halys and Blackwall (the first of the four 500kV projects) has been through a regulatory test / RIT-T process, is committed and has received full Powerlink board approval. Construction has either commenced or is imminent.

The AER is not satisfied that Powerlink's proposed capex on the 500kV capable projects reasonably reflects the capex criteria. There are two key issues that lead the AER to recommend a capex reduction:

- The projects are deferred under the revised demand forecast; some of the projects are deferred into subsequent regulatory control periods and

- 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.

- A third issue— that these projects are driven by generation (and are therefore not prescribed services)—was raised by AEMO and also considered by the AER.

Deferral of the 275kV network upgrade

- The AER considers that two of the four 500kV capable projects do not meet the capex objectives.[299] This is because the projects are unlikely to be required in the next regulatory control period, particularly (although not only) given the reduced demand forecast accepted by the AER. That is, these two projects do not meet the expected demand for prescribed transmission services over the next regulatory control period. These projects are:

  - Halys–Greenbank ($157.1 million, $2011-12)), which Powerlink proposed to commence in the last years of the next regulatory control period for commissioning subsequent to the next regulatory control period, and

  - Halys–Western Downs, 5th and 6th circuits ($69.1 million, $2011-12)), which Powerlink proposed will commence in the final years of the next regulatory control period but only under its 'high' demand scenario assumption.

- In addition, Powerlink has deferred the first of the 500kV projects —the Halys–Blackwall. It was to be commissioned by summer 2012-13[300] and revised to 2014-15 in Powerlink's

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[298] To ascertain whether the 500kV capable capex reasonably reflects a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives under NER, clause 6A.6.7(c)(3).

[299] NER, clause 6A.6.7(a)(1) and 6A.6.7(c)(3).

[300] Powerlink regulatory test, *Maintaining a reliable electricity supply to southern Queensland*, 2009, p. 5.

2011 Annual Planning Report. Therefore the other projects; Halys–Western Downs and Halys–Greenbank (which are preceded by the first) may also be delayed beyond the dates in Powerlink's revenue proposal.[301]

- AEMO's submission also stated that the Halys–Western Downs project is likely to be outside the next regulatory control period (even under Powerlink's own demand forecast)[302] and that the Halys–Greenbank project is not likely to be commissioned within the next regulatory control period.[303]

- EMCa's reduced demand forecast defers the median commissioning date for these two projects to the subsequent regulatory control period. EMCa also recommend that deferring the capex on the Halys–Blackwall project, built to 275kV (but not adjusting the overall spend within the next regulatory control period) leads to further efficiency gains / cost reductions.

500kV incremental cost

- The 500kV projects are driven by forecast growth in electricity demand that Powerlink identifies will increase loadings on the 275kV network supplying south west and south east Queensland. Powerlink's planning studies find the thermal limitations on its 275kV network will require action from summer 2014-15[304] to ensure customers continue to receive reliable electricity supply. The AER accepts that action is required to address the limitations to the 275kV network that have been identified in Powerlink's routine planning studies. However the AER also recognises there are a number of possible solutions available to Powerlink to address this reliability of supply issue, including non-network solutions. These alternatives should be fully explored in the RIT-T process, before a project is committed by Powerlink. That said, the AER accepts that Powerlink's planning process has identified that action is required to address limitations on the 275kV network.

- The AER expects a prudent operator in the circumstances of Powerlink would demonstrate the need for, and efficient costs of, the additional incremental cost of developing a 500kV network which is to be operated as a 275kV network.[305]

- The AER considers 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 the three uncommitted projects).

  <u>Uncommitted projects</u>

  - Three of the projects are in the 'uncommitted' planning phase. Uncommitted projects have not yet been through the regulatory test / RIT-T process and have not received approval for construction to commence.

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301 For example, the Halys–Western Downs 5th and 6th circuits (the fourth project) is necessarily preceded by the Halys–Western Downs 1st circuit (the second project).

302 AEMO, *Response to Powerlink Revenue Reset*, 12 September 2011, p. 6.

303 AEMO's NTNDP, 2010, showed that development was triggered in the 2015-2020 period (AEMO, *Submission*, 12 September 2011, p. 6). Powerlink's *Revenue proposal* (Attachment M, p.9) showed the median commissioning date is 2018, which is outside the next regulatory control period.

304 Commissioning date of 2013-14 was reported Powerlink 2009 regulatory test (*Maintaining a reliable electricity supply to southern Queensland*, 2009, p.5) and deferred to 2014-15 in Powerlink's *Annual planning report, 2011,* p. 47. This is for the first project, the Halys–Blackwall project.

305 NER, clause 6A.6.7(c).

- The forecast (probability weighted) costs for these three ‘uncommitted’ projects total $521.2 million ($2011-12), of which $267.3 million ($2011-12) is the cost of the build to 275kV and the remaining $253.9 million ($2011-12) is the incremental cost of building to 500kV.

- 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). This incremental cost is almost twice the cost of the build to meet the identified need, which is to maintain reliable supply on the 275kV network.

- Given the above, the AER considers that a decision to accept the 500kV incremental cost in proposed forecast capex should be underpinned by cost-benefit planning studies. A cost-benefit analysis would demonstrate that the forecast reasonably reflects the cost that a prudent operator in the circumstances of Powerlink would require to achieve the capex objectives.[306] The AER expects that such a study should be considered in the course of the network planning cycle and Powerlink’s capital governance framework, and would reasonably demonstrate the economic benefits of:

  a) continuing to augment the network at 275kV until the 500kV is needed, then upgrading to 500kV

  compared with

  b) building to 500kV now and carrying the associated costs, plus the limited upgrade costs at the time that the 500kV is ultimately required

  compared with

  c) implementing non-network solutions, such as contracting with new generators.

- The material provided by Powerlink did not include analysis of the above scenarios.[307]

<u>Committed project—regulatory test</u>

- The committed project, Halys–Blackwall, is expected to cost $357.8 million ($2011-12) [308], of which $183.5 million ($2011-12) is the cost of the network build to 275kV and the remaining $174.3 million ($2011-12) is the incremental cost of building the network to a 500kV capability.

- The AER does not accept the incremental cost ($174.3 million, $2011-12) of the 500kV capable build meets the capex criteria for the same reasons that the incremental costs of uncommitted projects do not meet the capex criteria (as outlined above).

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306 In accordance with NER, clause 6A.6.7(c)(2).

307 Powerlink performed a regulatory test in 2009 for the first of these projects, however these options were not tested because Powerlink assumed it would be unable to acquire easements. The validity of the assumption that easements would be unable to be obtained in the future was not tested or demonstrated.

308 Probability weighted in the next regulatory control period.

- In addition, 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 has assumed it will be unable to acquire 275kV easements for the project in the future and therefore needed to build on existing easements. The AER considers this should have been tested rather than assumed.

- Furthermore, in assuming that it will be unable to acquire future easements (in the 2009 regulatory test), 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. In deciding whether or not the AER is satisfied, the AER must have regard to the extent to which a TNSP has considered and made provision for efficient and prudent non–network alternatives.[309] Powerlink has not sufficiently addressed these requirements.

- The AER notes that if Powerlink elects to construct the Halys–Blackwall project to 500kV during the next regulatory control period, it may be able roll the incremental carrying costs ($174.3 million, $2011-12) into its Regulatory Asset Base (RAB) from 1 July 2017. In the meantime however, it will have to bear those carrying costs.

- For Powerlink to have the carrying costs rolled into its RAB, it will need to demonstrate to the AER that the preferred option passes the RIT–T. This will include demonstration of an effective RIT–T evaluation.

- EMCa reached the view that Powerlink had not appropriately assessed four 500kV capable augmentation projects in accordance with its capital governance framework.[310] EMCa found 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.[311]The AER expects 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 alternative options.

- The AER, however, considers that Powerlink may be able to include the 500kV incremental costs as a contingent project in its revised revenue proposal. If so, Powerlink would need to identify an appropriate trigger event, such that the incremental cost of the 500kV network could be classified as a contingent project. [312] An appropriate trigger event must satisfy the requirements in clause 6A.8.1(c) of the NER, and may include, though not be limited to, a RIT -T demonstrating the analysis of 275kV network options and evidence showing that easements will be unable to be acquired.[313] The RIT-T should also consider non-network options appropriately.

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309 NER, clause 6A.6.7(e)(12).

310 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. 17.

311 EMCa, *Powerlink revenue determination: Technical review*, *Forecast capital expenditure and service targets*, *Report to AER*, 6 September 2011, p. 17.

312 NER, clause 6A.8.1(c)(5) and clause 6A.6.7(e)(10).

313 NER, clause 6A.6.7(c)(1) and (2) and NER, clause 6A.6.7(e)(12)- that the assumption that easements are unable to be acquired leads to prudent and efficient costs and consideration of non-network solutions.

Generation driven projects

AEMO suggested that the Halys–Western Downs 500kV DCST, operated at 275kV project is driven by generation and should not be included in the ex ante allowance:[314]

AEMO's submission stated:

> It is less clear how generation driven augmentations can be classified as providing prescribed services unless they can demonstrate 'system-wide' benefits. Therefore all projects driven by generator connections should be included as contingent projects and must demonstrate net-positive benefits under RIT-T assessment. This approach would result in projects such as Western Downs to Halys 500kV DCST Operating at 2756kV, which is not currently specified as a contingent project, to be removed from the ex-ante allowance and re-classified as contingent project.[315]

In response, Powerlink stated:

> AEMO also interprets the Western Downs to Halys 500kV DCST operating at 275kV as being 'generation driven'. Powerlink can confirm that this project is driven by demand growth in southern Queensland, assessed in the context of the generation planting scenarios developed by ROAM consulting. Powerlink has included this project in the proposed ex-ante capex allowance after applying the same planning criteria and assessment methodology as all other proposed augmentations to the shared transmission network.
>
> Consistent with the Rules, Powerlink can confirm that no capital expenditure has been included in its Revenue Proposal for projects that are purely 'generation driven'. All network augmentation capital expenditure in the ex-ante allowance, including the Western Downs to Halys 500kV DCST, is required to meet the needs of growing customer demand.[316]

The AER accepts 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. However, the AER has reduced the capex for two of the Halys-Western Downs project(s) by $212.9 million ($2011-12) (58 per cent of the proposed $364.2 million, $2011-12)) for the reasons outlined above.

3.4.7 Non-load capex

The AER is required to accept a TNSP's forecast capex if it is satisfied that the total forecast capex for the regulatory control period reasonably reflects the capex criteria.[317] The total forecast capex proposed by Powerlink includes a non–load driven component of 40 per cent. The proposed non–load driven capex includes three main categories[318]:

- replacement capex—expenditure to replace assets that are obsolete or near the end of their technical life.[319]

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314 AEMO, *Submission*, 12 September 2011, p. 4.

315 AEMO, *Submission*, 12 September 2011, p. 4.

316 Powerlink, *Response to AEMO submission*, 29 September 2011, p. 3.

317 NER, clause 6A.6.7(a).

318 Powerlink, *2013–17 revenue proposal*, p. 55.

319 Replacement capex may also include expenditure related to asset refurbishments with the objective of extending the relevant asset economic life.

- security/compliance capex—expenditure to ensure compliance with amendments to various technical, safety or environmental legislation. This capex category also relates to expenditure to ensure the physical security of Powerlink's infrastructure assets.
- other capex—expenditure to enhance communication systems, to improve switching functionality and insurance spares.

This attachment sets out the AER's reasoning for its draft decision on Powerlink's proposed non–load driven capex.

The AER accepts non–load driven capex of $1,389.6 million ($2011-12) proposed by Powerlink for the next regulatory control period, which consists of:

- replacement capex of $1229.1 million ($2011-12)
- security/compliance capex of $50.7 million $2011-12)
- other capex of $109.9 million ($2011-12).

The AER is satisfied the proposed non–load driven capex reasonably reflects the capex criteria.[320] However, the AER considers that smoothing the expenditure profile over the next regulatory control period is likely to achieve efficiency gains.

Powerlink proposed $1389.6 million ($2011-12) of non–load driven capex for the next regulatory control period.[321] This amount compares with $1253.0 million ($2011-12) estimated to be incurred in the current regulatory control period, an increase of 10.9 per cent.[322] This is driven by a substantial increase in replacement capex (table 3.9). Figure 3.8 shows the proposed non–load driven capex as a component of the proposed total capex. Table 3.8 shows the break down of the proposed non-driven capex.

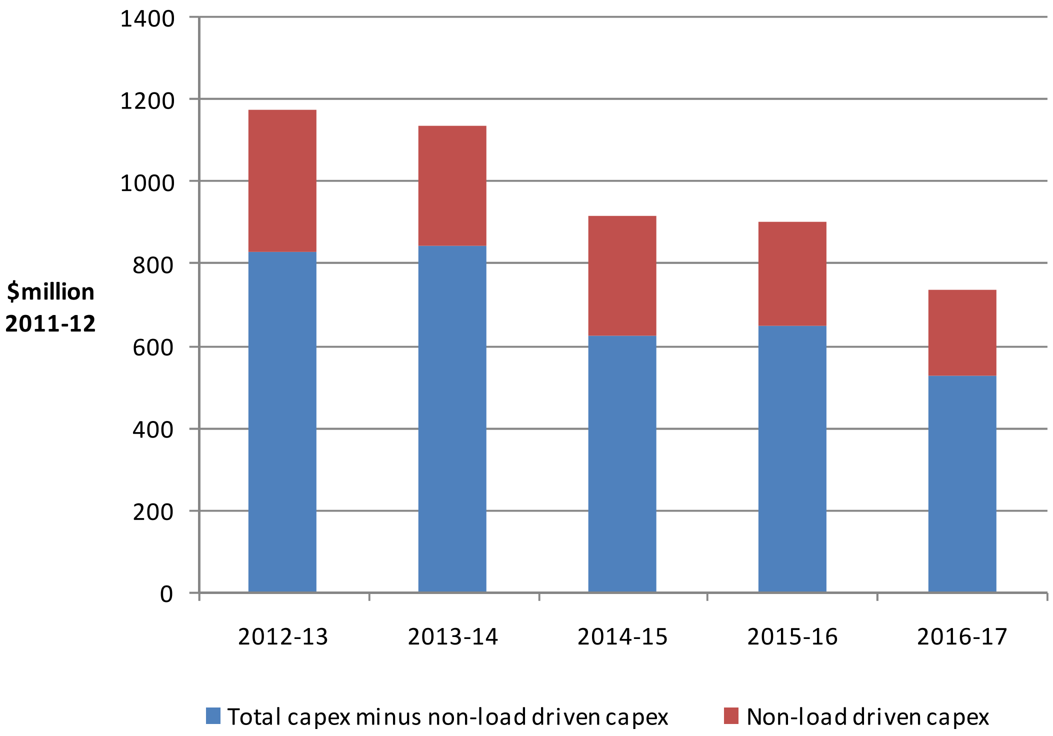
The expenditure profile of each category of the proposed non–load driven capex is front loaded—the highest level of expenditure is expected to be incurred in the first three years of the next regulatory control period (figure 3.9). This contrasts with the current regulatory control period, where the expenditure is highest in the last two years of the period (figure 3.9).

320 NER, clause 6A.6.7(c).

321 Powerlink, *2013–17 revenue proposal*, p. 72.

322 Powerlink, *2013–17 revenue proposal*, p. 35; the AER converted nominal values into $2011-12 using CPI adjustments.

Figure 3.8 Powerlink's non–load driven capex as proportion of total capex: 2012-13 to 2016-17 ($million, 2011-12)



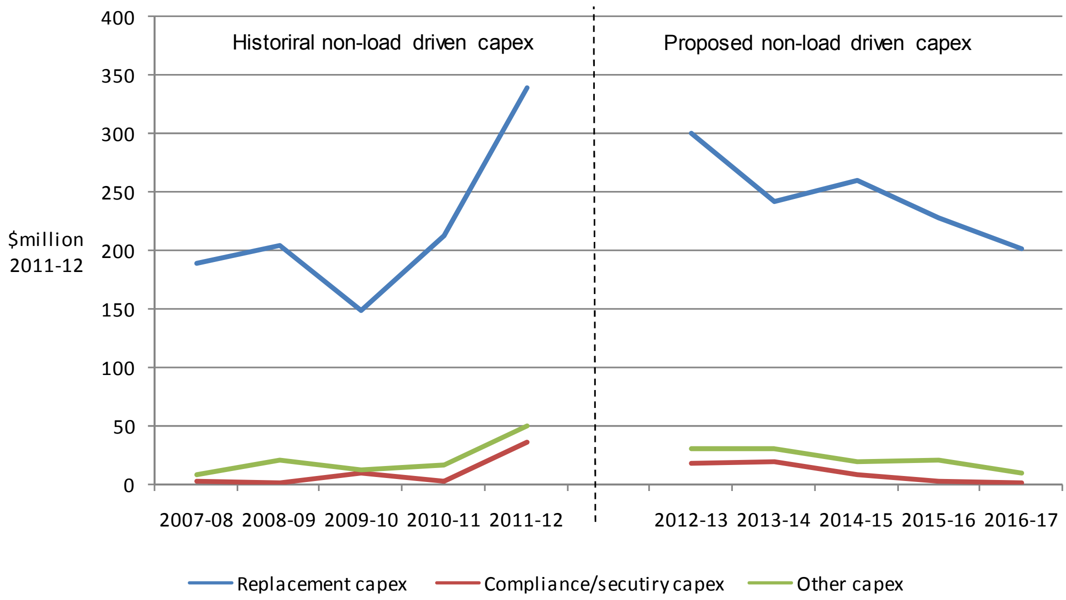
Source: Powerlink, 2013–17 revenue proposal, p. 72.

Table 3.8 Powerlink's proposed non–load driven capex by category 2012-13 to 2016-17 ($million, 2011-12)

Project category		2012-13	2013-14	2014-15	2015-16	2016-17	Total
NON–LOAD DRIVEN	Replacement	300.1	241.5	260.0	227.1	200.4	1,229.0
	Security/ compliance	18.7	18.8	8.7	2.8	1.7	50.7
	Other	29.9	29.9	19.6	20.4	10.0	109.9
	Total	348.7	290.2	288.3	250.3	212.1	1,389.6

Source: Powerlink, *2013–17 revenue proposal*, p. 72.

Figure 3.9 Powerlink's non–load driven capex by category: 2007-08 to 2016-17 ($million, 2011-12)



Source: Powerlink, regulatory financial statements, June 2011 and 2013–17 revenue proposal, pp. 35, 72.

Note: Actual 2007-08 to 2010-11; estimate 2011-12; forecasts 2012-13 to 2016-17.

Table 3.9 Powerlink's non–load driven capex: comparison by category ($million, 2011-12)

		1 July 2007 to 30 June 2012 regulatory control period	1 July 2012 to 30 June 2017 regulatory control period	Change (per cent)
NON–LOAD DRIVEN	Replacement	1,091.7	1,229.1	12.6
	Security/compliance	54.7	50.7	-7.4
	Other	106.6	109.8	3.0
	Total	1,253.0	1,389.6	10.9

Source: Powerlink, regulatory financial statements June 2011 and 2013–17 revenue proposal, pp. 35, 72.

The AER is required to accept Powerlink's forecasts of capex if it is satisfied the total forecast capex reasonably reflects the capex criteria set out in clause 6A.6.7(c) of the NER. The AER must be satisfied that the total of this capex reasonably reflects, among other matters, the efficient costs of achieving the capex objectives and the costs that a prudent operator in the circumstances of the TNSP would require to achieve the capex objectives.

In assessing the proposed non–load capex, the AER investigated the need or driver for expenditure. The AER also reviewed the timing and where appropriate, has used a 'business as usual' level of recurrent expenditure as a guide to developing a view about future expenditure.

The AER, assisted by EMCa, reviewed information provided by Powerlink as part of its revenue proposal, sought detailed information on specific projects and undertook follow-up discussions with Powerlink. The AER and EMCa scrutinised the decisions made by Powerlink in relation to categorising the proposed non–load capex as well as Powerlink's policies, procedures and practices. In conjunction with this process, the AER benchmarked ratios of Powerlink's proposed replacement capex relative to total proposed capex and closing regulatory asset base (RAB) against other TNSPs.[323]

The AER's assessment approach is consistent with clause 6A.6.7(e) of the NER.

The capex criteria relating to demand forecast are less applicable to the assessment of non–load driven capex.[324] This is because non–load driven capex projects are generally not driven by new load. These projects are intended to: [325]

- replace aged or obsolete assets that are at the end or near the end, of their economic life
- ensure compliance with amendments to various technical, safety or environmental legislation and physical security of the network
- enhance communication systems, to improve switching functionality and insurance spares.

The AER accepts non–load driven capex of $1 389.6 million ($2011-12) proposed by Powerlink for the next regulatory control period.

- The AER reviewed information provided by Powerlink, particularly, information that govern the proposed non–load driven capex. This information is contained in Powerlink's asset management strategy, the asset replacement and refurbishment policies, the non–load driven plan and the network asset security strategy.[326] In reviewing these documents, the AER assessed the need, timing and costs of non–load driven capex projects. In general, the AER is satisfied procedures, process and project costing used by Powerlink is likely to result in satisfactory decisions about non–load driven capex.
- The AER also benchmarked a number of high level indicators and found Powerlink's indicators generally align with those of other TNSPs.
- EMCa audited a number of Powerlink's non–load driven capex projects and found there was a good level of alignment and compliance with Powerlink's investment decision making framework commensurate with the status of the committed project.

The reasons for the AER's draft decision are discussed in more detail below.

Powerlink proposed $1229.1 million ($2011-12) of replacement capex for the next regulatory control period. This amount compares with $1097.7 million ($2011-12) estimated to be incurred in the current regulatory control period—an increase of 12.6 per cent.[327] The

323 The AER carried out the benchmark analysis to outline its consideration of issues raised in submissions.

324 NER, clause 6A.6.7(c)(3).

325 Powerlink, 2013–17 revenue proposal, p. 55.

326 Powerlink's asset management strategy, the asset replacement and refurbishment policies, the non–load driven plan and the network asset security strategy were provided to the AER on a confidential basis.

327 Powerlink, 2013-2017 Revenue proposal, 31 May 2011, pp. 35, 72; the AER converted nominal values on p. 32 into $2011-12.

proposed replacement program includes 145 individual projects. Table 3.10 shows the distribution of these replacement projects over defined ranges.

Table 3.10 Distribution of Powerlink's proposed replacement expenditure

Forecast expenditure for the next regulatory control period	Number of projects
> $25m	11
$20m–$25m	3
$15m–$20m	13
$10m–$15m	15
$5m–$10m	33
$0m–$5m	70
TOTAL	**145**

Source: Powerlink, *Pro-forma statements*, 31 May 2011.

The proposed replacement capex is driven by the age and condition of specific assets. Replacement expenditure is governed by Powerlink's asset management strategy as well as the asset replacement and refurbishment policies. Details of replacement projects are contained in Powerlink's 2010 non–load driven plan.[328] These documents were reviewed by the AER and EMCa to assess the need, timing and cost of replacement projects. The AER also had regard to a number of high level indicators. EMCa reviewed Powerlink's cost estimation and capex forecasting process and audited a number of Powerlink's replacement capex projects.

The AER is satisfied Powerlink's proposed replacement capex reasonably reflect the capex criteria. Firstly, the asset replacement procedures, process and project costing used by Powerlink is likely to result in optimal decisions about asset replacement. In particular, the governance procedures around replacements provide a high degree of scrutiny of replacement decisions.

Secondly, EMCa found cost estimation and capex forecasting methodologies used by Powerlink are sound and are considered to align with good industry practice and guidelines.

The AER received five submissions, which raised concerns about the proposed replacement capex as a proportion of the proposed total capex.[329] In particular, three of these submissions, Total Environment Centre (TEC), Powerlines Action Group Eumundi Inc (PAGE)

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328 Powerlink's asset management strategy, asset replacement and refurbishment policies and non–load driven plan were provided to the AER on a confidential basis.

329 These five submissions were from the Energy consumers Group operating in Queensland, Wesfarmers, the Energy Users Association of Australia (EUAA), the Total Environment Centre (TEC) and the Powerlines Action Group Eumundi Inc (PAGE); http://www.aer.gov.au/content/index.phtml/itemId/747312

and Wesfarmers, stated that Powerlink's proposed replacement capex is high and represents more than 20 per cent of its RAB over the next regulatory control period.[330] It also stated:[331]

> Most transmission assets have average lives of 40-50 years, which on average, would result in replacing approximately 10% of the asset base over a 5 year period. Yet, Powerlink is consistently replacing its assets at over twice this rate

In addition, TEC stated that Powerlink provided a diagram which attempts to create the impression that most of its assets are due for replacement and that a diagram based on the number of assets is misleading if it does not indicate the cost of those assets.[332] The AER's assessment and considerations of these issues are discussed below.

Asset replacement procedures and processes

- Powerlink's asset replacement policy involves the assessment of network assets against defined triggers, including: age, capacity, capability and compliance. Powerlink uses systems applications and products (SAP) accounting software to records all of its assets, including location, condition and age. Based on SAP asset age reports, Powerlink carries out inspection/assessment of assets approaching the end of their life. SAP reports identified 145 projects related to the proposed replacement capex. Powerlink developed the costing of these projects using the base planning objects unit costs (BPO). EMCa reviewed Powerlink's BPO methodology and found it was sound. EMCa found an objective link between the combination of Powerlink's project development methodology and the BPO cost estimation, the key driver for replacement (age/condition of assets), project identification and project cost estimates.[333] The AER accepts EMCa's findings.

- The AER reviewed Powerlink's non–load driven plan. This document provides information on how Powerlink manages the end of life of assets through replacement, life extension or disposal activities. The non–load driven plan also provides a detailed replacement project summary for each asset type (transmission lines, substation plants, secondary systems and telecommunications). Each summary include a brief description of the need for replacement, triggers, actual average age of asset, remaining technical age, risk assessment and estimated cost. The AER considers the proposed replacement capex aligns with Powerlink's transmission asset replacement needs.

- EMCa reviewed nine replacement capex projects in detail. These represent 20 per cent of the proposed replacement capex. EMCa found there was a good level of alignment and compliance with Powerlink's investment decision making framework commensurate with the status of the committed project. EMCa also found Powerlink's asset refurbishment and replacement policies were well structured, have the appropriate contents and are likely to be used as a reference within the organisation.[334] The AER accepts EMCa's findings.

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330 Total Environment Centre (TEC), *Submission to the AER: Powerlink revenue determination 2013–2017: a response to Powerlink's initial revenue proposal*, August 2011, p. 12; Wesfarmers, *Submission to the AER in response to Powerlink's regulatory proposal 2013–2017*, p. 4; Powerlines Action Group Eumundi Inc (PAGE), *Submission to the AER review of the Powerlink revenue reset application for 2012 to 2017*, p. 4.

331 Total Environment Centre (TEC), *Submission to the AER: Powerlink revenue determination 2013–2017: a response to Powerlink's initial revenue proposal*, August 2011, p. 12; Wesfarmers, *Submission to the AER in response to Powerlink's regulatory proposal 2013–2017*, p. 4.

332 The diagram referred to by TEC is Figure 1.2 in Powerlink's revenue proposal, p. 9.

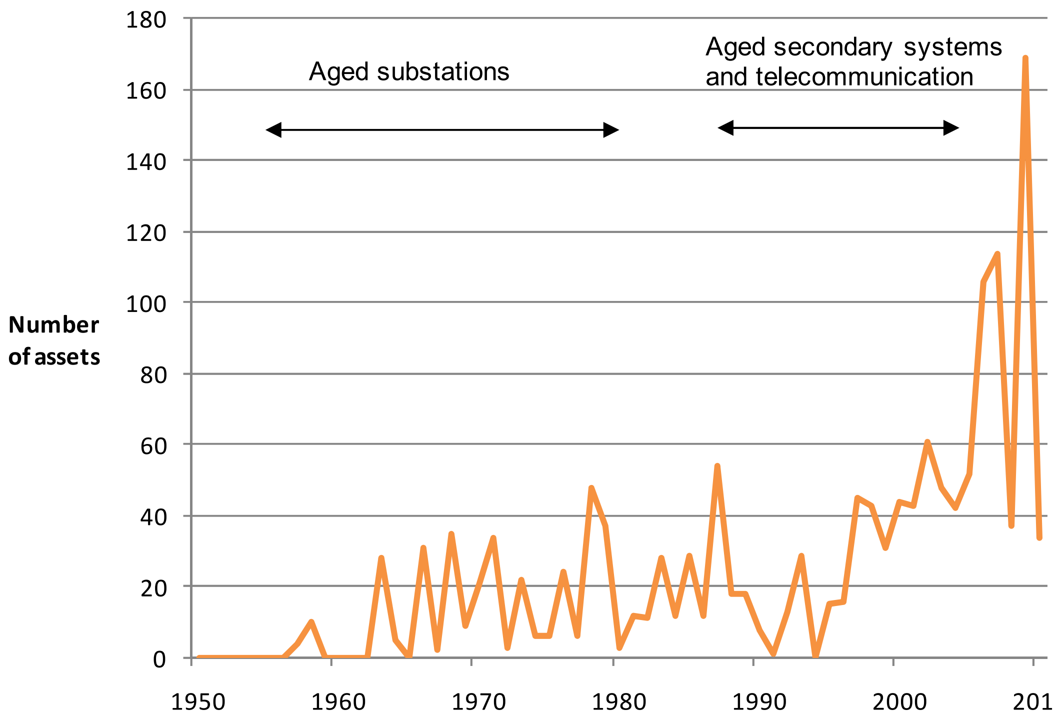
333 EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, p. 52.

334 EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, p. 14.

- Considering TEC's concerns about the magnitude of Powerlink's replacement program, the AER considered figure 1.2 of Powerlink's revenue proposal. This figure is reproduced in figure 3.10 and figure 3.11 below. These diagrams show the age profile of Powerlink's assets and indicative replacement timing. Figure 3.10 indicates that all substations commissioned prior to 1977 and all secondary systems commissioned prior to 1985 will be due for replacement over the next regulatory control period. Similarly, all transmission lines commissioned prior to 1967 will be due for replacement (figure 3.11).[335] The AER requested further clarification from Powerlink in regard to its replacement projects. Powerlink noted that transmission assets located in Far North Queensland and in coastal regions are subject to aggressive environmental conditions. These assets deteriorate faster than those located inland. Therefore, in Far North Queensland and along the coast, asset condition and reliability are the primary triggers for asset replacement. The AER accepted Powerlink's clarification.

- The AER also considered concerns raised by an Energy Consumer Group Operating in Queensland.[336] The energy consumer group stated that Powerlink may have received insurance payments for some of the assets that it is proposing to replace in the next regulatory control period. In response to this concern, Powerlink stated that its transmission lines in North Queensland were assessed as requiring replacement prior to Hurricane Larry. Powerlink also added that it did not have insurance for towers and lines prior to 2010.[337] The AER accepted Powerlink's explanation.

Figure 3.10 Age profile of Powerlink's substation network assets (at June 2010)



Source: Powerlink, 2013–2017 revenue proposal, p. 28.

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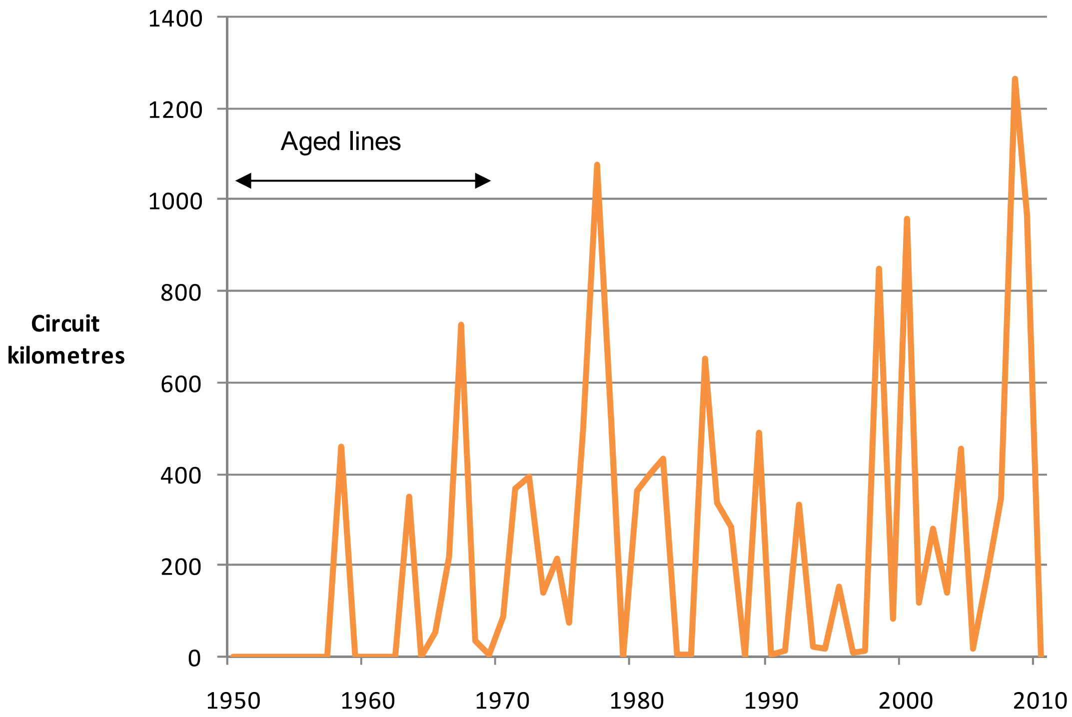
335 Powerlink stated that the technical life of a substation is approximately 40 years, while that of a secondary system and a transmission line is 15 years and 50 years, respectively.

336 Energy Consumers Group operating in Queensland, *Queensland electricity transmission revenue reset Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2001, p. 50.

337 Powerlink, *response to the AER's information request AER031*, September 2011.

Figure 3.11 Age profile of Powerlink's overhead line network assets (at June 2010)



Source: Powerlink, *2013–2017 revenue proposal*, p. 28.

The significance of replacement capex

The AER notes concerns raised in submissions that proposed replacement capex is a large proportion of proposed total capex (35 per cent). The AER considers that the magnitude of the proposed replacement capex does not necessarily imply the proposed expenditure is inconsistent with the capex criteria.

- The five submissions received by the AER on replacement capex highlighted that Powerlink's proposal represents a significant proportion of proposed total capex. Submissions from TEC and Wesfarmers stated that the proposed replacement capex represents over 20 per cent of Powerlink's RAB in the next regulatory control period. Figure 3.12 shows the ratio of Powerlink's proposed replacement capex to proposed total capex. Figure 3.13 indicates the ratio of Powerlink's proposed replacement capex to the proposed closing RAB. Both figures show how these ratios for Powerlink compare with those of other TNSPs. The AER's analysis shows the proposed replacement expenditure represents approximately 19 per cent of Powerlink's proposed closing RAB.

- In response to concerns that Powerlink's proposed replacement capex represents a large proportion of the RAB, Powerlink stated:

> This analysis overlooks the fact that the forecast replacement capex reflects the cost of modern engineering equivalent equipment, while the assets being replaced are in the RAB at their depreciated values.[338]

[338] Powerlink, response to submissions on Powerlink's 2013–17 revenue proposal, p. 4.

- The AER concurs and accepts Powerlink's response. TEC's second submission noted there is 'some validity' in Powerlink's assertion that forecast replacement capex reflects the cost of modern engineering equivalent equipment, and that the assets being replaced are depreciated.[339]

For the above reasons, the AER accepts the replacement capex of $1229.1 million ($2011-12) proposed by Powerlink for the next regulatory control period.

Other issues and considerations

The AER considers there is an issue with Powerlink's categorisation of expenditure between capex and opex.

- EMCa's detailed review of capex projects identified instances where Powerlink deferred maintenance on towers (opex) to the point where refurbishment/replacement was required towards the end of the asset's life (classified as capex).[340] This behaviour is likely related to Powerlink's use of International Transmission Operations and Maintenance Study (ITOMS) benchmarking. EMCa noted that under the ITOMS benchmarking, a TNSP could, for a period, be seen in a more favourable light if it had deferred opex to the point where life extension refurbishment was required.[341] However, EMCa also noted that asset service quality is likely to be in jeopardy if the assets that require replacement are not replaced. The AER accepts EMCa's findings that if Powerlink was not funded to refurbish its network, affected assets mail fail, leading to service quality degradation.

The proposed replacement capex is highest in the first three years of the next regulatory control period. The AER considers Powerlink could obtain a more efficient use of resources (contractors utilisation) by smoothing expenditure during the next regulatory control period. EMCa noted that smoothing replacement capex over the next regulatory control period may be a method that delivers efficiency gains.[342] The AER accepted EMCa's advice. However, the AER has applied this advice to all capex programs.

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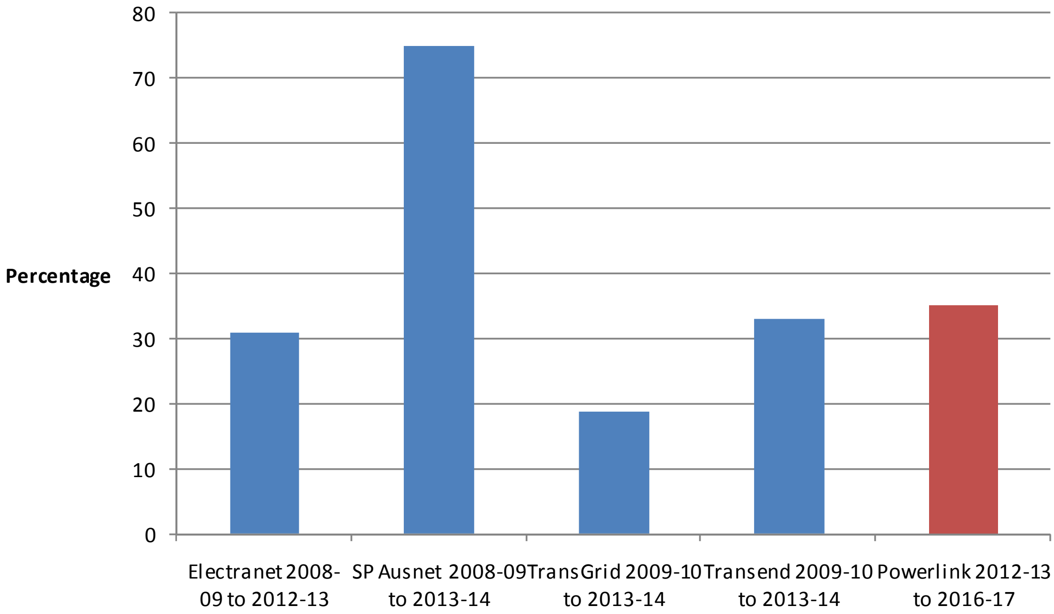
[339] Total Environment Centre (TEC), *Powerlink Revenue Determination 2013-2017: TEC Response to Powerlink's Response to Stakeholder Submissions*, September 2011, p. 2.

[340] EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, p. 171.

[341] EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, Annex 7 and Annex 8.

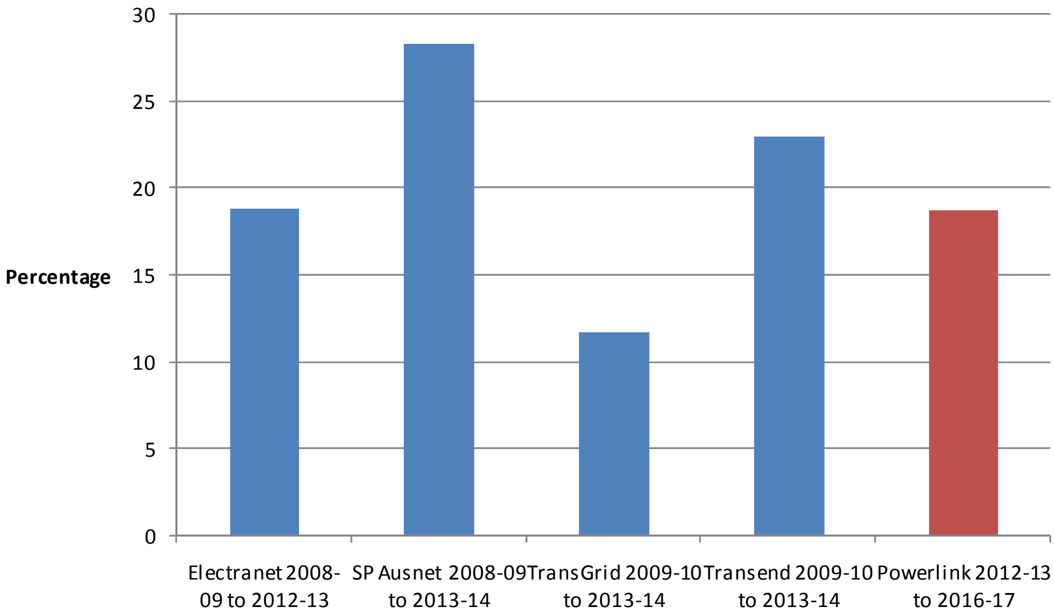
[342] EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, p. 117.

Figure 3.12 Comparison of Powerlink's replacement capex–total capex ratio



Source: Powerlink's 2013–17 revenue proposal and multiple AER's draft decisions.[343]

Figure 3.13 Comparison of Powerlink's replacement capex–RAB ratio



Source: Powerlink' s 2013–17 revenue proposal and multiple AER's draft decisions.[344]

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343 AER, *draft decision*, *TransGrid transmission determination 2009-10 to 2013-14*, 2008; AER, *draft decision*, *ElectraNet transmission determination 2008-09 to 2012-13*, 2007; AER, *draft decision*, *SP AusNet transmission determination 2008-09 to 2013-14*, 2007; AER, draft decision, *Transend transmission determination 2009-10 to 2013-14*, 2008.

344 AER, *draft decision*, *TransGrid transmission determination 2009-10 to 2013-14*, 2008; AER, *draft decision*, *ElectraNet transmission determination 2008-09 to 2012-13*, 2007; AER, *draft decision*, *SP AusNet*

Security/compliance capex

Powerlink proposed $50.7 million ($2011-12) of security/compliance capex for the next regulatory control period. This amount compares with $54.7 million ($2011-12) estimated to be incurred in the current regulatory control period—a decrease of 7.4 per cent.[345] The proposed security/compliance capex relates to 14 individuals projects driven by security needs, which depend on the criticality, locality and history of the relevant network site.[346] Security/compliance expenditure is governed by Powerlink's network asset security strategy, provided to the AER on a confidential basis.

The AER received one submission on security/compliance.[347]

The AER is satisfied Powerlink's proposed security/compliance capex comply with the capex criteria for the following reasons:

- The AER reviewed Powerlink's network asset security strategy. In general, the AER found the processes, procedures and the costing of security/compliance capex projects employed by Powerlink are likely to result in satisfactory decisions. In particular, Powerlink's network asset security strategy outlines drivers for the need to increase security measures at substations and communication sites. It also builds on plans for physical security of assets developed in 2006.
- The AER reviewed detailed information provided by Powerlink on its security projects. The AER is satisfied security/compliance expenditure resulting from the procedures and processes employed by Powerlink are likely to result in satisfactory decisions about security of the network and it compliance with different regulatory requirements.
- EMCa reviewed Powerlink's procedures about capex projects in general and found a good level of compliance with Powerlink's capital governance framework.

For the above reasons the AER accepts the security/compliance capex of $50.7 million ($2011-12) proposed by Powerlink for the next regulatory control period.

Other capex

Powerlink proposed $109.9 million ($2011-12) of other capex for the next regulatory control period.[348] This compares with $106.6 million ($2011-12) estimated to be incurred in the current regulatory control period—a decrease of 5.4 per cent.[349] The proposed other capex

transmission determination 2008-09 to 2013-14, 2007; AER, *draft decision*, *Transend transmission determination 2009-10 to 2013-14*, 2008.

345 Powerlink, *Regulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–2017*, p. 72.

346 Powerlink, *Pro-forma statements*, 31 May 2011.

347 Energy Consumers Group operating in Queensland, *Queensland electricity transmission revenue reset Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2001, pp. 52–53.

348 Powerlink, *Revenue proposal 2013–2017*, p. 72.

349 Powerlink, *Regulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–2017*, pp. 35, 72; the AER converted nominal values into $2011-12 using CPI adjustments.

relates to 48 individual projects.[350] The AER received one submission on the proposed other capex.[351]

The AER is satisfied Powerlink's proposed other capex complies with the capex criteria for the following reasons:

- The AER is satisfied that Powerlink's governance procedures related to other capex projects are likely to result in satisfactory decisions about other capex.

- EMCa reviewed the procedures and audited two other capex projects and found a good level of compliance with Powerlink's capital governance framework. The AER accepts EMCa's findings.

For the above reasons the AER accepts the other capex of $109.8 million ($2011-12) proposed by Powerlink for the next regulatory control period.

3.4.8 Non-network capex

The total forecast capex proposed by Powerlink include a non–network component of 3.4 per cent. Proposed non–network capex includes two main categories:[352]

- business information technology (Business IT)– expenditure on projects to maintain information technology capability and improve business system functionality.

- support the business–refers to expenditure on projects to replace and upgrade business requirements, including the areas of commercial buildings, motor vehicles and moveable plant.

The AER accepts the non–network capex of $120.1 million ($2011-12) proposed by Powerlink for the next regulatory control period The AER is satisfied the proposed non–network capex reasonably reflects the capex criteria.[353]

Powerlink proposed $120.1 million ($2011-12) of non–network capex for the next regulatory control period. This amount compares with $130.8 million ($2011-12) estimated to be incurred in the current regulatory control period–a decrease of 8 per cent (table 3.12). The decrease in the proposed non–network capex is driven by a substantial fall in the proposed expenditure on commercial buildings (table 3.12). The proposed expenditure for each year is relatively constant (figure 3.14). Table 3.11 sets out a breakdown of the proposed non–network capex for each regulatory year. Figure 3.15 shows Powerlink's non–network capex by category from 2007-08 to 2016-17.

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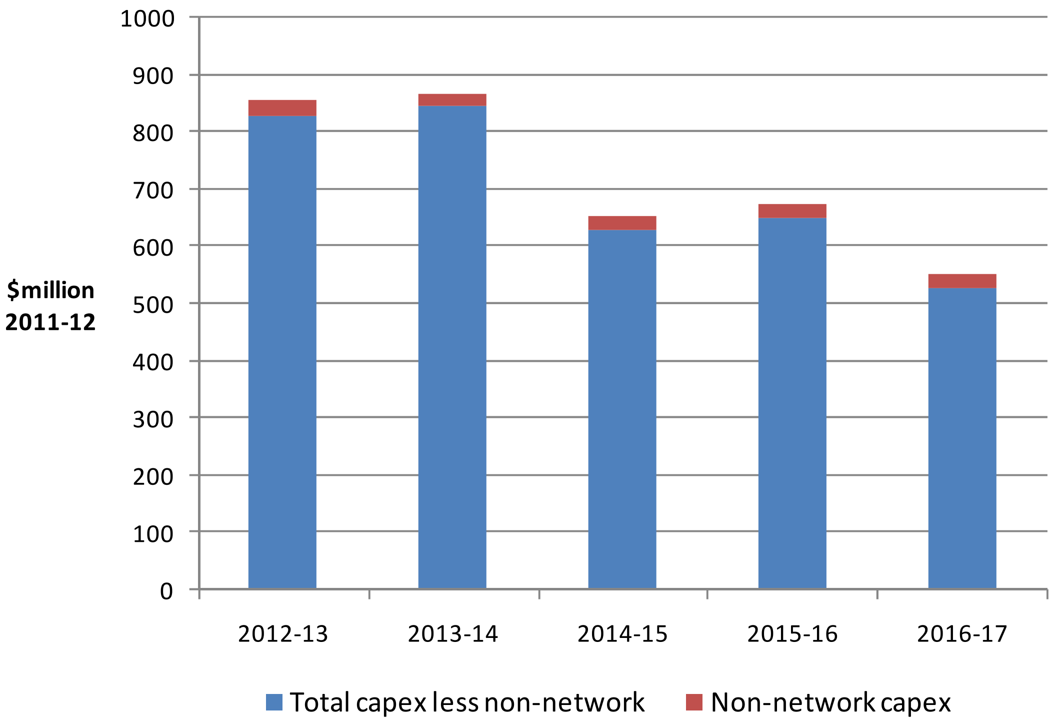
350 Powerlink, *Pro-forma statements*, 31 May 2011.

351 Energy Consumers Group operating in Queensland, *Queensland electricity transmission revenue reset Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2001, pp. 52–53.

352 Powerlink, *Revenue proposal 2013–2017*, p. 55.

353 NER, clause 6A.6.7(c).

Figure 3.14 Powerlink's proposed non–network capex compared with proposed total capex ($million, 2011-12)



Source: Powerlink, *Revenue proposal 2013–2017*, p. 72.

Table 3.11 Powerlink's proposed non–network capex by category ($million, 2011-12)

Project category		2012-13	2013-14	2014-15	2015-16	2016-17	Total
Business IT	Information technology	15.8	14.9	16.1	15.6	15.7	78.1
Support the business	Commercial buildings	5.7	3.3	3.1	2.9	3.1	18.1
Support the business	Motor vehicles	2.4	2.7	3.4	2.7	3.7	14.8
Support the business	Moveable plant	1.9	1.8	1.7	1.8	1.9	9.1
	Total	25.8	22.7	24.4	22.9	24.3	120.1

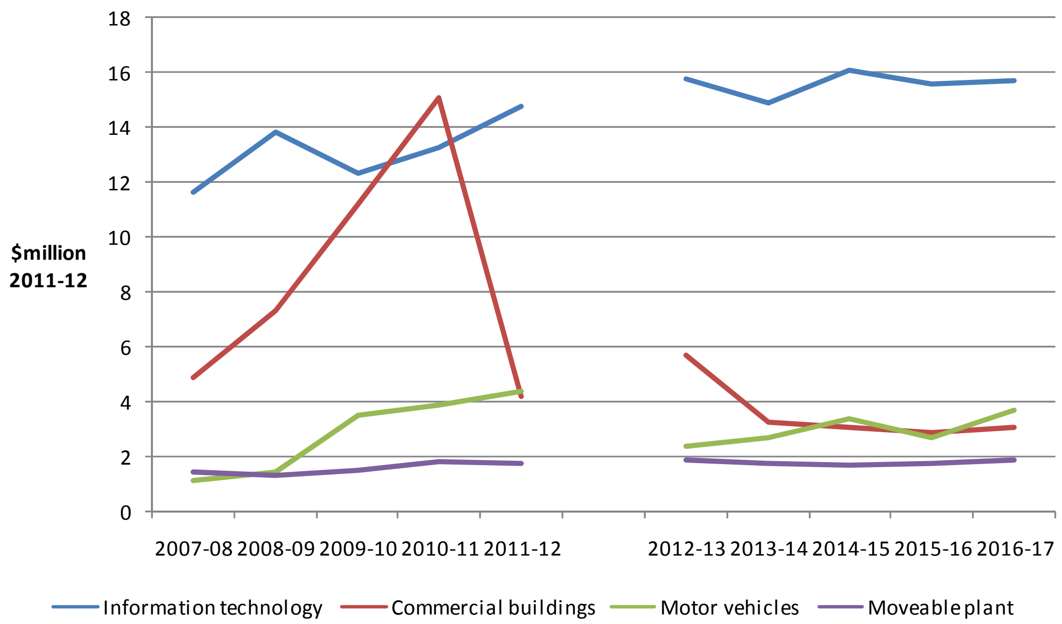
Source: Powerlink, *Revenue proposal 2013–2017*, p. 72.

Table 3.12 Powerlink's non–network capex comparison ($million, 2011-12)

Project category		08–12 regulatory control period	13–17 regulatory control period	Change (per cent)
Business IT	Information technology	65.5	78.1	19.2
Support the business	Commercial buildings	42.7	18.1	-57.6
Support the business	Motor vehicles	14.3	14.9	4.0
Support the business	Moveable plant	7.9	9.1	15.3
	Total	130.5	120.2	–7.9

Source: Powerlink, R*egulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–17*, pp. 35, 72.

Figure 3.15 Powerlink's non–network capex by category 2007-08 to 2016-17 ($million, 2011-12)



Source: Powerlink, *Regulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–2017*, pp. 35, 72.
Note: Actual 2007-08 to 2010-11; estimate 2011-12; forecasts 2012-13 to 2016-17.

In assessing the proposed non–network capex, the AER investigated the need or driver for expenditure. The AER also reviewed the timing of the expenditure and where appropriate, has used a 'business as usual' level of recurrent expenditure as a guide to developing a view about future expenditure.

The AER and its consultant, EMCa, reviewed information provided by Powerlink as part of its revenue proposal, sought detailed information on specific projects and undertook follow-up discussions with Powerlink. The AER and EMCa scrutinised the decisions made by Powerlink in relation to categorising the proposed non–network capex as well as Powerlink's policies, procedures and practices.

In conjunction with this process, the AER used a trend analysis. This analysis would identify variances, which may indicate step changes (strategic or operational) that require further exploration. The AER also benchmarked ratios of Powerlink's proposed non–network capex relative to total proposed capex against other TNSPs.

The AER's assessment approach is consistent with clause 6A.6.7(e) of the NER.

The capex criteria relating to demand forecast are less applicable to the assessment of non–network capex. This is because non–network expenditure does not vary proportionately with demand. The main components of the proposed non–network capex are business IT capex and support the business capex. All these components may be considered fixed in the short term.

The AER accepts Powerlink's proposed non–network capex of $120.1 million ($2011-12):

- The AER reviewed information provided by Powerlink, particularly, information that govern the proposed non–network capex. This information is contained in Powerlink's asset management strategy, the asset replacement and refurbishment policies, and the 2010 non–network plan.[354] In reviewing these documents, the AER assessed the need, timing and costs of non–network projects. In general, the AER is satisfied procedures, process and project costing used by Powerlink are likely to result in satisfactory decisions about non–network capex.

- The AER supplemented this review with a trend and a benchmark analysis. The AER found the proposed non–network capex is consistent with past expenditure (figure 3.14).[355] The AER also considers Powerlink's ratio of non–network to total proposed capex aligns with that of other TNSPs.

- EMCa reviewed Powerlink's cost estimation and the capex forecasting process. In addition, EMCa carried out a detailed audit of a number Powerlink's capex projects.[356] The main focus of EMCa's project review was to identify the extent to which Powerlink had applied its capital governance framework in practice. EMCa found a good level of compliance with Powerlink's capital governance framework. EMCa also found costs estimation and capex forecasting methodologies used by Powerlink are sound and can be considered to be in alignment with good industry practice standards and guidelines.

The AER received one submission on non–network capex.[357] The AER's considerations are discussed below.

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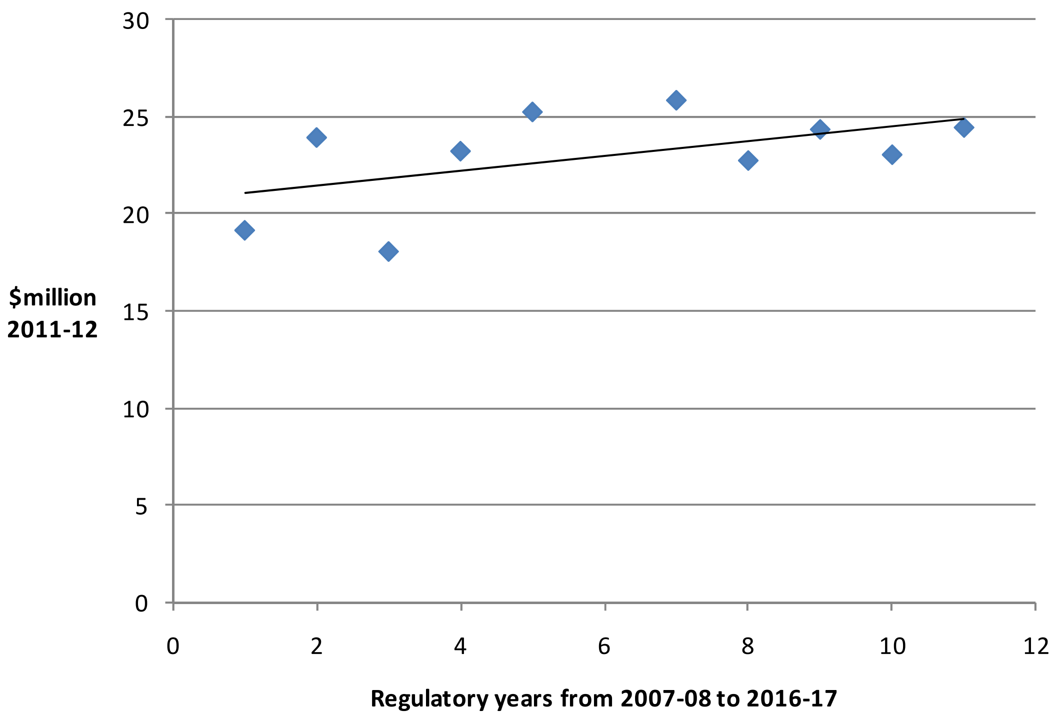
354 Powerlink's asset management strategy, asset replacement and refurbishment policies, and non–network plan were provided to the AER on a confidential basis.

355 The AER adjusted the proposed non–network capex expenditure fro 2010-11 and 2011-12 by removing a 'one off' commercial buildings expenditure based on further information provided by Powerlink.

356 EMCa reviewed a sample of 25 capex projects, of which two related to Business IT. See EMCa, Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER, September 2011, pp. A-6 to A-8.

357 Energy Consumers Group operating in Queensland, *Queensland electricity transmission revenue reset Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2001, pp. 53–54.

Figure 3.16 Powerlink's non-network capex—trend from 2007-08 to 2016-17 ($million, 2011-12)



Source: Powerlink, *Regulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–2017*, pp. 35, 72.

Note: Actual 2007-08 to 2010-11; estimate 2011-12; forecasts 2012-13 to 2016-17.

Business IT

Powerlink proposed $78.1 million ($2011-12) of business IT capex for the next regulatory control period.[358] This amount compares with $65.5 million ($2011-12) estimated to be incurred in the current regulatory control period–a 19.2 per cent increase.[359] The proposed business IT expenditure is the largest non–network capex category. It involves 79 IT projects, of which six are committed.[360]

The main driver for IT projects is the need to maintain manageable, stable, secure and effective applications architecture.[361] Powerlink stated the replacement of business IT is required when the assets reach their end of life because they are unreliable, obsolete or unsupported by the manufacturer.[362] Powerlink's business IT replacement expenditure is governed by its asset management strategy as well as its asset replacement and refurbishment policies. The AER reviewed details of business IT projects contained in Powerlink's 2010 non–network plan. In addition, EMCa carried out a detailed audit of two

358 Powerlink, *Revenue proposal 2013–2017*, p. 72.

359 Powerlink, *Revenue proposal 2013–2017*, p.35; the AER converted nominal values into $2011-12 using CPI adjustments.

360 Powerlink, *2010 non–network plan*, pp. 13–79.

361 Powerlink, *2010 non–network plan*, p. 13.

362 Powerlink, *2010 non–network plan*, p. 8.

business IT projects.[363] The main focus of EMCa's project review was to identify the extent to which Powerlink had applied its capital governance framework in practice.

The AER found Powerlink's asset replacement procedures, process and project costing is likely to result in satisfactory decisions about business IT expenditure. EMCa found a good level of compliance with Powerlink's capital governance framework. EMCa also found Powerlink's cost estimation and capex forecasting methodologies sound and aligned with good industry practice and guidelines. These outcomes demonstrate it is likely that Powerlink's proposed business IT capex will reasonably reflect the capex criteria.

Powerlink prepared a project by project forecast for its business IT for the next regulatory control period. This approach is in contrast with the current regulatory control period where Powerlink proposed a project by project forecast for 2007-08 and 2008-09, but adopted a three year rolling average forecasting method for 2009-10 to 2011-12. The AER reviewed the business cases for all 73 uncommitted business IT projects. It found these projects are likely to be critical to Powerlink's strategic capex projects and operational development.

The increase in business IT capex was raised in a submission by an energy consumers group operating in Queensland.[364] However, the AER's trend analysis of the proposed business IT expenditure did not reveal any major step changes in the expenditure profile (figure 3.14). Further, the AER's benchmark analysis indicates the ratio of the proposed business IT expenditure relative to the total proposed capex is not dissimilar to that of other TNSPs (figure 3.14).

For the above reasons, the AER accepts the business IT capex of $78.1 million ($2011-12) proposed by Powerlink for the next regulatory control period.

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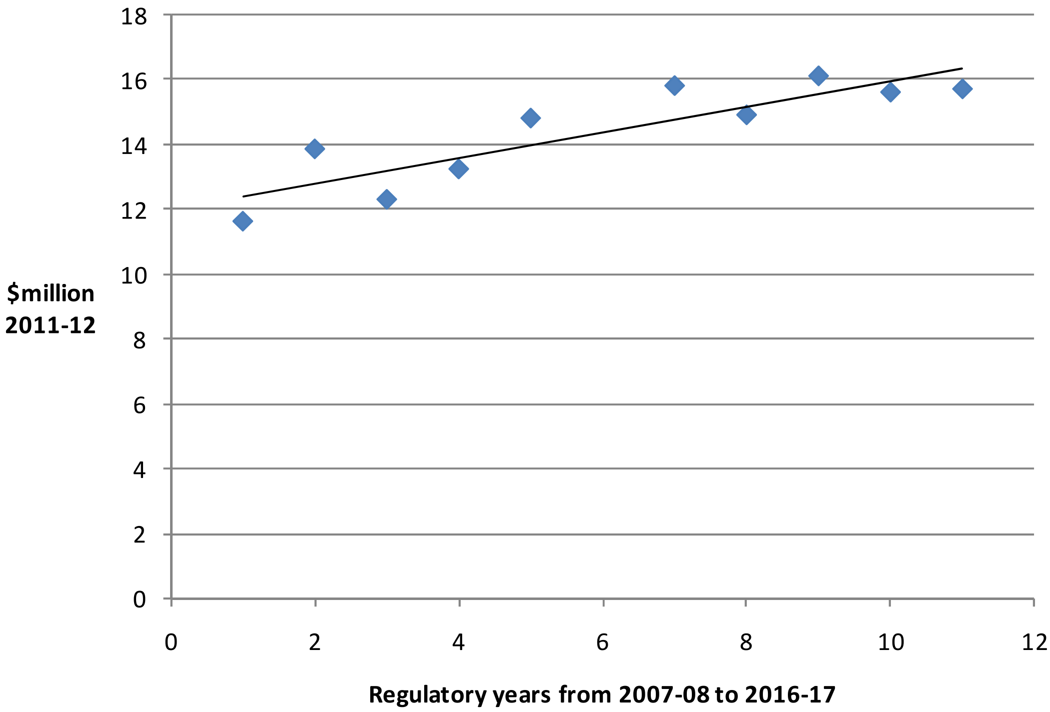
363 EMCa reviewed a sample of 25 capex projects, of which two related to Business IT. See EMCa, *Powerlink, revenue determination: technical review—forecast capital expenditure and service targets, report to the AER*, September 2011, pp. A-6 to A-8.

364 Energy Consumers Group operating in Queensland, *Queensland electricity transmission revenue reset Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2001, p. 53.

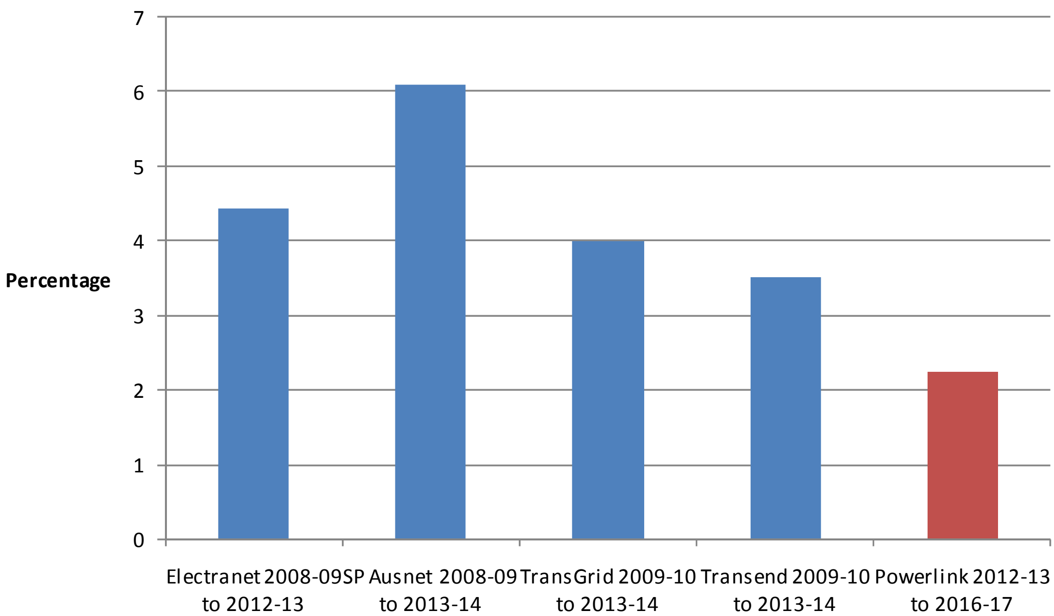
Figure 3.17 Powerlink's proposed and actual business IT capex– 2007 to 2017 ($million, 2011-12)



Source: Powerlink, *Regulatory financial statements*, June 2011; Powerlink, *Revenue proposal 2013–2017*, pp. 35, 72.

Note: Actual 2007-08 to 2010-11; estimate 2011-12; forecasts 2012-13 to 2016-17.

Figure 3.18 Comparison of business information technology capex-total capex ratio



Source: Powerlink, 2013–17 revenue proposal and multiple AER's draft decisions.[365]

Commercial buildings

At $18.1 million ($2011-12) commercial buildings is the second largest non–network capex category (figure 3.14). This amount compares with $42.7 million ($2011-12) estimated to be incurred in the current regulatory control period—a decrease of 57.6 per cent.

The proposed commercial buildings capex is intended to cover the costs of specialised secure car parking facilities, replacement works for air handling units, corroded guttering and drainage works.[366] The AER noted a substantial rise in actual expenditure for 2009-10 and estimate expenditure for 2010-11, followed by a substantial (estimated) fall in 2011-12 (figure 3.14). Powerlink stated the observed variation in commercial buildings expenditure was due to a single large project.[367] This project, a warehouse establishment, was approved in the current regulatory control period for $23.7 million ($2011-12). Powerlink stated approximately $9.9 million ($2011-12) was spent in 2009-10 and $10.6 million ($2011-12) in 2010-11. The AER accepted Powerlink's explanation. In its trend analysis, the AER adjusted the annual commercial buildings expenditure in 2009-10 and 2010-11 based on Powerlink's explanation.

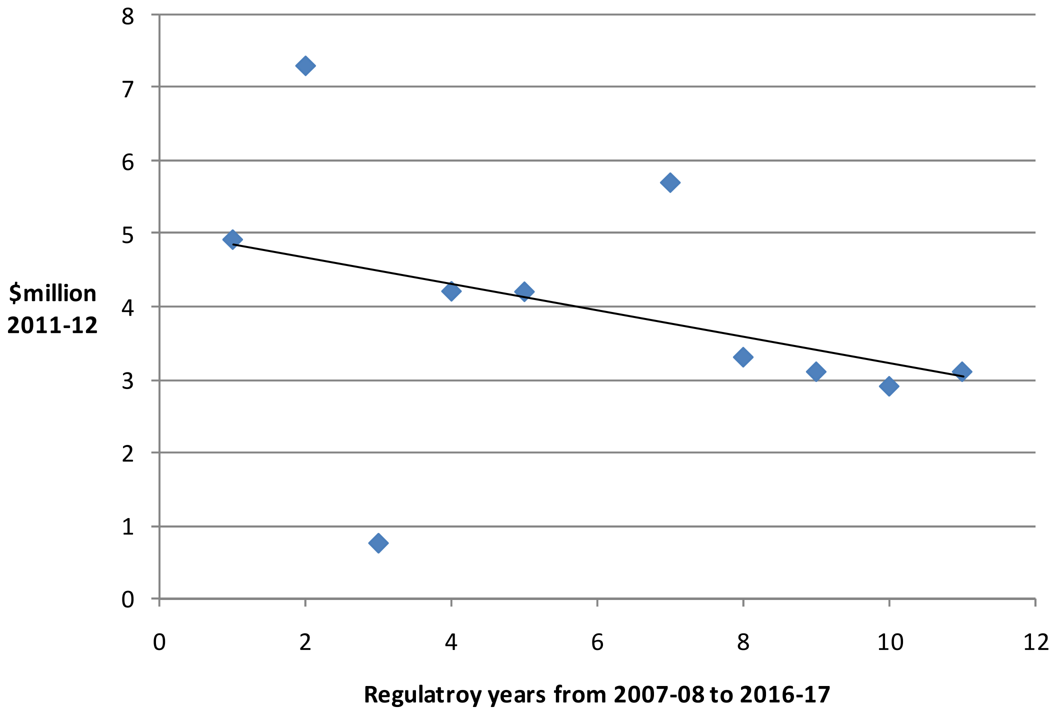
The AER considers the proposed commercial buildings capex is in line with historic trends, which shows a persistent decrease over time (figure 3.14). In conjunction with other findings by the AER and EMCa in regard to non–network capex projects, this outcome indicates the proposed commercial building capex is likely to reasonably reflect the capex criteria.

365 AER, *draft decision*, *TransGrid transmission determination 2009-10 to 2013-14*, 2008; AER, *draft decision*, *ElectraNet transmission determination 2008-09 to 2012-13*, 2007; AER, *draft decision*, *SP AusNet transmission determination 2008-09 to 2013-14*, 2007; AER, *draft decision*, *Transend transmission determination 2009-10 to 2013-14*, 2008./

366 Powerlink, *2010 non–network plan*, p. 80.

367 Powerlink, Response to information request AER/0017 of 26 July 2011.

Figure 3.19 Powerlink's proposed and actual commercial buildings capex - adjusted trend from 2008 to 2017 ($million, 2011-12)



Source: Powerlink, *Regulatory financial statements*, June 2011; Powerlnk, *Revenue proposal 2013–2017*, pp. 35, 72; Powerlink, response to information request AER/0017 of 26 July 2011.

Note: Actual 2007-08 to 2010-11; estimate 2011-12; forecasts 2012-13 to 2016-17.

3.4.9 Equity raising costs

Equity raising costs—such as legal fees, marketing costs and other transaction costs—are expenses associated with raising new equity capital. These are upfront costs with little or no ongoing costs over the life of the equity. Equity raising costs are a legitimate expense for a benchmark efficient operator where external equity funding is the least-cost option available. A TNSP should only be provided an allowance for equity raising costs where cheaper sources of funding (e.g. retained earnings) are insufficient, subject to the gearing ratio and other assumptions about financing decisions being consistent with regulatory benchmarks.

The AER has assessed Powerlink's proposal and does not accept Powerlink's proposed allowance for equity raising costs associated with its forecast capex.

The AER considers that Powerlink's proposed allowance does not reflect the benchmark efficient equity raising costs that a prudent operator in Powerlink's position would incur to achieve the capex objectives.

Specifically, the AER does not consider that the following elements of Powerlink's proposed method for estimating equity raising costs are appropriate:

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

These issues are discussed in detail below.

Powerlink proposed a total equity raising cost allowance of $31.5 million over the next regulatory period. This value was then discounted back using a notional 10 per cent WACC bringing the total allowance to $24.7 million ($2011–2012) for inclusion in the opening RAB.[368]

Powerlink engaged PricewaterhouseCoopers (PwC) to estimate the allowance for equity raising costs.[369]

PwC's method for estimating equity raising costs is broadly consistent with the approach that the AER has previously accepted that employs a cash flow analysis to determine the quantum of equity required; however there are two key differences in approach.

PwC considered that a dividend yield approach, rather than assuming a payout ratio, should be adopted to estimate the value of dividends in the cash flow analysis. In addition, PwC proposed to cap dividend reinvestment plans at 18 per cent of dividends paid out by the firm. Under these assumptions, more equity would need to be raised via seasoned equity offerings (SEOs).

Powerlink also proposed to recover $363,000 in additional equity raising costs as part of its contingent project application accepted by the AER in December 2007 relating to the South Pine to Sandgate project under clause 11.6.12(f) of the NER. Powerlink included this amount in its revenue modelling requirements.[370]

The revenue and pricing principles under the NEL set out that each operator should be provided with a reasonable opportunity to recover at least its efficient costs.[371] Also relevant is the potential for under or over investment, a matter that is relevant to equity raising costs as they are associated with the forecast capex allowance.[372] The capex criteria require the AER to accept the total of the forecast capex if it reasonably reflects:

- the efficient costs,
- the costs a prudent operator would require,
- a realistic expectation of the demand forecast and cost inputs required to achieve the capex objectives.[373]
- Further, the forecast capex is assessed with regard to, among other things, the benchmark capex that would be incurred by an efficient operator over the regulatory control period.[374]

The AER is required to assess Powerlink's proposal with regards to the relevant criteria and objectives under the NER. In assessing a TNSP's proposal for equity raising costs, the AER

368 Powerlink, *Powerlink Queensland 2013–2017 Revenue proposal* , April 2011, p. 68.
369 Pricewaterhouse Coopers, *Powerlink Queensland 2013–2017 Revenue proposal: Appendix K–Debt and equity raising costs*, April 2011.
370 Powerlink, *Powerlink Queensland 2013–2017 Revenue proposal* , April 2011, p. 68.
371 For electricity, this means efficient costs the operator incurs in providing direct control network services and complying with regulatory obligations or requirements or making regulatory payments; see s.7A NEL.
372 NEL, s.7A(6).
373 NER, Clauses 6A.6.7(c)(1), 6A.6.7(c)(2) and 6A.6.7(c)(3).
374 NER, Clauses 6A.6.7(c)(1); 6A.6.7(c)(2); 6A.6.7(e)(4).

has relied on an approach based on the 2004 Allens Consulting Group (ACG) report commissioned by the ACCC.[375]

The ACG method involves two key steps. First, it identifies the types of transaction costs that an efficient and prudent operator would incur in raising equity. Second, it quantifies the level of these costs, taking into account the specific circumstances of the operator, with reference to competitive market rates for the relevant services. The AER considers this method would appropriately estimate the prudent and efficient equity raising costs that would be incurred by a benchmark efficient operator. This provides a forecast of equity raising costs consistent with the relevant capex criteria under clause 6A.6.7 of the NER and revenue and pricing principles under the NEL.

Under this method the benchmark allowance for equity raising costs is based on a hierarchy of three methods for raising equity:

- First, firms should use retained earnings as a source of equity.
- Second, firms use dividend reinvestment plans. The amount of equity raised through this method is capped at 30 per cent of dividends paid.
- Third, firms use seasoned equity offerings (SEO) encompassing both rights issues and placements.

This hierarchy arises because the benchmark operator will exhaust cheaper sources of funding before using more expensive sources of financing. The AER has assigned the following transaction unit cost for each form of equity funding:

- retained earnings—0 per cent
- dividend reinvestment plans—1 per cent of total dividends reinvested
- SEOs—3 per cent of total external equity required.

These figures are based on ACG's and the AER's empirical review in assessing the benchmark costs for raising equity finance. The AER considers that these costs represent the efficient costs required to raise equity in current market conditions.

The AER's method applies a cash flow analysis in the post-tax revenue model (PTRM) to determine the required benchmark amount of equity raising associated with forecast capex:

- Retained earnings are equal to the internal cash flow less dividends to shareholders. This is then deducted from the equity portion of forecast capital expenditure to determine the amount of external equity required.
- Dividends are assumed to be sufficient to distribute 100 per cent of the imputation credits assumed in the PTRM.

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[375] ACG, *Debt and equity raising transaction costs—Final Report*, December 2004. The AER has applied this approach to assess equity raising costs in all its determinations, including some refinements and updates based on market data.

- It is assumed that 30 per cent of dividends paid is returned to the business via a dividend reinvestment plan.
- The requirement for SEOs is the difference between the forecast capex funded by equity and the net cash flow (retained earnings plus dividends reinvested) that is available for capex.

The benchmark equity raising costs allowance is amortised over the weighted average standard life of the RAB. As such, the amount calculated from the steps above is added to the RAB for the purposes of providing an allowance for equity raising costs associated with forecast capex. For reasons discussed below, the AER considers that this method represents the approach that an efficient and prudent operator would apply in raising equity, given its particular capital raising requirements.

The AER will amortise the allowance for benchmark equity raising costs over the weighted average standard life of Powerlink's RAB to provide the equity raising cost allowance associated with forecast capex in the next regulatory period.[376]

The AER has applied the ACG equity raising method to estimate the indicative costs and total allowance for Powerlink shown in table 3.13. The AER will update this analysis again for the final decision based on the final capex allowance to be determined at that time.

[376] This is consistent with the AER's previous approach. See for example AER, *Draft decision*, *South Australia distribution determination 2010-11 to 2014-15*, p. 165–166.

Table 3.13 AER's cash flow analysis for Powerlink's equity raising cost ($million, nominal)

Cash flow analysis	Total	Notes
Dividends	589.85	Set to distribute imputation credits assumed in the PTRM (100 per cent)
Dividends reinvested	176.96	Capped at 30% dividends paid
Cost of dividend reinvestment plan	1.77	Dividends reinvested multiplied by benchmark cost (1%)
Capex funding requirement	2 534.40	Forecast capex funding requirement (not the capex value that includes half year WACC adjustment)
Debt component	1 379.81	Set to equal 60% of RAB
Equity component	1 154.59	Residual of capex funding requirement and debt component
Retained cash available for reinvestment	1 182.10	Include dividends reinvested
External equity required	–27.15	Equals equity component less retained cash flows
External equity raising costs	–0.81	External equity requirement multiplied by the benchmark cost (3 per cent)
Total equity raising costs	0.96	
Total equity raising costs ($million, 2011-12)	0.91	To be added to the RAB at the start of the regulatory control period

Source: AER analysis.

Powerlink relied on a report from PwC to estimate the allowance for equity raising costs.[377] PwC's method for estimating equity raising costs is largely consistent with the AER's approach to employ a cash flow analysis; however there are two key differences:

- PwC adopted a dividend yield approach, as opposed to the payout ratio, to estimate the value of dividends in the cash flow analysis
- PwC applied a different cap on dividend reinvestment plans.

[377] PwC, *Powerlink Queensland 2013–2017 Revenue proposal: Appendix K–Debt and equity raising costs*, April 2011

- If PwC's approach is accepted, the benchmark operator will need raise more equity via external sources such that more equity will be raised through the more expensive source of SEO's which would increase equity raising costs under benchmark assumptions.

Dividend yield approach

PwC proposed a dividend yield approach to determine the value of dividends in the cash flow analysis. It proposed a yield of 8.4 per cent to be applied to determine the value of dividends. This figure is based on empirical evidence of dividend yields for infrastructure businesses.[378]

The AER will estimate the value of dividends by applying a payout ratio of 100 per cent as set out under the statement of revised WACC parameters.

The AER does not accept Powerlink's proposal to apply a dividend yield approach.

The AER notes that the use of the dividend yield approach was considered in the AER's previous Powerlink transmission decision[379]. Most recently, this issue was examined in detail in the AER's NSW distribution determination.[380]

Under a dividend yield approach the value for dividends would be estimated with regards to the dividend rate or the dividend yield that a benchmark infrastructure operator would provide to its shareholders. However, the AER has previously applied a dividend payout ratio based on the value specified under the SORI to estimate the value for dividends. Under this approach it is assumed that 100 per cent of notional after tax profit for a TNSP would be distributed to shareholders. Hence this value is assumed in the cash modelling to determine the requirement for additional equity and therefore the value for equity raising costs.

In the 2009 NSW distribution determination, the AER rejected the dividend yield approach due to a lack of comparable data from which a robust estimate of the dividend yield could be determined.[381] The AER considered that the problems with using dividend yields could be overcome by using the assumed dividend payout ratio which would determine the benchmark level of dividends that is consistent with the value of gamma required under the NER regulatory framework. The AER's view was that the use of a dividend payout ratio is a more direct method to establish the amount of retained earnings available for investment and amount required to be raised as equity.

For the NSW distribution determination, the AER decided to amend the cash flow analysis by adopting a dividend payout ratio.[382]

The AER considers that Powerlink's proposal for a dividend yield approach would not provide a robust estimate for the value of dividends to estimate the quantum of required equity. The

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378 PwC, *Powerlink Queensland 2013–2017 Revenue proposal: Appendix K–Debt and equity raising costs*, April 2011, p. 25−26.

379 AER, *Powerlink Queensland transmission network revenue cap 2007-08 to 2011-12: Decision*, June 2007, pp. 99−102.

380 AER, *NSW draft distribution determination 2009-10 to 2013-14*, November 2008, pp. 193.

381 AER, *NSW draft distribution determination 2009-10 to 2013-14*, November 2008, pp. 194.

382 This distribution determination incorporated a gamma value of 0.5 (required under the NER), consistent with an imputation credit payout ratio of 70 per cent. This is distinct from this determination, where a gamma value of 0.65 applies (as per the 2009 WACC review), consistent with an imputation credit payout ratio of 100 per cent.

AER considers that use of a payout ratio is still the preferable method for estimating the value of dividends when making an assessment that is consistent with the NER, for the reasons outlined above. The AER's reasons for rejecting a dividend yield approach and adopting a payout ratio in the NSW distribution determination remain relevant for assessing the equity raising costs for Powerlink.

Dividend reinvestment plan

Dividend reinvestment plans are an equity investment option offered to existing investors, whereby a portion of the investors' dividends are directly reinvested back into the business. In previous decisions, the AER capped dividend reinvestment plans at 30 per cent of dividends paid. PwC has proposed to cap dividend reinvestment plans at 18 per cent of dividends paid.

The AER does not accept PwC's proposal to cap dividend reinvestment plans at 18 per cent of dividends paid.

The AER will apply a cap of 30 per cent for dividend reinvestment plans.

In assessing the allowance for equity raising costs, the AER has regard to the prudent and efficient costs likely to be incurred by a benchmark efficient firm in procuring equity capital. For the purpose of estimating equity raising costs, the AER considers that where a benchmark firm requires capital, it will seek to minimise the cost of raising this capital.

In practice, the AER has applied a 'pecking order approach' to give effect to this concept. Under this approach, the benchmark firm will acquire equity capital via the cheapest available sources in the first instance—namely, from internal cash flow and subsequently from dividends reinvested into the company. Once these sources have been exhausted, the efficient benchmark firm will then meet its capital needs via the more expensive option of issuing SEOs. Importantly, this means that where the benchmark firm can meet its capital needs from a cheaper source it will not need to access the more expensive sources.

The AER observed market take up rates for dividend reinvestment plans issued by energy utilities, and on average shareholders reinvested 30 per cent of the amount distributed to them.[383] On this basis the AER included a cap on the amount raised via dividend reinvestment plans in its benchmark assessment of equity raising costs. To clarify, this 30 per cent calculation refers only to dividend payments which offered a dividend reinvestment plan, but not all dividend payments come with such an offer. A firm is under no obligation to offer a dividend reinvestment plan and will not do so if it has no desire to raise equity through this source at that particular time.[384]

PwC stated that a cap on dividend reinvestment plan of 18 per cent more accurately reflects the long-term funding requirements of energy utilities. PwC's proposed approach takes into

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383 For this determination, the AER conducted its own assessment of the take up rate for dividend reinvestment plans based on market information sourced from the ASX and company annual reports over the period 2001 to April 2011 for SP AusNet, DUET, APA, Envestra, AGL, Origin and Spark Infrastructure.

384 An important corollary is that the absence of a dividend reinvestment plan means only that the firm had no need for this source of equity (at that point in time), not that it was unable to obtain equity from this source.

account the dividend reinvestment plan as a proportion of the entire dividend history for a sample of energy utilities.[385] PwC stated that:[386]

- dividend reinvestment plan take up averaged around 17.7 per cent based on full dividend history for the sample of energy utilities in Australia over the period since 2000
- actual dividend reinvestment plan take up for the sample companies since 2007 averaged 32.7 per cent.

The AER does not consider PwC's approach for estimating the cap on dividend reinvestment plans to be appropriate. The AER's assessment recognises that not all companies will need to offer a dividend reinvestment plan, where retained earnings (the first level in the hierarchy) are sufficient to meet equity capital needs. If retained earnings are insufficient, the benchmark firm will then offer a dividend reinvestment plan (the second level of the hierarchy). Hence, the relevant comparator set comprises those firms who have sought to obtain equity via a dividend reinvestment plan. By averaging across all dividend issues PwC inappropriately conflates two questions:

- Does the firm need to offer a dividend reinvestment plan?
- If a dividend reinvestment plan were to be offered, what take up rate would result?

Only the second question is relevant to the cap implemented by the AER, given that at this point in the benchmark assessment it has already determined that the benchmark firm requires capital from this source.

PWC also reported the average take up rate using the appropriate comparator set—that is, excluding dividends where no dividend reinvestment plan was offered. PwC calculated average of 32.7 per cent approximately aligns with the AER's cap of 30 per cent. In such circumstances, the AER considers that a dividend reinvestment plan cap of 30 per cent is a robust estimate for a benchmark efficient energy business and adopts this figure.

Equity raising costs relating to contingent project

Powerlink proposed to recover $363,000 in additional equity raising costs as part of its contingent project application under clause 11.6.12(f) relating to the South Pine and Sandgate project. The application was accepted by the AER in 2007 and the AER adjusted Powerlink's 2007–2012 revenue decision to account for incremental revenue associated with the project.[387]

Powerlink noted that while the AER amended its 2007 Revenue Cap Decision for the additional debt raising cost associated with the project, the AER did not make a corresponding adjustment for additional equity raising costs. Accordingly, Powerlink is seeking to recover these costs in the next regulatory control period.

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[385] The energy businesses that PwC investigated are DUET, Envestra, APA, SP AusNet and Spark Infrastructure.

[386] PwC, *Powerlink Queensland 2013–2017 Revenue proposal: Appendix K—Debt and equity raising costs*, April 2011, pp. 27–29.

[387] Under the clause 11.6.12(f) of the NER, the AER approved Powerlink's application to amend its 2007–12 transmission network revenue cap to meet the additional cost associated with this project. See AER, *Statement of reasons: Powerlink Queensland South Pine to Sandgate Contingent Project (Undergrounding)*, December 2007.

The AER rejects Powerlink's proposal to recover additional equity raising costs for its contingent project application to amend its 2007–2012 revenue decision.

Clause 11.6.12(a) of the NER defines transitional revenue determination as a final revenue determination made by the AER for the Powerlink transmission network. Also, clause 11.6.12(a) defines the transitional regulatory control period as the regulatory control period commencing 1 July 2007 and ending on 30 June 2012.

This means clause 11.6.12(f) only applies to the 2007–2012 regulatory control period. Therefore, Powerlink cannot rely on clause 11.6.12(f) to recover additional equity raising costs in the next regulatory control period for costs relating to its contingent project from the 2007–2012 regulatory period.

Standard asset lives

Powerlink proposed standard asset life of 43 years for equity raising costs in its PTRM. This value is consistent with the weighted average standard life accepted by the AER in previous determinations.[388]

Powerlink also proposed tax standard life of 43 years for equity raising costs.

The AER accepts Powerlink's proposed asset life for equity raising costs.

The AER rejects Powerlink's proposes tax standard life for equity raising costs.

The AER considers the standard asset life proposed by Powerlink value is still appropriate and will accept Powerlink's proposal and amortise the allowance for equity raising costs over the standard asset life of 43 years.

The AER notes that an ATO determination requires equity raising costs to have a tax standard life of 5 years.[389] The AER will therefore apply a tax standard life of 5 years for equity raising costs in Powerlink's post tax revenue model.

3.5 Revisions

Revision 3.1: The minimum adjustment to Powerlink's proposed forecast capex required to meet the capex objectives is $1128 million ($2011-12) and the total forecast capex for Powerlink (once the adjustment has been applied and including AER cost escalation) is $2360 million ($2011-12).

[388] AER, *Final decision*, *South Australia distribution determination 2010-11 to 2014-15*, p. 167.

[389] ATO, *Guide to depreciating assets 2001-02: Business» related costs—section 40-880 deductions, ATO reference; NO NAT7170.*

4 Operating expenditure

Opex refers to the operating, maintenance and other non-capital costs a transmission network service provider (TNSP) incurs in providing prescribed transmission services. The AER must accept the proposed total opex forecast if satisfied it reasonably reflects the opex criteria.[390] If not satisfied, it must give reasons for not accepting Powerlink's proposal along with changes required or matters to be addressed by Powerlink in its revised regulatory proposal, and estimate the total required opex that reasonably reflects the opex criteria. In doing so, the AER must take into account the opex factors.[391]

4.1 Draft decision

The AER is not satisfied Powerlink's forecast opex reasonably reflects the opex criteria, taking into account the opex factors. The AER's estimate of Powerlink's required opex for the next regulatory control period includes changes to:

- the base year for the opex model
- labour cost escalation
- network growth
- step changes
- insurances
- network support
- debt raising costs.[392]

Overall, the AER estimated a total forecast opex of $920.0 million ($2011-12)[393] for the next regulatory control period (figure 4.1 and table 4.1)—an 8.2 per cent decrease on the opex proposed by Powerlink.

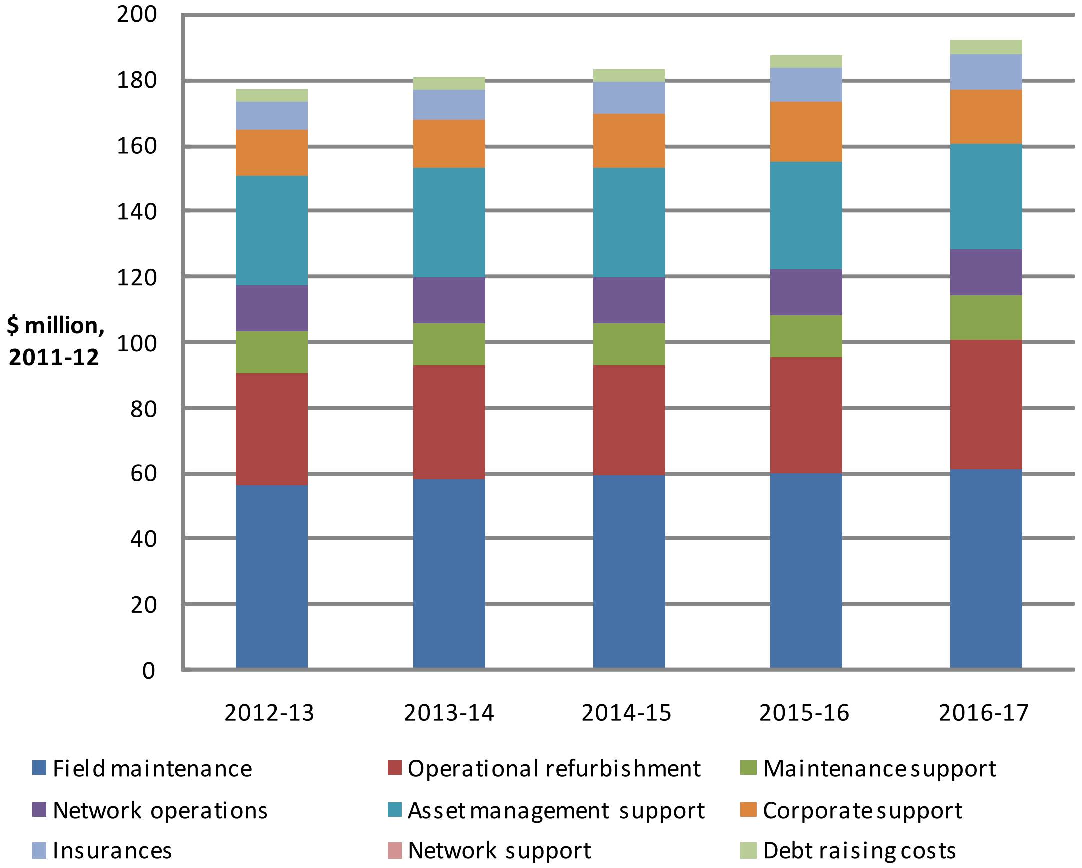
390 NER, clauses 6A.6.6(c) and 6A.14.1(3)(i).

391 NER, clauses 6A.6.6(d) , 6A.12.1(c) and 6A.14.1(3)(ii).

392 NER, clause 6A.14.1(3)(ii).

393 All amounts expressed in 2011-12 dollars in this attachment are in mid year terms. Because all post tax revenue model inputs are in end of year terms these amounts are escalated by a half year of inflation prior to entering in the post tax revenue model.

Figure 4.1 AER draft decision on Powerlink's operating and maintenance expenditure ($million, 2011-12)



Source: AER analysis.

Table 4.1 AER draft decision on Powerlink's operating and maintenance expenditure ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Field maintenance	56.6	58.1	59.4	60.3	61.6	296.0
Operational refurbishment	34.0	34.9	33.5	35.1	39.6	177.1
Maintenance support	12.7	12.9	13.0	13.1	13.2	64.9
Network operations	14.1	14.2	14.1	14.0	14.0	70.4
Asset management support	33.2	33.2	33.0	32.6	32.3	164.4
Corporate support	14.2	14.4	16.5	18.2	16.3	79.6
Total controllable opex	**164.9**	**167.7**	**169.5**	**173.2**	**177.1**	**852.5**
Insurances	8.5	9.0	9.8	10.3	11.0	48.6
Network support	0.0	0.0	0.0	0.0	0.0	0.0
Debt raising costs	3.5	3.7	3.8	3.9	4.1	18.9
Total opex	**176.9**	**180.4**	**183.1**	**187.4**	**192.1**	**920.0**

Source: AER analysis.

4.2 Powerlink's proposal

Powerlink proposed total opex of $1001 million ($2011-12) over the next regulatory control period (table 4.2), an increase of 24.5 per cent on the current regulatory control period.

Table 4.2 Powerlink's total proposed forecast opex ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Field maintenance	57.7	60.8	65.2	68.8	73.3	325.8
Operational refurbishment	34.8	35.6	34.0	35.3	39.8	179.5
Maintenance support	12.8	13.3	14.0	14.4	14.9	69.3
Network operations	14.1	14.7	15.5	16.1	16.8	77.3
Asset management support	33.6	34.7	36.1	37.2	38.5	180.0
Corporate support	14.8	15.8	18.4	21.4	20.4	90.9
Total controllable operating expenditure	**167.8**	**174.9**	**183.3**	**193.2**	**203.6**	**922.7**
Insurances	8.9	9.4	10.1	10.7	11.4	50.5
Network support	1.2	0.8	1.2	2.9	2.2	8.3
Debt raising costs	3.5	3.8	4.1	4.3	4.5	20.3
Total operating expenditure	**181.3**	**188.9**	**198.7**	**211.1**	**221.7**	**1001.8**

Source: Powerlink, *Regulatory proposal*, 31 May 2011, p. 99.

4.2.2 Powerlink approach

Powerlink separates its forecast opex into controllable opex and other opex. Powerlink's controllable opex forecast method applied cost drivers, escalators, efficiencies and economies of scale to each opex category individually.[394]

Powerlink used three methods to forecasts its opex:

1. Base year escalated method—Powerlink used a base reference year and extrapolated this forward by applying to opex line items specified cost drivers, escalators, efficiencies and economies of scale.[395] Powerlink has used its 2009-10 financial year as the reference year for its base year escalated method.[396]

2. Zero based method—This method is a bottom up build of costs based on forecast work units and work unit charge rates.[397]

3. Hybrid method—This approach calculated a bottom up build up of costs for a base year consistent with the zero base approach. This base year was then extrapolated forward consistent with the base year approach.

Powerlink used 2009-10 actual opex as the base year for its base year escalation method.[398]

394 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 85–87.
395 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 85–87.
396 Powerlink, *Regulatory proposal*, 31 May 2011, p. 88.
397 Includes labour and materials.
398 Powerlink, *Regulatory proposal*, 31 May 2011, p. 88.

4.3 Assessment approach

The AER is required to assess Powerlink's total forecast opex to decide whether it:[399]

- accepts the total forecast opex, or
- does not accept it. In this case, the AER is required to estimate the total amount of Powerlink's required opex it considers reasonably reflects the opex criteria, taking into account the opex factors.

To make this decision, the AER must form a view on Powerlink's proposed total forecast opex as a whole, not individual projects or programs.[400] However, because the total forecast opex can be (and is by Powerlink) separated into expenditure components, the AER assesses these components to make its decision on the total amount.

The AER must accept Powerlink's proposed total forecast opex if satisfied it reasonably reflects the opex criteria. That is, the forecast must reflect the efficient costs a prudent operator in Powerlink's circumstances would need to incur based on a realistic expectation of the demand forecast and the cost inputs required to achieve the opex objectives.[401] The AER considers the opex criteria are complementary. It considers that efficient costs are the costs a prudent operator is expected to incur, not a 'prudence premium' above otherwise efficient costs to balance risk.[402]

Operating costs are largely recurrent. As a result, the AER's starting point is to assess actual expenditure in a base year that reflects the recurrent operating costs of providing prescribed transmission services. The AER then adjusts this base year opex to account for changes in Powerlink's circumstances that will drive changes in Powerlink's operating costs in the next regulatory control period. These adjustments include:

- removing non-recurrent costs from actual expenditure in the base year
- escalating forecast increases in the size of the network (referred to as 'scale escalation')
- escalating forecast real cost changes for labour and materials (referred to as 'real cost escalation')
- adding step changes for efficient costs not reflected in the base opex, such as costs due to changes in regulatory obligations and the external operating environment.

Under the chapter 6A NER incentive regime, transmission network service providers are subject to an efficiency benefit sharing scheme (EBSS) and a revenue cap control mechanism. That is, this regime provides them with incentives to reduce expenditure (because TNSPs can retain any cost savings made during the regulatory control period). While this incentive to reduce expenditure declines over the period, the application of the

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399 NER, clause 6A.14.1(3).

400 NER, clause 6A.6.6(c).

401 NER, clause 6A.6.6(c). Clause 6A.6.6(a) specifies the opex objectives.

402 Some distribution network service providers posited the 'prudency premium' hypothesis during the 2011–15 Victorian electricity distribution price review in the context of the opex criteria. See AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, 2010, p. 313.

AER's EBSS provides TNSPs with a continuous incentive to make savings. The revenue cap control mechanism also delivers savings to TNSPs because revenue is fixed during the regulatory control period, so any cost savings are retained by the service provider. The EBSS and the revenue cap control mechanism interact to incentivise service providers to undertake opex that meets the opex objectives.

The AER would expect TNSPs should be responding to the incentive regime by making opex savings over time. The AER observes that Powerlink has largely spent its opex allowance in the current regulatory control period despite the operation of the EBSS and the revenue cap control mechanism. This result could suggest that the allowance provided by the AER in the previous regulatory determination was set at an appropriate level. Alternatively, this result could suggest that Powerlink has not responded to the incentives in the regime and has not actively sought efficiency savings.

Therefore, the AER did not solely rely on Powerlink's base opex as representative of its recurrent costs. The AER benchmarked Powerlink's opex with that of other TNSPs in setting the base opex. This is further discussed in section 4.4.1. The AER also reviewed several aspects of Powerlink's proposal in detail. The AER also had particular regard to Powerlink's circumstances, consistent with the NER opex criteria[403] and to the opex factors[404].

In making its assessment of Powerlink's recurrent costs, the AER considered a mix of top down and bottom up approaches. It assessed Powerlink's historic opex and determined the key drivers for forecast opex. This included analysis of Powerlink's:

- labour and material cost escalation
- network growth
- step changes
- insurances
- network support
- debt raising costs.

The AER also had regard to the extent Powerlink's proposed capital expenditure (capex) affects its opex.[405] Where proposed capex results in opex savings or increases the AER has adjusted proposed forecast opex accordingly.

In deciding whether Powerlink's proposed total forecast opex reasonably reflects the opex criteria, the AER must have regard to the opex factors.[406] It also took into account the revenue and pricing principles.[407] Although the AER considered each opex factor when assessing Powerlink's proposed total forecast opex, not all factors were relevant for assessing each opex component.

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403 NER, clauses 6A.6.6(c).
404 NER, clauses 6A.6.6(e)(1), (4) and (5).
405 NER, clauses 6A.6.6(e)(6), (7), (10), (11), (12) and (13).
406 NER, clause 6A.6.6(d). Clause 6A.6.6(e) specifies the opex factors.
407 NEL, s.7(a).

The AER also had regard to circumstances in the next regulatory control period that differ from those in the base year, leading to a change in Powerlink's future costs.

For these reasons, the AER considers this base year approach provides a starting point for determining whether Powerlink's proposed total forecast opex reasonably reflects the opex criteria, having regard to the opex factors. In assessing Powerlink's proposal, the AER has examined key documents, processes and assumptions, and compared historical expenditure to that proposed, to better understand the key drivers behind Powerlink's proposed forecast opex. In addition to the information provided by Powerlink, the AER considered the issues raised in stakeholder submissions. Where the AER considered an alternate approach to determining Powerlink's inputs was appropriate it has applied this approach in its forecast of total opex. These considerations combined provide the AER with insight to determine whether Powerlink's proposed total forecast opex reasonably reflects the opex criteria.

4.4 Reasons for draft decision

The AER is not satisfied that the total forecast opex proposed by Powerlink reasonably reflects the opex criteria, having regard to the opex factors.[408] Its reasons for this decision relate to:

- the efficiency of base year expenditure
- labour cost escalation
- network growth
- step changes
- insurances
- network support
- debt raising costs.

These reasons are presented below.

4.4.1 Efficiency of Powerlink's historical expenditure

Powerlink proposed that its cost for 2009-10 be used as the base year for forecasting it total opex for the next regulatory control period. The AER reviewed Powerlink's expenditure during the current regulatory period to test whether it was efficient and appropriate for use as the base year expenditure using a base year forecasting approach. The AER considered the incentives faced by Powerlink during the current regulatory control period, undertook benchmarking of Powerlink's opex and assessed its base year expenditure to ensure it was reflective of recurrent costs.

[408] NER, clause 6A.6.6(d).

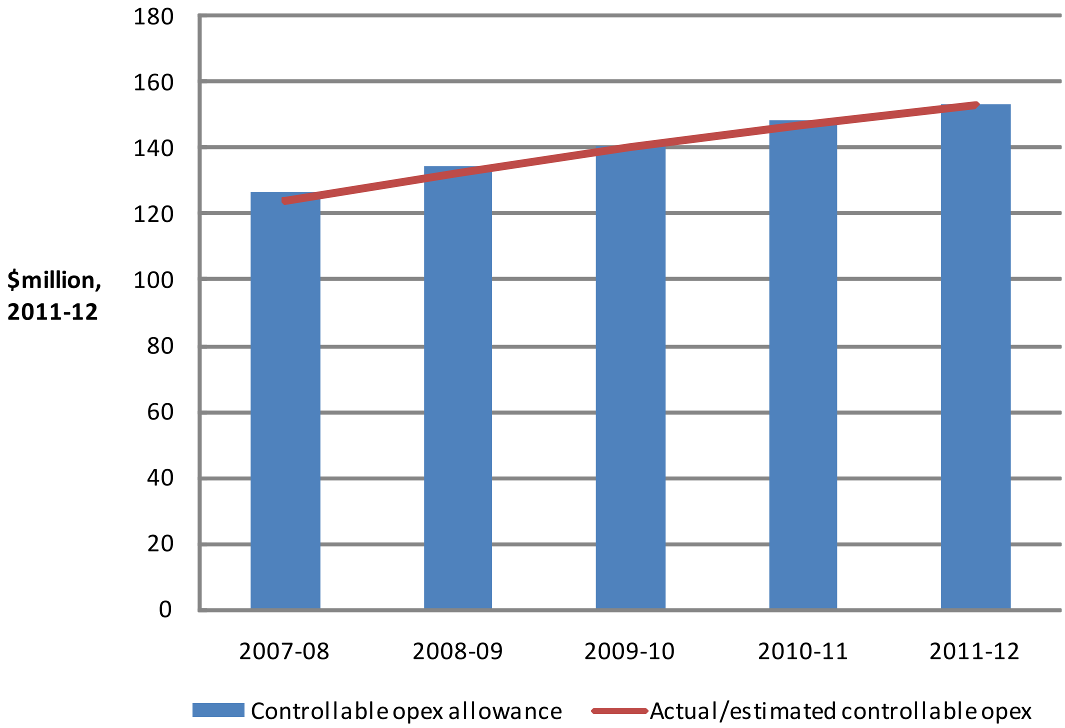
The effect of Powerlink's incentives on its current regulatory control period opex

The AER has used Powerlink's historic controllable actual opex in determining a recurrent base year to assess whether Powerlink's proposed total forecast opex reasonably reflects the opex criteria, having regard to the opex factors. To do this the AER has investigated the effect of the continuous incentive properties of a revenue cap control mechanism and the EBSS on recurrent base opex.

Under the chapter 6A NER incentive regime, TNSPs are subject to a revenue cap control mechanism and an EBSS. This regime is intended to provide them with continuous incentives to reduce their costs over a regulatory control period.

The AER investigated the impact these incentives have had on Powerlink's historical opex, to satisfy itself the base opex is representative of recurrent costs. Figure 4.2 compares Powerlink's controllable actual opex with the allowance set by the AER for the current regulatory control period. It shows Powerlink expects to spend close to its allowance in the current regulatory control period.

Figure 4.2 AER allowance and Powerlink's actual/estimated controllable opex—current regulatory control period ($million, 2011-12)



Source: AER analysis.

This is confirmed in table 4.3, indicating Powerlink spent close its allowed opex for the current regulatory control period to 2009-10. Powerlink has marginally overspent its 2010-11 allowed opex[409] and estimates it will marginally overspend its 2011-12 allowed opex based on its most recent forecasts.[410]

Table 4.3 Comparison of controllable allowed opex and actual/estimated opex 2007-08 to 2011-12 ($million, 2011-12)

	2007-08	2008-09	2009-10	2010-11	2011-12	Total
Allowance	126.5	134.4	140.5	148.6	153.1	703.0
Actual/estimate	127.0	132.2	142.2	149.8	154.1	705.0
Difference (per cent)	0.4	–1.6	1.2	0.8	0.6	0.4

Source: AER analysis.

The data in table 4.3 of itself does not indicate whether Powerlink's opex in the current regulatory control period can be considered efficient. Further, it is not clear whether Powerlink has actively pursued efficiency savings during the current regulatory control period. This issue was raised in stakeholder submissions. Based on its own analysis, the Energy Users Group operating in Queensland questions the way Powerlink has responded to incentives of the EBSS.[411]

In view of Powerlink's pattern of actual and estimated expenditure in the current regulatory control period, the AER did not simply rely on Powerlink's base opex being representative of recurrent costs. Therefore the AER has undertaken further analysis to help it assess Powerlink's base opex.

Benchmarking

The AER must have regard to the benchmark expenditure of an efficient TNSP when assessing proposed TNSP forecast opex against the opex criteria.[412] The AER considers benchmarking provides an indication of the relative performance of TNSPs and can be used to form a view about the efficiency of Powerlink's historical costs. This view is shared by numerous stakeholders.[413]

Benchmarking has played a role in previous price determinations, by the AER and by other regulators such as the United Kingdom's Office of the Gas and Electricity Markets (Ofgem).[414] Powerlink's proposal presents benchmarking in support of its opex forecast.[415] Powerlink's benchmarking uses opex as a percentage of the regulatory asset base (RAB) and external benchmarking by the International Transmission Operations and Maintenance Study (ITOMS)

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409 Powerlink, *2010-11 regulatory financial statements*, October 2011.

410 Powerlink, *Regulatory proposal pro-forma statements non-confidential*.

411 The Group, *AER 2011 review of Queensland electricity transmission*, 2011, p. 28. The Group is an energy consumers group operating in Qld.

412 NER, clause 6A.6.6(e)(4).

413 EUAA, *Submission to the Australian energy regulator on Powerlink's regulatory proposal 2012-2017*, August 2011, pp. 12–13 and The Energy Users Group operating in Queensland, *AER 2011 review of Queensland electricity transmission*, 2011, p. 26.

414 See: AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011-15*, 2010, Appendix H and Ofgem, *Electricity distribution price control review methodology and initial results paper*, 8 May 2009, p. 38–46.

415 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 100–104.

2009. The AER notes that Powerlink's benchmarking measures have drawn criticism from stakeholders, who question the robustness of this analysis.[416] In particular, the EUAA consider:

> …the benchmarking done by Powerlink to be partial and inadequate.[417]

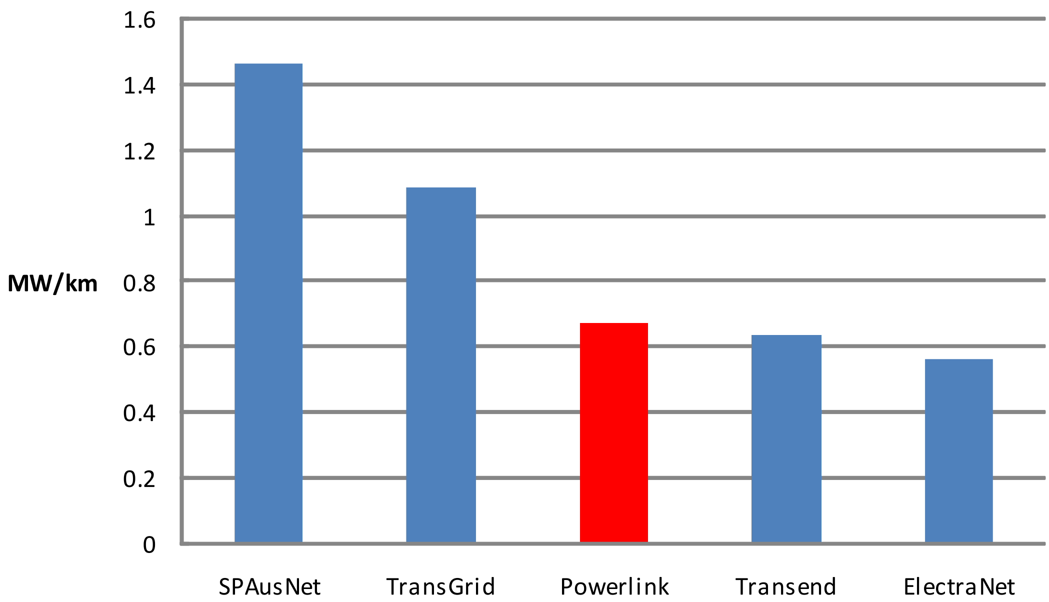
The AER has undertaken benchmarking to inform its decision. Nevertheless, the AER notes the limitations of benchmarking.[418] These include:

- differences between purchase and leasing policies
- variations in the network characteristics of TNSPs including the age, size and maturity of their networks and the markets they serve
- different capitalisation, cost allocation and other accounting policies.

Explanatory factors for differences in expenditure incurred by TNSPs

There are two key factors the AER can adjust for when considering efficient benchmark opex: density and size. Typically more opex is required for less dense networks, partly due to increased travel costs. Size is important because larger TNSPs will benefit from economies of scale.

Figure 4.3 Load density of TNSP's in the NEM



Source: AER analysis.

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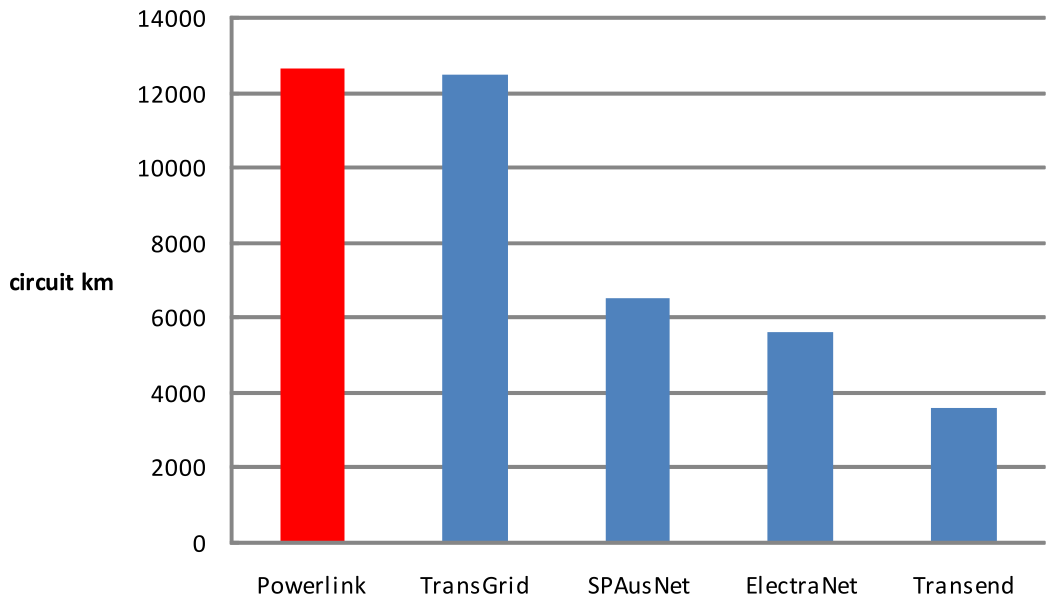
416 EUAA, *Submission to the Australian energy regulator on Powerlink's regulatory proposal 2012-2017*, August 2011, p. 12, The Group, *AER 2011 review of Queensland electricity transmission*, 2011, p. 30, Wesfarmers, *Submission to the AER in relation to the Powerlink regulatory proposal 2013-2017*, p. 5 and TEC, *Response to Powerlink's response to stakeholder submissions*, September 2011, p. 2.

417 EUAA, *Submission to the Australian energy regulator on Powerlink's regulatory proposal 2012-2017*, August 2011, p. 12.

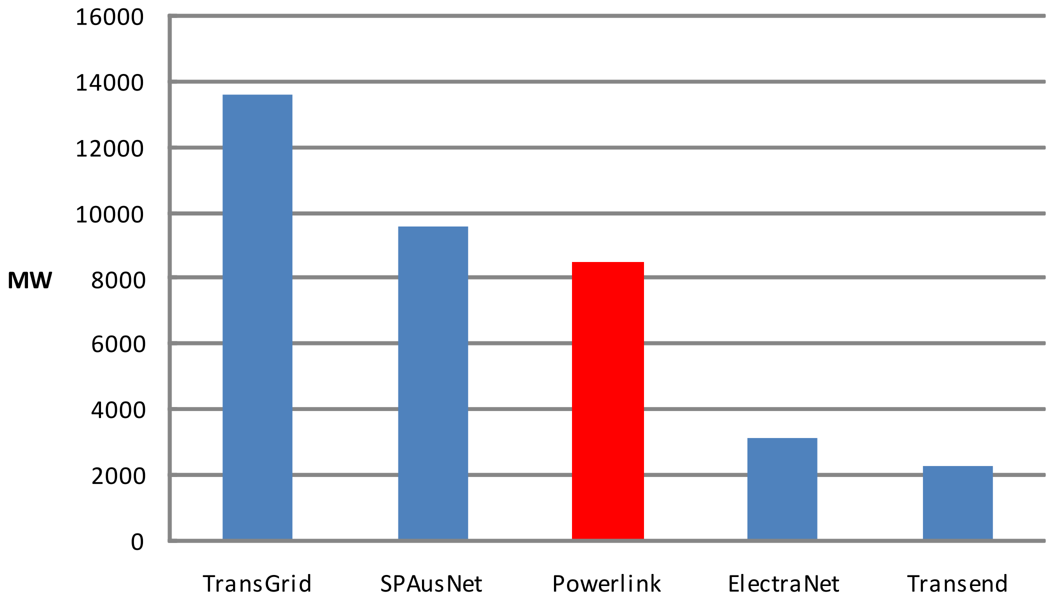
418 AER, *Draft decision: Victorian electricity distribution network service providers: Distribution determination 2011–15*, Appendix I, pp. 78–79.

Figure 4.4 Size of TNSPs in the NEM, by kilometres of line



Source: AER analysis

Figure 4.5 Size of TNSPs in the NEM, peak demand

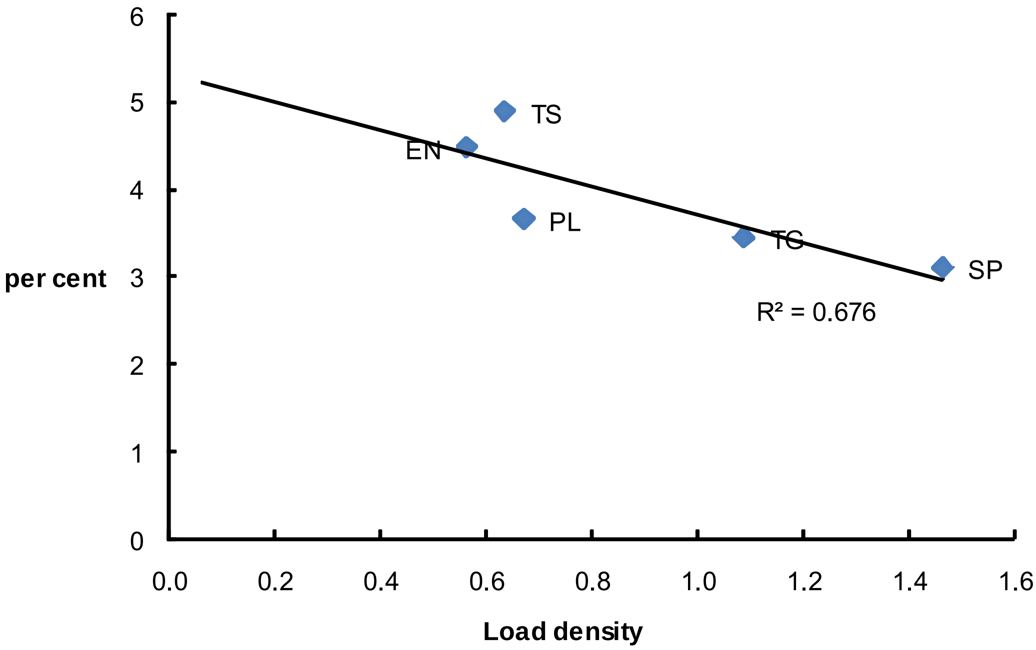


Source: AER analysis.

The AER undertook a ratio analysis to compare the level of recent historical opex for Powerlink against other TNSPs in the NEM (see figures 4.6 to 4.9). The AER used load density (megawatts per kilometre of line) to normalise the results. The AER considers load density is the appropriate measure given the size in TNSPs differs substantially. The analysis below suggests Powerlink is at an average level when compared to other TNSPs.

The trend line in the figures below relates to all TNSPs.

Figure 4.6 Opex/Regulatory asset base (RAB)[419]

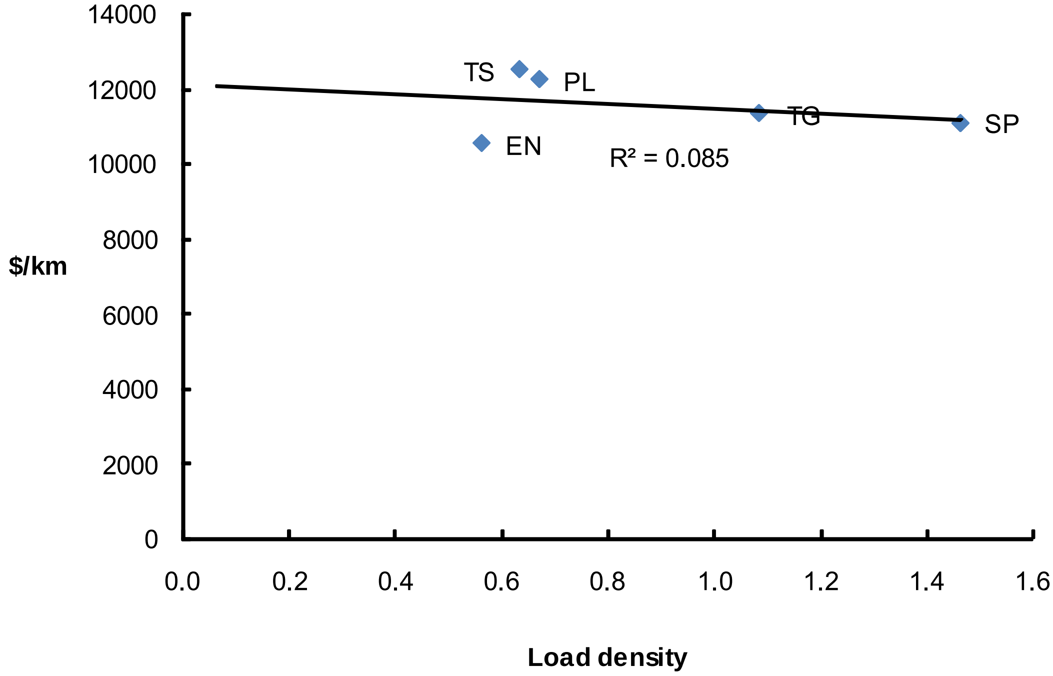


Note: The shortened versions of the business names in the figures are SP—SPAusNet, TG—Transgrid, PL—Powerlink, TS—Transend, EN—ElectraNet.

Source: AER analysis.

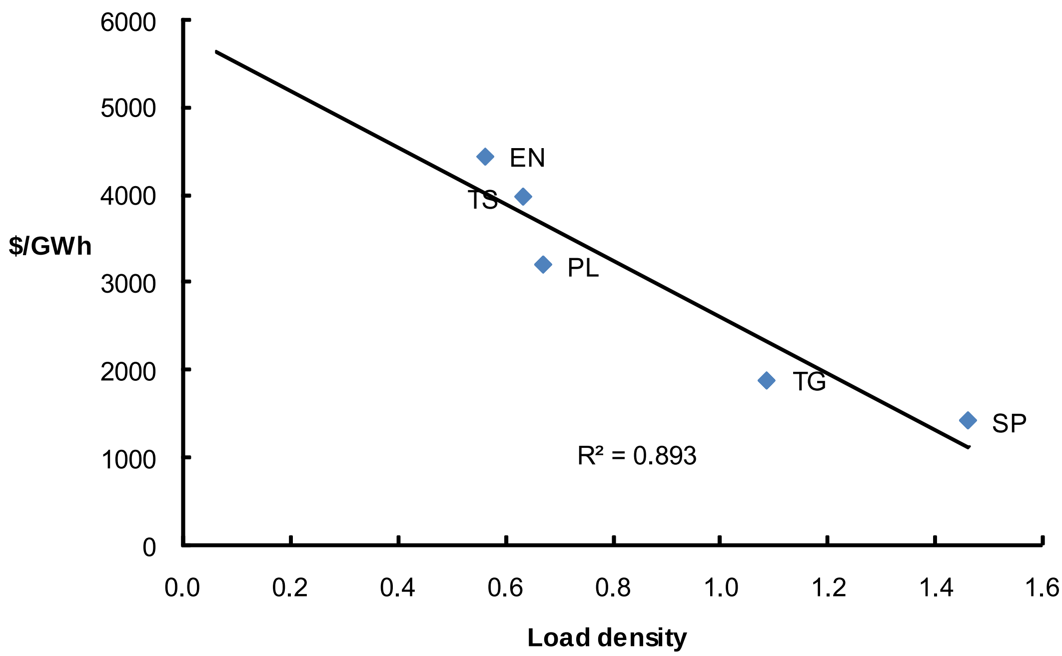
419 The AER notes RAB can be used as a broad measure of network size. However, the robustness of this measure is influenced by a number of factors including different points at which NSPs may be in their investment cycle and the opex/capex trade off. The inconclusive nature of opex/RAB is commented on by numerous stakeholders. See: EUAA, *Submission to the Australian energy regulator on Powerlink's regulatory proposal 2012–2017*, August 2011, p. 12, The Group, *AER 2011 review of Queensland electricity transmission*, 2011, p. 30, Wesfarmers, *Submission to the AER in relation to the Powerlink regulatory proposal 2013–2017*, p. 5 and TEC, *Response to Powerlink's response to stakeholder submissions*, September 2011, p. 2.

Figure 4.7 Opex/line length



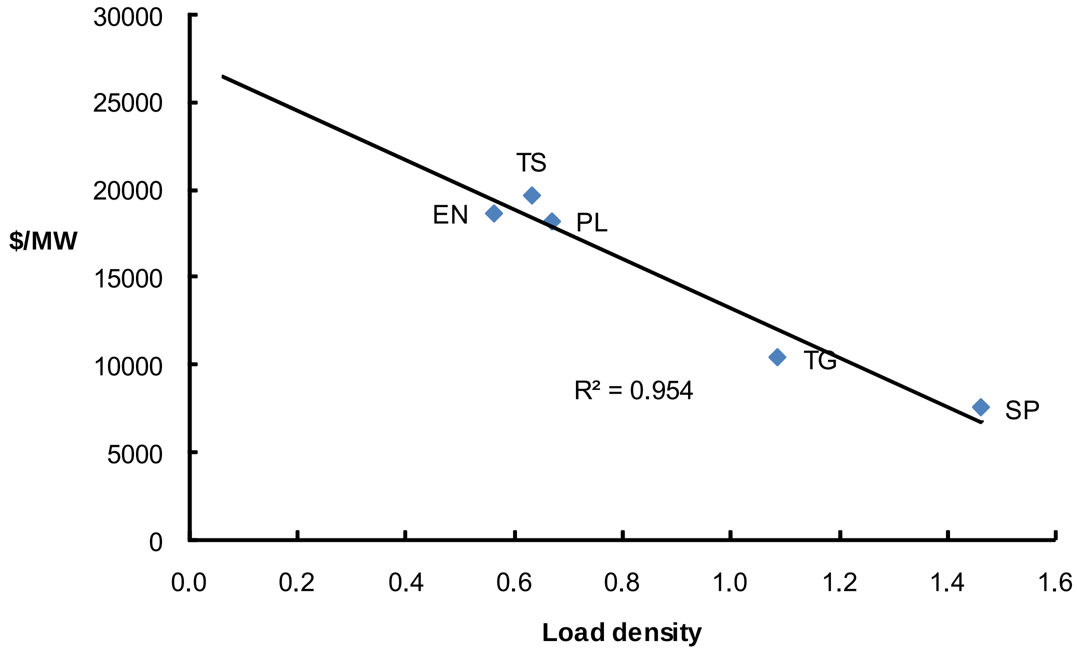
Source: AER analysis.

Figure 4.8 Opex/electricity distributed



Source: AER analysis.

Figure 4.9 Opex/peak demand



Source: AER analysis.

Based on the analysis above, 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. In comparison to Transend, Powerlink performed better on every measure. However, this difference could be explained by economies of scale due to the difference in size of the two TNSPs. In comparison to ElectraNet, Powerlink is generally consistent across the benchmark ratios.

The analysis indicates Powerlink's current opex is in the average range when compared to the other TNSPs in the NEM.

Choice of base year for assessment approach

Powerlink used its 2009-10 financial year actual expenditure as its base reference year from which to forecast controllable opex.[420] The 2009-10 financial year is the third last year of the current regulatory control period. Powerlink's choice of base year was commented on in numerous stakeholder submissions which contended this particular year was not necessarily reflective of Powerlink's efficient costs.[421]

The base year selected by the AER is typically the most recently available year, within the current regulatory control period, for which actual audited expenditure is available. The AER's

420 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 85–87.

421 TEC, *Powerlink revenue determination 2013-2017: Response to Powerlink's initial revenue proposal*, August 2011, p. 6; Wesfarmers, *Submission to the AER in relation to the Powerlink regulatory proposal 2013–2017*, 2011, pp. 5–6.

choice of base year reflects the view that the last year of actual costs is likely to represent the recurrent costs of a TNSP, given its circumstances.

In addition, where a TNSP has been subject to an EBSS, the AER has typically adopted year four of the current regulatory control period as representing the base opex. This is consistent with the transmission EBSS assumptions.[422] The continuous commercial incentives from the application of a revenue cap control mechanism and the EBSS means Powerlink's recent historical costs are most reflective of its recurrent controllable opex.[423]

The AER considers the combined application of a revenue cap and EBSS interact to incentivise service providers to undertake opex that meets the opex objectives. The AER also considers that the most recently available year is the most reflective of the recurrent expenditures in order meet the opex objectives. This underlying principle is consistent with Powerlink's approach, which used 2009-10 actual data for its regulatory proposal because it:

> … is the most recent full year of available operational costs, and contains data that has been independently verified and audited.[424]

Based on the discussion above, the AER considers the use of 2009-10 actual data is not appropriate as the base year as it:

- will not be the most recent full year of actual data for the final decision
- is inconsistent with the assumptions in the transmission EBSS.

Therefore, the AER considers the use of year four being the most recently available year of actual data (2010-11 financial year) for the final decision is the appropriate reference point to assess Powerlink's forecast opex. The AER considers in using the 2010-11 financial year data it has had regard to Powerlink's circumstances as the last year of actual costs is most likely to represent the recurrent costs in the next regulatory control period. Therefore the AER considers the use of the 2010-11 financial year data as the base year is consistent with the NER opex criteria[425] and the opex factors.[426]

The AER uses Powerlink's 2010-11 actual audited opex for the draft decision. Powerlink's 2010-11 audited opex became available in October 2011 and was not available for use by Powerlink at the time of preparing its regulatory submission.[427] Powerlink's regulatory financial statement is not disaggregation at the same level as its operating expenditure model.[428] Due to time constraints it was not feasible for the AER to obtain the actual disaggregation required to input into the operating expenditure model methodology for the draft decision. The AER has therefore used a pro-rata of the regulatory financial statements

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422 AER, *Final decision: Electricity transmission network service providers efficiency benefit sharing scheme*, September 2007, p. 9.

423 The combination of a revenue cap control mechanism and EBSS provide for a continuous incentive for a TNSP to minimise costs throughout the regulatory control period.

424 Powerlink, *Regulatory proposal*, 31 October 2011, p. 89.

425 NER, clause 6A.6.6(c).

426 NER, clauses 6A.6.6(1) and (5).

427 Powerlink, *2010-11 regulatory financial statements*, October 2011.

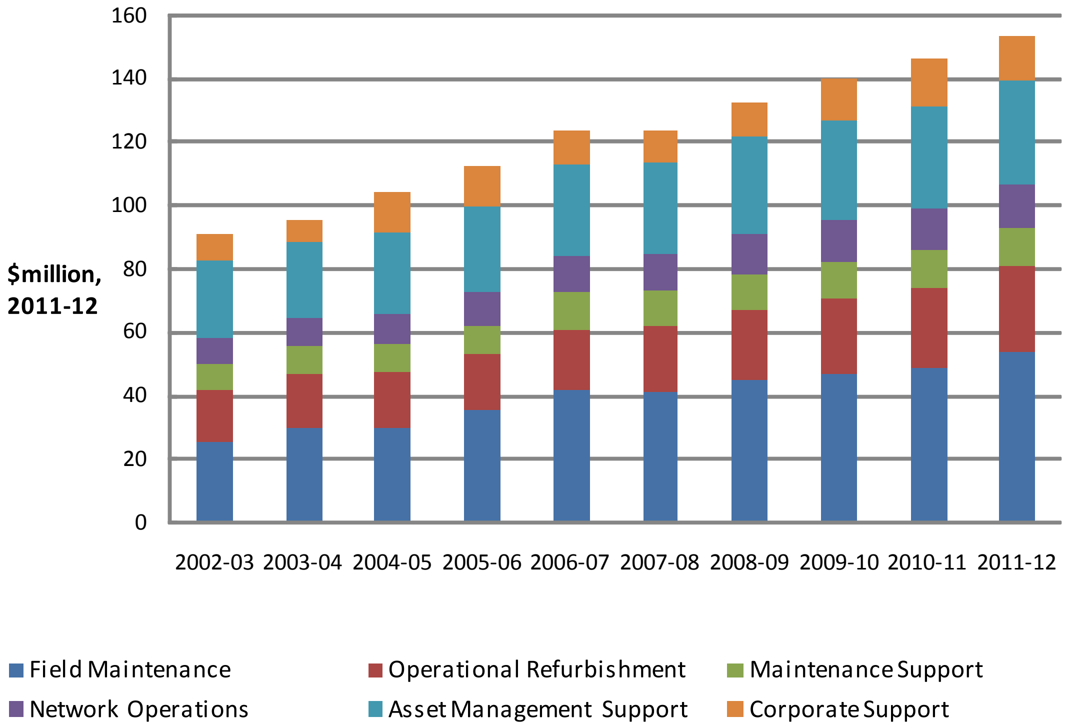
428 Powerlink's operating expenditure model methodology provides opex split by service provider as well as labour and materials which is not required for the reporting of its regulatory financial statements.

data, based on Powerlink's 2010-11 regulatory proposal estimates. The AER will use actual disaggregation of Powerlink's 2010-11 audited opex for the final determination.

Analysis of Powerlink's historical opex

Figure 4.10 shows Powerlink's historical controllable opex, although exhibiting an upward trend does not contain any material increases in particular categories of opex during the current regulatory control period.

Figure 4.10 Powerlink's controllable opex by category ($million, 2011-12)



Source: The AER's analysis is based on Powerlink Pro-forma's provided to the AER for the most recent two regulatory proposals.

In addition, as Powerlink has marginally overspent its allowance, it will incur a negative carryover into the next regulatory control period. This position holds regardless of whether the AER uses the 2009-10 audited actual opex (Powerlink's proposed base reference year) or the 2010-11 audited actual opex (AER's base reference year) due to marginal overspends in both years. The AER considers the overspends to be immaterial in comparison to the level of allowable expenditure for these years (see table 4.3).

On the basis of its analysis, the AER has accepted Powerlink's actual costs are reflective of its recurrent costs.

Non-recurrent costs

The AER removes non-recurrent costs from base year opex, as they are considered not reflective of the level of future ongoing recurrent costs.

Powerlink's opex includes provisions. A provision is a liability of uncertain timing or amount.[429] Provision accounts are used to set aside amounts for the payments of these liabilities for when they arise for settlement. A movement in provisions occurs when the annual amount set aside differs to the annual amount paid out. The AER considers the movement in these provisions represents non-recurrent costs and therefore removed them from the base year.

The AER reverses the movement in provisions relating to Powerlink's 2010-11 opex. The reversal of the movement in provisions more appropriately recognises the amount of provisions paid out rather than the amount of provisions Powerlink reported. This reversal for Powerlink reduces the base year. The AER considers this necessary in setting the opex allowances for Powerlink, on the basis that movement in provisions:

- may be used to represent the reported accounts for Powerlink differently from its underlying economic circumstances
- may prevent and distort the comparison of Powerlink's expenditure on a consistent basis from year to year
- can be affected by a change in accounting standards despite expenditure remaining unchanged.

Based on the above, the AER considers the reversal of the movement in provisions produces a base level of expenditure that is more suitable for regulatory purposes. This is important for calculating EBSS carryover adjustments for Powerlink's next regulatory control period.

The AER notes in calculating the carryover adjustments due to the application of the EBSS in the current regulatory control period, it has removed the movement in provisions from Powerlink's actual opex as well as back cast and removed the movement in provisions in the allowance set at the AER's last determination. The AER notes this adjustment has had a minimal impact on the calculation of the EBSS carryover amount for the next regulatory control period. This adjustment is further discussed in attachment 11.

Furthermore, the AER has allocated all of Powerlink's movement in provisions relating to its regulated business operations to Powerlink's prescribed services opex. The AER considers this allocation is appropriate, based on Powerlink's treatment of these costs in its financial statements. The AER requested Powerlink to further disaggregate its movement in provisions but this has not yet been done.[430] Therefore, the AER considers its allocation of provisions to be a placeholder position for the draft decision. Further investigation of these costs will be undertaken for the final decision.

Powerlink's categories of opex not subject to the base year approach

Not all of Powerlink's controllable opex was forecast using a base year approach. It used either a zero based or a hybrid approach in some circumstances. The hybrid approach calculated a build up of costs for a base year. This build of up costs is consistent with the build up of costs in Powerlink's zero base approach. This base year was then extrapolated forward for efficiencies and growth in network, labour and materials consistent with the base

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429 AASB, *137: Provisions, contingent liabilities and contingent assets*, section 10.

430 Powerlink, *Response to information request AER/035 of 7 September 2011*, received 8 September 2011.

year approach. The following categories of Powerlink's controllable opex forecast were either calculated using either a zero based or hybrid approach:

- routine maintenance
- operational refurbishments
- step changes.

Powerlink's routine maintenance forecast was established using a hybrid approach, whereby forecasts are based on a build up of work units and work unit charge rates. Escalators and scale efficiencies were then applied. In assessing Powerlink's routine maintenance expenditure, the AER applied a base year approach consistent with Powerlink's other controllable opex. This is because routine maintenance should be relatively consistent year on year and across regulatory control periods.

Further, the AER has undertaken a high level test of routine maintenance using its base year approach against Powerlink's hybrid approach using 2009-10 as the base year. This test indicates an immaterial difference to Powerlink's forecast. Based on this immaterial difference the AER has not undertaken any further investigation into Powerlink's build up of work units and work unit charge rates. Powerlink's work units and work unit charge rates are inputs into its operating expenditure model methodology.[431]

The AER's base year approach for its draft decision uses Powerlink's 2010-11 actual data. The 2009-10 work units and work unit charge rates are hard coded inputs into Powerlink's operating expenditure model methodology. As the AER is not in possession of Powerlink's work units and work unit charge rates model it is unable to update these in 2010-11 value terms. Based on the immaterial difference of the AER's analysis on Powerlink's 2009-10 work units and work unit charge rates, the AER considers its base year approach using 2010-11 actual data appropriate. The AER will further investigate Powerlink's work units and work unit charge rates for its final decision based on 2010-11 updates.

Powerlink's operational refurbishment opex was forecast using its zero based approach. This category of Powerlink's opex demonstrates a noticeable increase over the next regulatory control period.[432] The main driver of the forecast relates to Powerlink's proposed tower refurbishment step change. The EUAA's submission questioned the reasonableness of this increase.[433] The AER's analysis of Powerlink's operational refurbishment is considered with the other step changes in section 4.4.2. All remaining step changes were investigated in more detail, in section 4.4.2.[434]

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431 Powerlink's operating expenditure model methodology was provided to the AER on a confidential basis.

432 Powerlink, *Regulatory proposal*, 31 May 2011, p. 99.

433 EUAA, *Submission to the Australian energy regulator on Powerlink's regulatory proposal 2012–2017*, August 2011, p. 12.

434 See: AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–15*, Appendix L, October 2010, pp. 265–48.

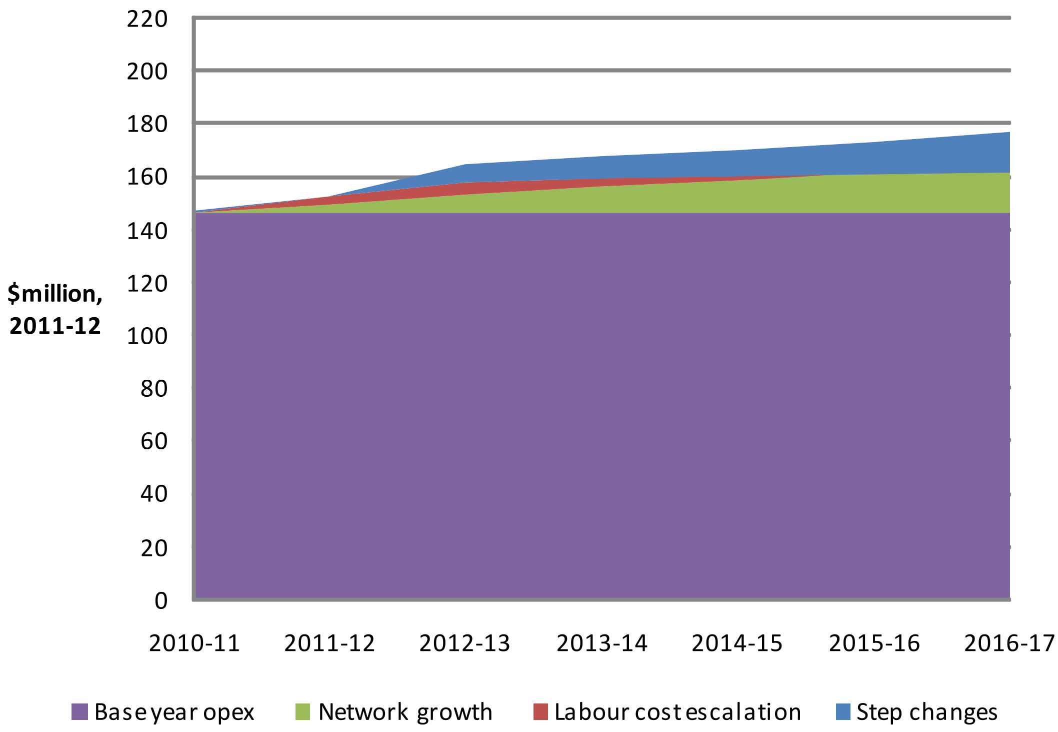
4.4.2 Projecting the base year forward

The AER used Powerlink's 2010-11 expenditure to forecast controllable opex for the next regulatory control period by adjusting it for:

- network growth
- real costs escalation
- step changes.

This forecast of controllable opex is shown in figure 4.11.

Figure 4.11 AER draft decision on controllable opex ($million, 2011-12)



Source: AER analysis

Accounting for network growth

The AER must assess whether Powerlink's proposed total forecast opex reasonably reflects the opex criteria.[435] The AER used a base year approach to do so. It took actual expenditure in a base year, removed any non-recurrent expenditure and added allowances for scale escalation, real cost escalation and step changes. Powerlink referred to scale escalation as network growth.

The AER is not satisfied that Powerlink's proposed network growth factors reasonably reflect the opex criteria.[436] It considers Powerlink's proposed use of forecast total asset values for

[435] NER, clause 6A.6.6(c).
[436] NER, clause 6A.6.6(c).

forecasting network growth is largely reasonable. [437] However, the AER considers Powerlink overstated its forecast network growth because the forecast total asset values that Powerlink used included real cost escalation. The AER therefore removed the impact of real cost escalation to calculate Powerlink's network growth factors. It also adjusted the network growth calculation to reflect the AER's draft decision on Powerlink's forecast capex (see attachment 3). The AER accepts Powerlink proposed economies of scale factors. The AER's draft decision on Powerlink's network growth factors resulted in a total reduction on Powerlink's proposed total opex by 0.9 per cent or $8.3 million ($2011-12) during the next regulatory control period. The majority of this reduction is due to the the AER's draft decision on Powerlink's forecast capex. Table 4.4 sets out the AER's draft decision on Powerlink's network growth factors.

Table 4.4 AER's draft decision on Powerlink's network growth factors (per cent)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Average
Communications	3.21	8.04	20.19	11.54	1.90	1.48	11.96	8.33
Transmission lines	4.66	3.49	4.85	3.26	1.85	4.32	3.68	3.73
Secondary systems	2.06	3.87	5.62	2.74	1.32	1.03	1.12	2.54
Substation	1.28	2.74	5.27	2.18	1.51	1.55	1.48	2.29
Land	5.24	6.62	5.14	3.56	10.47	7.57	6.43	6.43
Total	3.51	3.58	5.33	3.12	2.24	3.47	3.28	3.50

Source: AER analysis.

Powerlink escalated its base year opex by applying network growth escalators which represent the additional opex needed to operate and maintain its growing network. It calculated the network growth escalators from the forecast change in total asset values. It then applied economies of scale factors to reflect the decreasing long run average costs associated with increased network size.[438]

To assess the reasonableness of Powerlink's proposed network growth, the AER compared Powerlink's historical growth in network size with its growth in total asset values. To assess Powerlink's proposed economies of scale factors, the AER compared Powerlink's actual and forecast price deflated opex with the growth in network size. It calculated Powerlink's actual price deflated opex using the formula below:[439]

Δ real opex = (Δ opex price – ΔCPI) + (Δ output quantity – Δ opex PFP)[440]

Where:

Δ opex PFP = Δ identified efficiency gains + Δ unidentified efficiency gains

437 Powerlink, *Regulatory proposal*, 31 May 2011, p. 91. The total asset value reflects the undepreciated asset value.

438 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 91–92.

439 Note: the ESCV used this formula to determine the rate of change in opex for gas distributors. The formula identifies that a change in actual opex reflects both changes in net opex prices and changes in net output quantities.

440 Δ opex PFP is the growth in partial factor productivity (PFP) for opex inputs.

= EOS gain + technology efficiency gain

Conceptually, a TNSP's output can be measured by its line length, number of transmission assets and system capacity. In relation to Powerlink's network growth method, the AER referred to these variables as the measurement of network size. In terms of the impact of growth on the network size, subtracting the change in opex input prices from the total change in real opex reveals the growth in the network size net of efficiency gains. The AER then compared the trend of the price deflated opex with the trend of the growth in network size to identify the efficiency gains experienced by Powerlink.

The use of total asset values

Powerlink calculated its network growth factors from the forecast change in total asset values.[441] Powerlink's forecast total asset values included the impact of forecast real cost escalation. The AER considers that Powerlink has overestimated its forecast network growth factors because Powerlink's forecast total asset values reflect changes in the real cost of assets as well as growth in the volume of network assets over time.

The AER is not satisfied Powerlink's proposed network growth escalators reasonably reflect a realistic expectation of the demand forecast and cost inputs required to achieve the opex objectives.[442] It considers Powerlink, by using forecast total values that included real cost escalation to determine network growth factors, overstated its opex requirement for the next regulatory control period. For the purpose of calculating forecast network growth factors, the AER removed the impact of real cost escalation from Powerlink's forecast total asset values. Further, the AER adjusted the total asset values to reflect the AER's draft decision on Powerlink's forecast capex (see attachment 3). Table 4.4 sets out the AER's draft decision on Powerlink's network growth factors. Table 4.5 compares the average of AER revised network growth factors with the average of Powerlink proposed network growth factors.

Table 4.5 Annual average network growth factors (per cent, per year)

	AER draft decision	Powerlink proposed	Difference
Communications	8.33	7.87	0.46
Transmission lines	3.73	4.56	–0.83
Secondary systems	2.54	4.49	–1.95
Substation	2.29	2.94	–0.65
Land	6.43	5.87	0.56
Total	3.50	4.25	–0.75

Source: AER analysis.
Note: The annual average of AER's revised network growth factors for communications and land assets are higher than the average of Powerlink's proposed network growth factors for these assets. This is due to the higher values for these assets as a result of AER's revision of Powerlink's forecast capex.

441 Total asset value reflects the undepreciated asset value.
442 NER, clause 6A.6.6(c)(3).

Powerlink used the growth in forecast total asset values to forecast growth in the size of the network over time.[443] The AER notes that Powerlink's forecast total asset values include the impact of real cost escalation. This means that Powerlink's forecast total asset values reflect changes in the cost of assets as well as change in the volume of network assets over time.[444] The AER considers that Powerlink's forecast network growth factors should only reflect growth in the physical size of network. This is because network growth escalation of base year opex reflects the additional opex that Powerlink requires for increased opex activities resulting from expansion of Powerlink's network. The increase in opex activities is a result of the growth in the physical size of Powerlink's network, and not because of an increase in asset prices. Therefore, by using total asset values that include real cost escalation, Powerlink has overestimated its forecast network growth factors.

The AER notes that an Energy Users Group operating in Queensland (Energy Users Group) expressed concerns about the use of replacement network asset values to forecast network growth factors.[445] The Energy Users Group noted that the AER used the physical size of the network and customer numbers to forecast the growth of distribution networks in recent DNSP determinations.[446] The AER considers that assets volume data for Powerlink's network could be used directly to forecast network growth if reliable volume data are available to the AER. However, the AER could not obtain forecast volume data from Powerlink. The AER requested Powerlink provide historical and forecast volume data for each of its asset categories.[447] Powerlink could not provide forecast volume data for all the asset categories and the historical data for some of the asset categories.[448] The AER further notes that recent studies recommending the use of composite size variables, such as customer numbers, line length and units of energy delivered, for measuring the 'size' of a network business focused on distribution networks,[449] and the AER is not aware of similar studies conducted for transmission networks. For these reasons, some caution must be used if the approach adopted for DNSPs for forecasting network growth is applied to Powerlink.

To assess whether the use of total asset value to forecast network growth is reasonable, the AER compared Powerlink's actual network size during 2004-05 to 2009-10 with the forecast total asset values in its 2007-08 to 2011-12 revenue cap determination for each asset category (except communications assets, because the AER could not obtain historical volume data for communications assets).[450] Table 4.6 shows that the average annual growth in the asset value measures aligns closely with the average annual growth in network size during 2004-05 to 2009-10. This alignment indicates the growth in total asset value provides a reasonable estimate for the growth in Powerlink's network size. However, the growth in

443 Powerlink, *Regulatory proposal*, 31 May 2011, p. 91.

444 The change in volume of network assets reflects the change in the quantity and capacity of network assets. Therefore, the growth in the physical size of the network can be described by the growth in the volume of the network assets.

445 The Group, *AER 2011 review of Queensland electricity transmission, 2011*, pp. 39–40. The Group is an energy consumers group operating in Queensland.

446 AER, *Final decision: appendices: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, 2010, p. 181.

447 AER, *Information request AER/006 of 7 July 2011—Opex questions and meeting*, sent 20 July 2011.

448 Powerlink, Response to information request AER/006 of 7 July 2011—Opex questions and meeting—Volumes of Network Quantities (confidential), 20 July 2011.

449 Wilson Cook & Co, *ACT&NSW DNSPs expenditure review—main report final*, October 2008, p. 18.

450 Land and easement is a new asset category for the next regulatory period. Therefore, this asset category is not included in this analysis.

average annual asset values is slightly higher than the growth in average annual network size. This higher growth in average asset values may reflect the impact of the overall change in the cost of assets over time.

Therefore, the AER considers that real cost escalation should be removed from Powerlink's forecast total asset values to remove the impact of any change in the cost of assets over time. This ensures network growth factors only measure the growth in the volume of network assets. The AER further notes that Powerlink has adjusted its forecast total asset values to exclude the value of replaced assets. The AER considers the removal of replaced assets is a necessary step to ensure that the forecast network growth factors do not count the number of replaced assets as additional network assets.[451]

Overall, the AER considers network growth factors based on de-escalated asset values that exclude the value of replaced assets reflect a realistic expectation of Powerlink's demand forecast. It considers that this approach addresses the Energy Users Group's concerns about the replace asset values and the impact of price changes because both the impact of asset price change and the value of replaced assets have been removed.[452]

Table 4.6 Change in Powerlink's replacement asset value, compared with growth in network size, 2004-05 to 2009-10 (per cent, per year)

Asset category	Replacement asset value[a]	Actual undepreciated asset value[b]	Network size	Growth in network size
Transmission lines	3.3	4.5	Line length (km)	2.7
Substations	7.6	6.7	Substation capacity (MVA)	7.7
Secondary systems	5.8	6.1	Average numbers of transformers, circuit breakers, capacitor banks, shunt reactor and static var compensators	5.9
Communications	9.1	7.7	N/A	N/A
Average (excludes communications)	5.6	5.8	Average	5.4
Average (includes communications)	6.4	6.3	N/A	N/A

(a) Replacement asset value is based on the forecast data in the Powerlink's opex model in the 2007–12 regulatory reset.
(b) The actual undepreciated asset value has been adjusted to remove the value of replaced assets.
N/A Not available.

451 Powerlink, *Regulatory proposal*, 31 May 2011, p. 91.
452 The Group, *AER 2011 review of Queensland electricity transmission, 2011*, pp. 39–40. The Group is an energy consumers group operating in Queensland.

Source: AER analysis.

In the capex attachment the AER made several adjustments to Powerlink's forecast capex. These adjustments have affected Powerlink's forecast total asset values for the next regulatory control period. The AER used the AER adjusted total asset values for calculating Powerlink's network growth factors. It has also removed the real cost escalation from the adjusted total asset values for the calculation.

Economies of scale

The AER is satisfied Powerlink's proposed economies of scale factors reasonably reflect the opex criteria.[453]

To assess Powerlink's proposed economies of scale factors, the AER conducted an opex trend analysis that compared Powerlink's actual and forecast price deflated opex with the growth rate of its network. Because the price deflated opex reflects growth in the network size and efficiency gains, this analysis enabled the AER to identify Powerlink's actual efficiency gains and compare them with Powerlink's forecast efficiency gains.

The opex trend analysis in table 4.7 and figure 4.12 shows Powerlink experienced 0.3 per cent efficiency gain from 2004-05 to 2009-10. This efficiency gain reflects economies of scale gains and technology efficiency gains. In the next regulatory control period, Powerlink's forecast network growth and price deflated opex will result in 0.4 per cent efficiency gain, which reflects the proposed economies of scale gains. The AER noted Powerlink has been subject to the efficiency benefit sharing scheme (EBSS) in the current regulatory control period. Benchmark analysis conducted by the AER indicates Powerlink's actual opex is at a similar level of efficiency compared with that of other TNSPs (see section 4.4.1). Powerlink's actual opex thus appears to have reasonably reflected the efficient costs required to maintain and operate its network. Therefore, the AER considers the proposed economies of scale factors are reasonable. This is because the forecast price deflated opex calculated using Powerlink's proposed economies of scale and network growth factors resulted in forecast efficiency gains that aligned closely with Powerlink's actual revealed efficiency gains.

The Energy Users Group considered Powerlink's proposed economies of scale factors are overstated when compared with the economies of scale that are experienced by Energy Users Group members. However, the Energy Users Group also recognised that economies of scale may be different depending on the type of business.[454] The AER considers Powerlink should experience similar levels of economies of scale with other TNSPs, given the similar nature of those businesses. The proposed economies of scale factors are largely the same as the economies of scale factors applied for other TNSPs in recent AER transmission determinations. The AER thus accepts Powerlink proposed economies of scale factors.

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453 NER, clause 6A.6.6(c).

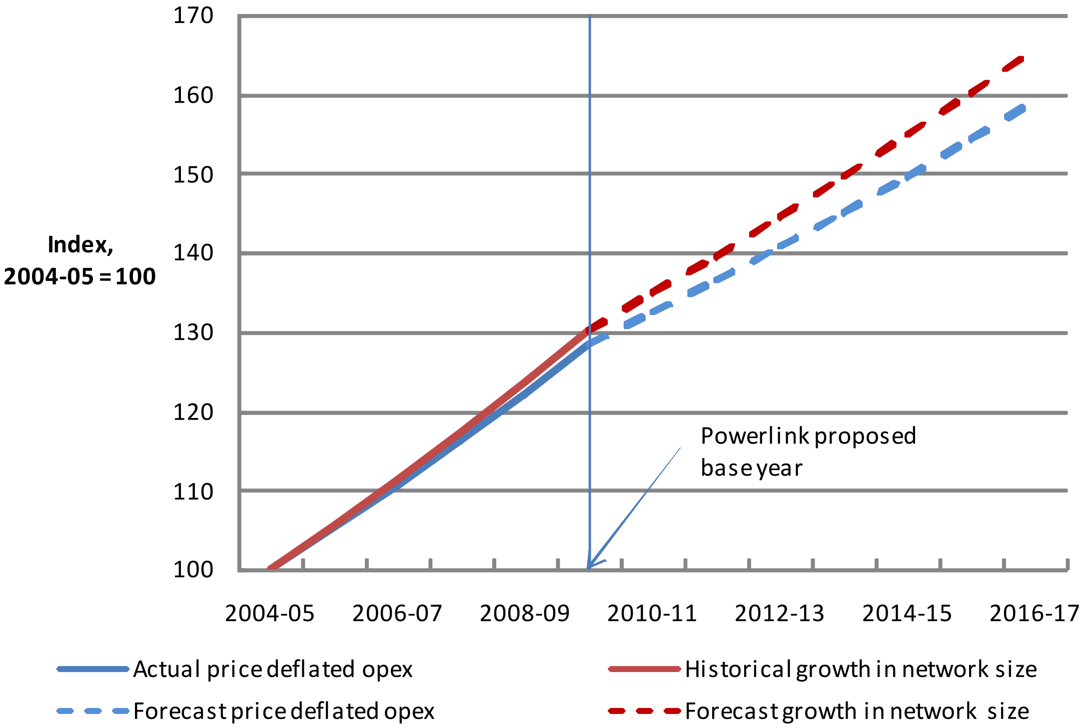
454 The Group, *AER 2011 review of Queensland electricity transmission*, 2011, pp. 39-40. The Group is an energy consumers group operating in Queensland.

Table 4.7 Comparison of Powerlink's actual and forecast price deflated opex and network growth (per cent, per year)

	2004–05 to 2009-10	20010–11 to 2016-17
Price deflated opex	5.1	3.1
Network growth	5.4	3.5
Efficiency gains	0.3	0.4

Source: AER analysis.
Note: Efficiency gains = Growth in network size – price deflated opex

Figure 4.12 Analysis of Powerlink's opex trend



Source: AER analysis.

Application of real cost escalators

Powerlink's proposed total opex included $70.8 million ($2011-12) for forecast real cost increases in labour, materials and land costs. The AER's consideration of the real cost escalators proposed by Powerlink is in attachment 0. The impact of the application of the AER's real cost escalators is outlined in table 4.8.

Table 4.8 Impact of real cost escalation ($million, 2011-12)

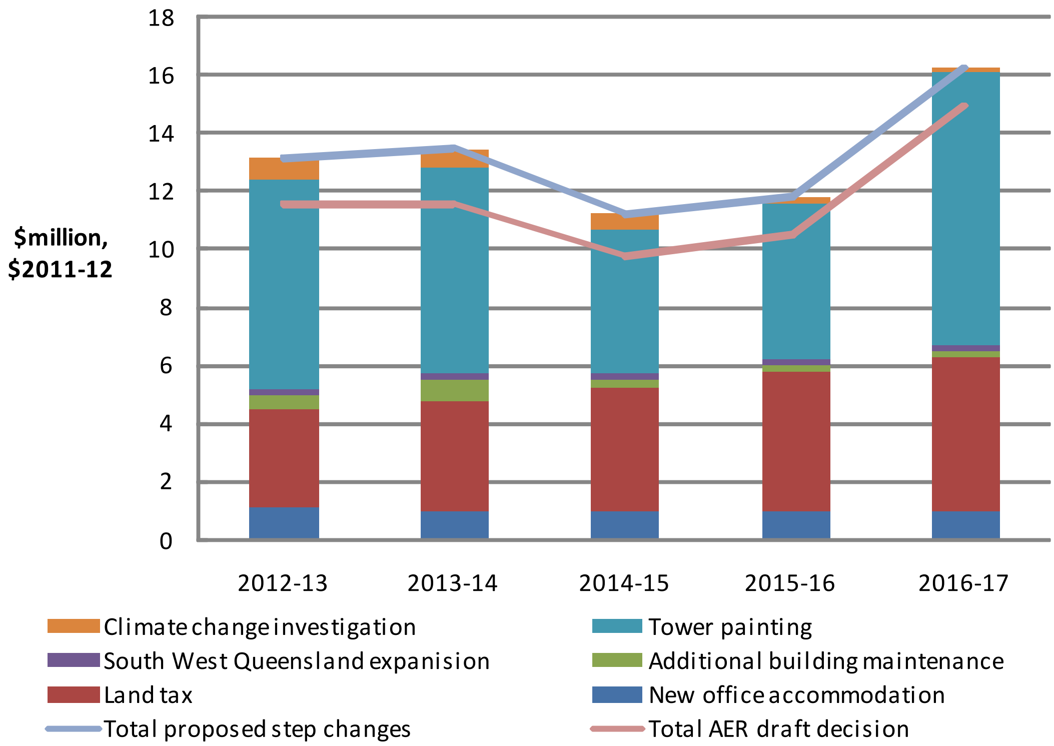
	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink proposal	7.4	10.5	14.1	17.5	21.3	70.8
AER determination	4.1	3.4	2.0	–0.4	–2.2	6.7
Difference	–3.3	–7.1	–12.1	–18.0	–23.6	–64.1

Source: AER analysis.

Step changes

The AER recognises Powerlink may be subject to changes in regulatory obligations or the operating environment that are not reflected in its base year expenditure. The base opex should therefore be adjusted to account for these 'step changes'. The AER is not satisfied Powerlink's total proposed step changes reasonably reflect the efficient cost of a prudent TNSP in Powerlink's circumstances[455] or a realistic expectation of the demand forecast that required to achieve the opex objectives.[456]

Figure 4.13 Powerlink's proposal and AER's draft decision on step changes for 2012-13 to 2016-17 ($million, 2011-12)



Source: AER analysis.

Figure 4.13 shows that the total proposed step change is driven by tower painting and land tax step changes. The AER accepted Powerlink's proposed tower painting and the majority of

455 NER, clause 6A.6.6(c).

456 NER, clause 6A.6.6(a).

the proposed land tax and new office accommodation costs. However, the AER rejects Powerlink's proposed step changes for climate change investigation, additional building maintenance and the majority of the proposed South West Queensland network expansion costs. The total accepted amount represents 88 per cent of the total proposed step changes. Table 4.9 sets out the AER's draft decision on Powerlink's proposed step changes.

Table 4.9 AER's draft decision on Powerlink's step changes for 2012-13 to 2016-17 ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink proposed	13.1	13.5	11.2	11.8	16.2	65.8
AER's draft decision	11.5	11.5	9.8	10.5	14.9	58.2
Difference	–1.6	–1.9	–1.4	–1.3	–1.3	–7.6

Source: Powerlink, *Response to information request AER/006 of 7 July 2011—Opex questions and meeting*, 1 August 2011; Powerlink, *operating expenditure model—version 2*, 10 August 2011 (confidential); AER analysis.

Note: Total may not add up due to rounding.

Powerlink proposed $65.8 million ($2011-12) of step changes for the next regulatory control period (table 4.10).

Table 4.10 Powerlink proposed step changes for 2012-13 to 2016-17

Step change	Reasons for proposal
Land Tax	To account for additional state legislative requirements on freehold land.
Tower painting	To ensure towers in harsh environments can reach their currently projected economic life.
Office accommodation	To cater to staff growth resulting from Powerlink's expanding network.
Climate change investigations	To identify and understand the impacts of climate change on the development, operation and maintenance of the network, and develop and adaptation plan.
Additional building maintenance	Maintenance for Powerlink's disaster recovery site and carpet replacement and painting for Powerlink's offices.
South West Queensland expansion	The extension will beyond the geographical reach of the existing network and will impose additional costs above the inherent network growth factors.

Source: Powerlink, *Regulatory proposal*, 31 May 2011, pp. 89-90; Powerlink, *Response to information request AER/006 of 7 July 2011—Opex questions and meeting*, 1 August 2011, p. 3.

In assessing Powerlink's proposed step changes, the AER first considered whether the proposed step change is driven by a changed regulatory obligation. Powerlink's base year expenditure will not reflect any new regulatory requirements. Additional opex may be required, above that expended in the base year, to meet any new regulatory requirements. The AER first confirms that a new regulatory obligation exists. If it does, it then assesses the efficiency of the proposed expenditure.

Additionally, there may be changes to Powerlink's operating environment in the next regulatory control period, which are beyond its control. Any opex requirement related to these changes will not be reflected in its base year expenditure. For such changes, the AER first considers whether base year expenditure will cover the associated opex. If it does not, the AER then considers the efficiency of the proposed opex. Powerlink's proposed base year is 2009-10. The AER has rejected the proposed base year and has used 2010-11 as the base year for Powerlink (see section 4.4.1).

Land tax

Powerlink proposed a step change for land tax because of changes to the Land Tax Act 2010 (Queensland) and Land Valuation Act 2010 (Queensland).

The AER is not satisfied that Powerlink's proposed land tax costs reasonably reflect a realistic expectation of land values during the next regulatory control period. The AER has reduced the amount of Powerlink's proposed land tax by 8.2 per cent by using the land value escalation rates in attachment 1.

The AER considers the change in the Land Tax Act 2010 (Queensland) and Land Valuation Act 2010 (Queensland) will increase Powerlink's land tax liability in the next regulatory control period. Therefore, it considers that a step change for land tax is reasonable.

However, the AER considers that Powerlink has overestimated its land tax liability in the next regulatory control period. Powerlink has calculated its land tax based on its forecast land values for the next regulatory control period.[457] The forecast land values are calculated using its proposed forecast land value escalators. The AER considered that Powerlink has overestimated its land value escalation rates for the next regulatory control period (set out in attachment 1). Consequently, the forecast land taxes based on these proposed land value escalators rates are also overestimated. Therefore, the AER is not satisfied Powerlink's proposed land tax reasonably reflects the opex criteria.[458] The AER has recalculated Powerlink's forecast land tax using the AER's amended land value escalators in table 1.1 in section 1.4.9.

Tower painting refurbishment

Powerlink proposed a step change to its refurbishment opex to ensure towers in harsh environments can reach their current projected economic life.[459] An energy users group operating in Queensland considered that the proposed tower refurbishment is not a step change because Powerlink has always been required to ensure assets reach at least their designed life.[460]

The AER accepts Powerlink proposed step change for tower painting.

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457 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 3.

458 NER, clause 6A.6.6(c).

459 Powerlink, *Regulatory proposal*, 31 May 2011, p. 90.

460 The Energy Users Group, *AER 2011 review of Queensland electricity transmission*, 2011, p. 29.

Powerlink's proposed refurbishment opex was forecast using a zero based approach.[461] Therefore, the Powerlink proposed refurbishment opex is not included in the AER's assessment of Powerlink's base year opex (see section 4.4.1).

The needs for all the proposed refurbishment projects (including the proposed tower painting step change) are identified in Powerlink's Operational refurbishment plan.[462] Further, Powerlink's asset refurbishment rationale is detailed in Powerlink's Asset management strategy, Refurbishment policy and relevant methodology documents.[463] EMCa found that Powerlink's asset refurbishment policy is generally well structured. It considered that the content of the asset refurbishment policy is appropriate, and this policy is thus likely to be used as a reference within Powerlink. EMCa further identified that the systems and processes that Powerlink used to develop its refurbishment plans were sound.[464] Powerlink identified the need for the proposed the tower painting step change as part of its refurbishment planning process. The AER thus considers that the reasons provided by Powerlink for the proposed tower painting step change are reasonable. Therefore, the AER is satisfied that Powerlink's proposed tower painting step change reasonably reflect the opex criteria.[465]

New office accommodation

Powerlink stated it requires additional staff to operate and maintain its growing network but its Virginia site is currently fully utilised, with no further capacity to expand. Powerlink has stated its commitment to leasing new office space to accommodate additional staff. The proposed total forecast cost for the new office accommodation includes the annual lease costs, annual maintenance and outgoing expenditure and staff relocation costs.[466]

The AER is not satisfied that Powerlink's proposed office accommodation step change reasonably reflects the efficient cost that a prudent TNSP requires to meet expected demand during the next regulatory control period. The AER accepts the proposed lease costs and staff relocation cost. However, it considers the proposed maintenance and outgoing costs are not reasonable. The AER's draft decision reduced Powerlink's proposed total forecast for new office accommodation cost by 14 per cent for the next regulatory control period.

Powerlink's proposed expenditure for new office accommodation included lease costs, maintenance and outgoing costs and staff relocation costs. Powerlink owns its main office site in Virginia. Therefore, Powerlink's base year opex does not include office lease costs. Consequently the AER considers that the proposed lease costs for the new office accommodation is a step change because network growth escalation of base year opex will not include these costs. It also considers Powerlink's proposed staff relocation cost is reasonable. This cost is required to relocate staff to the new office site in the next regulatory control period.

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461 Powerlink, *Regulatory proposal*, 31 May 2011, p. 93.

462 Powerlink, *Regulatory proposal*, 31 May 2011, p. 93.

463 Powerlink, *2010 Operational Refurbishment Plan Volume 1*, 2010, p. 4.

464 EMCa, *Powerlink Revenue Determination: Technical Review: Forecast Capital Expenditure and Service Targets*, September 2011, pp. A20–A21.

465 NER, clause 6A.6.6(a).

466 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, pp. 4–6.

However, Powerlink's base year opex will include maintenance and outgoing costs for its Virginia site. The AER considers this cost is not a step change. It considers any forecast increase in Powerlink's office maintenance and outgoing costs due to network expansion is covered by Powerlink's proposed network growth escalation. This issue was also raised by stakeholders in submissions on Powerlink's regulatory proposal.[467] Therefore, the AER does not accept office maintenance and outgoing costs as a step change.

Climate change investigations

Powerlink has proposed a step change to identify and understand the impact of climate change on the development, operation and maintenance of its transmission network. The AER has previously rejected similar step changes for climate change studies in the Victorian distribution determination.[468]

The AER is not satisfied Powerlink's proposed step change for climate change investigation is consistent with a total forecast opex that reasonably reflects the opex criteria.[469]

Powerlink noted the Australian Energy Market Commission's (AEMC) Review of the Effectiveness of NEM Security and Reliability Arrangements in light of Extreme Weather Events. This identified there may be potential improvements to the performance of the power system, by requiring TNSPs to upgrade their networks to meet higher technical standards.[470] However, there are no regulatory or legislative changes that require Powerlink to increase its current reliability and technical standard stemming from the AEMC's review.

Powerlink stated that, as a prudent TNSP, it investigates the impact of outside drivers on its network, such as new technologies.[471] The AER considers that a prudent TNSP would regularly undertake studies on the impact of various drivers, such as new technologies, on designing, operating and investing in the transmission network. It considers the incentive framework under which TNSPs operate allows them to retain any identified efficiency savings achieved as a result of such studies, therefore incentivising them to conduct these studies. The AER considers expenditure for such studies is a normal business cost and not a step change. Further, the subject of such studies would vary over time. Even though Powerlink may not have undertaken a study on a particular issue in the past, it may still be possible that the base year opex includes the opex required to undertake such a study.

Climate change is not a new phenomenon. The impacts of environmental variables, such as wind speed and temperature, have always been an integral part of designing, operating and maintaining transmission assets.[472] Therefore, the AER considers that Powerlink's circumstances are no different in the next regulatory control period, to what they have been

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467 The Energy Users Group, *AER 2011 review of Queensland electricity transmission*, August 2011, p. 29.

468 AER, *Final decision: appendices: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, 2010, p. 312.

469 NER, clause 6A.6.6(c).

470 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, pp. 7–8.

471 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 7.

472 Western Power, TransGrid, Powerlink, VenCorp, Transend, ElectraNet and SP AusNet, TNSP operational line ratings, March 2009, pp. 6–7.

previously. Consequently, the AER considers Powerlink's base year opex is sufficient to undertake the proposed climate change investigations.

Additional building maintenance

Powerlink proposed additional building maintenance expenditure for its new disaster recovery site, and proposed to paint its existing offices and replace carpet.[473]

The AER is not satisfied that Powerlink's proposed step change for additional building maintenance is consistent with a total forecast opex that reasonable reflects the opex criteria.

The AER considers that Powerlink proposed maintenance costs for its disaster recovery site is not a step change because these costs will be covered by network growth escalation of Powerlink's base year expenditure. Powerlink's base year corporate support costs include building maintenance costs.[474] The AER considers that any additional maintenance expenditure provided through network growth escalation is sufficient to cover the maintenance costs for any new buildings in the next regulatory control period, including the disaster recovery site. Further, Powerlink stated its proposed maintenance costs for its disaster recovery site is not included in its base year opex.[475] The AER notes that Powerlink proposed base year is 2009-10. The AER rejected the proposed base year and used 2010-11 as the base year (see section 4.4.1). It notes that the building maintenance costs for its disaster recovery site is included in Powerlink's 2010-11 opex.[476]

Powerlink stated its proposed carpet replacement and offices painting expenditure are not in its base year opex.[477] The AER considers not undertaking a specific maintenance activity in the base year does not indicate that base year opex is insufficient to undertake that activity in the next regulatory control period. Powerlink will have undertaken various activities in the base year. Not all of them will be undertaken in every year of the next regulatory control period. Not all of these costs have been identified and removed from the base year. Consequently, to provide an additional opex allowance for all opex activities that were not undertaken in the base year would overstate Powerlink's efficient opex. This would not be consistent with the opex objectives.[478] The AER considers Powerlink has sufficient opex in its base year opex to undertake the proposed carpet replacement and office painting activities.

South West Queensland expansion maintenance

Powerlink stated that it will need to change its existing maintenance delivery strategy to adequately meet the maintenance requirement of its new network in South West Queensland. Powerlink's proposed South West Queensland network expansion maintenance costs

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473 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 9.

474 Powerlink, *Regulatory proposal*, 31 May 2011, p. 88.

475 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 9.

476 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 9; Powerlink, *Operating expenditure model—version 2*, 10 August 2011.

477 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 9.

478 NER, clause 6A.6.6(a)

involves the lease of a regional depot facility, security requirements and additional fleet vehicle, and increased helicopter support.[479]

The AER is not satisfied that Powerlink's proposed step change for South West Queensland expansion is consistent with a total forecast opex that reasonably reflects the opex criteria. The AER accepts the proposed depot lease costs. However, it considers the proposed security requirement, fleet vehicle and helicopter support costs do not reasonably reflect the opex criteria.[480] The AER's draft decision reduced Powerlink's proposed total forecast South West Queensland expansion maintenance strategy costs by 85 per cent for the next regulatory control period.

Consistent with the AER's decision for Powerlink's proposed new office accommodation step change (section 0), the AER considers that the proposed regional depot lease cost is reasonable. This is because Powerlink owns its main office site and does not pay a lease for it. The AER notes Powerlink's internal maintenance service provider, Network Field Services (NFS), is based at its Virginia office. Therefore, Powerlink's base year opex does not include the regional depot lease costs. Consequently the AER considers that the proposed lease costs for the new regional depot facility is a step change because network growth escalation of base year opex will not include these costs. The AER notes stakeholders' concern in relation to the proposal includes costs for the non–regulated assets in the South West Queensland.[481] It notes that Powerlink has adjusted the proposed lease cost to exclude the non–regulated proportion of Powerlink's network in South West Queensland.[482]

The AER considers that Powerlink's proposed security requirements and fleet vehicle costs for the regional depot are not step changes. The AER notes Powerlink's forecast corporate support opex category, which includes such costs for its existing offices, has been escalated by Powerlink's forecast network growth.[483] It thus considers that any additional office building security and fleet vehicle costs required due to network growth, are addressed by Powerlink's network growth escalation in the next regulatory control period.

For the proposed additional helicopter support cost, the AER notes that Powerlink's base opex includes expenditure on helicopter support. Further it notes this expenditure has been escalated by Powerlink's forecast network growth. Therefore, the AER considers that the costs for any additional helicopter support required due to network growth have been addressed by Powerlink network growth escalation in the next regulatory control period. The AER thus considers that the proposed additional expenditure for helicopter support is not a step change.

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479 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, p. 11.

480 NER, clause 6A.6.6(c).

481 TEC, *Submission to the AER—Powerlink revenue determination 2013–2017—Response to Powerlink's initial revenue proposal*, August 2011, p.6; EUAA, *Submission to the AER on Powerlink's regulatory proposal 2012-2017*, August 2011, p.12.

482 Powerlink, *Response to information request AER/006 of 07 July 2011—Opex questions and meeting*, 1 August 2011, pp. 11 and 12.

483 Powerlink, Operating expenditure forecasting methodology, 2011, p. 12.

4.4.3 Other opex

In addition to its proposed controllable opex, Powerlink proposed opex for insurances, network support costs and debt raising costs, which, collectively, it called other opex.

Insurances

Insurances refer to expenditure to manage the risks associated with loss events. This expenditure relates to insurance policies (insurance) and self–insurance. In the current regulatory control period insurances were included in controllable opex. The insurance premiums proposed by Powerlink include both domestic and international premiums.[484] Powerlink's proposed self–insurance relates to uninsurable and uninsured risks associated with the network.[485]

The AER does not accept Powerlink's proposed insurances of $50.5 million ($2011-12) for the next regulatory control period. The AER is not satisfied the proposed insurances reasonably reflect the opex criteria. The AER's adjustments result in a 3.8 per cent reduction in proposed insurances ($1.9 million, $2011-12). Powerlink's proposed insurances, together with the AER's decision, are set out in table 4.11.

Table 4.11 AER draft decision on Powerlink's insurances ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Proposed insurance	7.1	7.6	8.3	8.8	9.5	41.2
Proposed self insurance	1.8	1.8	1.8	1.9	1.9	9.3
Total	**8.9**	**9.4**	**10.1**	**10.7**	**11.4**	**50.5**
AER's adjustment (self insurance)	–0.4	–0.4	–0.3	–0.4	–0.4	–1.9
AER's decision	**8.5**	**9.0**	**9.8**	**10.3**	**11.0**	**48.6**

Source: Powerlink, *Regulatory proposal*, 31 May 2011, pp. 93; AER analysis.

Powerlink proposed to address exposures to the potential cost impact of unforeseen and high cost events in certain areas by the means of a cost pass through arrangement. These areas include:[486]

- above insurance cap losses
- uninsured events
- insurance company failure
- the aggregation of deductibles.

[484] Powerlink, *Regulatory proposal*, 31 May 2011, p. 93.
[485] Powerlink, *Regulatory proposal*, 31 May 2011, p. 94.
[486] Powerlink, *Regulatory proposal*, 31 May 2011, pp. 95–96.

In deciding whether Powerlink's proposed insurances reasonably reflect the opex criteria, the AER examined key documents that outline Powerlink's approach to forecasting the proposed insurances. The documents examined included:[487]

- Powerlink approach to forecast of insurance premiums
- Five year premium projection to 2017
- Insurance premium five year forecast to 2017—Marsh Consulting services for Powerlink Queensland (Marsh)
- Motor fleet insurance five year premium estimates (Marsh)
- Actuarial estimate of retained losses—Finity consulting Pty Ltd (Finity).

The AER reviewed the information provided including coverage, claims history, risk profile, business growth and assumptions. It also sought additional information on calculations carried out by Powerlink's consultant. Further, the AER compared historical expenditure to that proposed, to better understand the key drivers behind Powerlink's proposed insurances. In this process, the AER assessed the trend in Powerlink's network growth and insurance services CPI to determine whether it is consistent with that of the proposed insurances. A trend in insurance expenditure that is comparable to that of the network growth combine with insurance services CPI is likely to indicate an optimal outcome.

Self insurance has some unique features such that the AER has developed a conceptual framework to guide its assessment. The AER set out its approach in detail in its recent determination for Victorian DNSPs.[488] As the NER provisions relating to opex are almost identical for transmission and distribution, the AER considers it appropriate to apply this approach here. The key elements are outlined below.

The AER considers that the following factors are relevant in assessing a proposal for self insurance[489]:

- whether the risk is practically quantifiable and does not relate merely to a loss of value
- whether or not the event is already compensated for through any other aspect of the regulatory regime, such as through operating, maintenance and capital expenditure activities, or through pass through events
- whether any remaining negative risks (not already compensated) are outweighed by upside risks (that is, risks are negatively asymmetric in aggregate).

By providing an allowance for risks which are not compensated for elsewhere in the regulatory regime, the AER provides for the efficient recovery of costs consistent with what would be incurred by a prudent operator. This is consistent with clause 6A.6.6(c)(2) of the NER. The provision of allowances for risks that are compensated through other areas of the

487 These documents were provided to the AER on a confidential basis.

488 AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, October 2010, Appendix M, p. 456–9.

489 See section M.2 of AER, *Draft decision: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, October 2010, Appendix M.

regime would be inconsistent with the opex objectives and the incentive regime more generally. As such provision would lead to an effective double recovery of costs.

In its assessment of self insurance opex, the AER considers whether such opex reasonably reflects the expectation of cost inputs required to achieve the opex objectives in the NER.[490] A TNSP has a variety of mechanisms to mitigate or protect itself against risks. One primary tool for doing so is external insurance for which the AER provides an allowance. Most external insurance policies carry an accompanying excess or deductible—the component which the TNSP must contribute to a claim made on that policy. In this context, the AER permits self insurance for these costs in accordance with clause 6A.6.6(c)(3). Further, the AER considers that self insuring for below deductible amounts is consistent with the amounts incurred by a prudent and efficient operator.[491] This is because the AER considers that it is more cost efficient for the TNSP to retain some risk on external insurance policies than, for example, insuring for the entire risk. This would lead to inefficient increases in premiums.

Although the AER recognises that TNSPs face downside risks which may increase their costs, there are also upside risks which may result in savings during the regulatory control period. Evidence of this can be seen in the above-benchmark returns frequently earned by TNSPs. Hence the AER allows self insurance for certain identifiable material downside risks which are negatively asymmetrical. Conversely, the AER disallows less material risks which are likely to be balanced by other savings.

The AER has had regard to various opex factors in determining whether it is satisfied that TNSPs' forecast opex (as it relates to self insurance) reasonably reflects the NER criteria. Some of these factors are outlined above. The AER has also considered the information contained in or accompanying Powerlink's regulatory proposal. Further, for some risks, the AER has undertaken its own analysis in forming a view on the appropriate self insurance amounts that a prudent and efficient operator requires to meet or manage expected demand over the forthcoming regulatory control period.[492]

The AER is not satisfied the proposed insurances reasonably reflect the opex criteria. The AER accepts the broad approach used by Finity to estimate the proposed self insurance based on the probability times size of loss approach. However, the AER considers some adjustments to calculations are necessary for the proposed self insurance to reasonably reflect the opex criteria. The reasons for the AER's draft decision are outlined below.

The AER considers that Powerlink's forecasts for remaining insurance is appropriate because Powerlink is a price taker in a global insurance market and its forecast were developed based on advice from actuaries and insurance brokers.

Insurance

Powerlink proposed $41.2 million ($2011-12) of insurance for the next regulatory control period. This provides cover for property and liability, financial products liability, motor vehicles and other insurances.[493] Powerlink's forecast relied on advice from its insurance brokers and

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490 NER, clause 6A.6.6(c)(3).

491 NER, clause 6A.6.6(3)(c)(1) and (2).

492 NER, clause 6A.5.6(e)(3).

493 Powerlink, *Powerlink approach to forecast of insurance premiums*, May 2011—confidential.

independent external actuaries and takes into account the coverage, claim history, risk profile, network growth and recent trends in insurance markets.[494]

The AER considers Powerlink is a price taker in a global insurance market. Using independent actuarial advice to develop insurance cost forecasts will take into account the most up to date information which impacts insurance premiums. The AER has previously accepted insurance cost forecasts on the basis of actuarial advice prepared for TNSPs, rather than extrapolating base year data.[495] This same approach was adopted to assess Powerlink's forecasts. The AER notes a step increase in Powerlink's insurance costs between 2008-09 and 2009-10. Powerlink submitted this was because it purchased insurance for towers and lines for the first time in 2010. The AER also notes the rapid increase in the proposed insurance over the next regulatory control period. Powerlink's network growth in recent years combined with the rise in insurance services CPI is consistent with the rapid increase in the proposed insurance. Therefore, the AER is satisfied Powerlink's proposed insurance of $41.2 million ($2011-12) reasonably reflects the costs a prudent operator in its circumstances would require to meet the opex objectives in the next regulatory control period.

Self insurance

Powerlink proposed $9.3 million ($2011-12) of self insurance for the next regulatory control period. The proposed self insurance relates predominantly to below-deductible losses on assets such as towers and lines, sub-station property and vehicles. The AER considers that it is efficient for these types of costs to be recovered through self insurance. Powerlink's forecast is based on a report from a consulting actuary (Finity), which outlined the data and calculations underlying Powerlink's proposed self insurance estimates and allowances.

The AER accepts the broad approach used by Finity to estimate the proposed self insurance, based on the 'probability times and size of loss' approach. However, the AER considers some adjustments to Finity's calculations are necessary for the proposed self insurance to reasonably reflect the opex criteria.[496] The AER has made the following adjustments:

- 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
- the number of years CPI consumer price index (CPI) escalation applied to past losses on certain property has been corrected.

The AER's broad reasoning is set out below.

Powerlink stated that it no longer has any significant uninsured risks, as its commercial insurance now covers towers and lines which had previously not been covered.[497] The three classes of loss estimated are considered below.

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494 Powerlink, *Regulatory proposal*, 31 May 2011, p. 93.
495 AER, *Draft decision, ElectraNet transmission determination 2008-09 to 2012-13*, November 2007, p. 168–169.
496 NER, clause 6A.6.6 (c).
497 Finity Consulting Pty Limited, *Powerlink Queensland: Actuarial Estimate of Retained Losses*, March 2011, p. 7.

Towers and lines

This category of losses arises primarily due to thunderstorms and cyclones. Finity estimated an expected annual loss based on an average incidence of 0.25 events per year and an average loss of $1.6 million ($2010).[498] Finity's data showed two loss events in the decade to 2009-10, and 2.7 per decade over the 30 year period from 1980 to 2009.

The AER accepts Finity's estimate of the frequency of events. However, it considers that in escalating past losses for growth in asset values; the below–deductible losses should have an upper limit equivalent to the fixed deductible amount. After adjusting the escalation for this adjustment, the AER has recalculated the average annual loss to an amount approximately 11 per cent below Finity's estimate.

Property

This category of losses includes sub–stations and transformers. Finity estimated the average annual loss on the basis of records from the 10 years to 2009-10, which included 10 property loss events. It estimated the average event frequency to be 0.06 per cent per million dollars of sub-station assets and the average loss per event to be $0.442 million.[499] Finity then applied the average frequency from that period to expected asset values over the regulatory period, inflated by the expected rate of growth in nominal asset values. It estimated the average event frequency to be 0.06 per cent per million dollars of sub-station assets and the average loss per event to be $0.442 million.[500]

However, the AER considers that this Finity's approach tends to overestimate likely losses by basing the frequency on the nominal value of assets rather than their real value. The probability of an weather event affecting the network is more likely to be related to the physical size of the network rather than its monetary value. Cost inflation will affect the monetary loss per event, rather than the frequency, but each loss is limited by the fixed deductible amount. Therefore, the AER has recalculated the event frequency per million dollars of assets using real values as a proxy for physical size. The AER's approach reduces the event frequency to 0.044 per cent per million dollars ($2011-12) per year. The average loss on property calculated by the AER is approximately 30 per cent below Finity's estimate.

'Other'

This category of losses comprises property theft and damage and motor vehicle losses. Finity estimated the average annual loss to be $0.3 million.[501] Finity based its estimate of the average annual loss on recent years experience, inflated by CPI to 2012-13 values.[502] The AER accepts this method but considers the inflation adjustment was incorrectly applied from December 2007 rather than from the years the losses were incurred. The AER recalculated the average loss to be 5 per cent lower than Finity's estimate.

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498 Finity Consulting Pty Limited, *Powerlink Queensland: Actuarial Estimate of Retained Losses*, p. 10–11.

499 Finity Consulting Pty Limited, *Powerlink Queensland: Actuarial Estimate of Retained Losses*, p. 12.

500 Finity Consulting Pty Limited, *Powerlink Queensland: Actuarial Estimate of Retained Losses*, p. 12.

501 Finity Consulting Pty Limited, *Powerlink Queensland: Actuarial Estimate of Retained Losses*, p. 13.

502 Powerlink, *response to AER information request AER/033 of 6 September*, question 2. The specific losses and years are confidential.

Insurance cost past through events

Powerlink proposed a combination of insurance policies, self-insurance and pass through arrangements to manage the risks associated with loss events. In relation to cost pass through, Powerlink considered that it remains exposed to the potential cost impact of unforeseen, low probability, high cost events in the following areas:

- above insurance cap losses
- uninsured events
- insurance company failure
- aggregation of deductibles.

Powerlink's proposed insurance premiums and self-insurance allowances do not include any provision for these risks.

To address its exposure to these risks, Powerlink proposed to treat the combined costs associated with the occurrence of these events by means of a cost pass through arrangement, whereby only total exposures exceeding one per cent of maximum allowed revenue (MAR) can be sought.[503]

In addition, Powerlink's revenue proposal also flagged:

- Grid Australia's intention to lodge a Rule change proposal to address these matters
- Powerlink's willingness to engage with the AER and/or AEMC to reach a resolution that accommodates its requirements in the context of the Grid Australia Rule change proposal process (e.g. via transitional provisions applicable to the next regulatory control period) and
- That if the Grid Australia Rule change process was not concluded before the AER's final decision:
  - an appropriate allowance should be provided as an insurance item in Powerlink's opex as part of the AER's revenue cap decision. Powerlink noted it could provide additional information to the AER, if necessary.

Grid Australia lodged its proposed Rule change—Cost Pass through arrangements with the AEMC on 14 October 2011. Powerlink identified the potential to include associated transitional provisions applicable to its next regulatory control period to address the above issues. At the time of writing, the AEMC has yet to commence formal consultation on Grid Australia's Rule change proposal and it is likely that the AEMC's Final rule determination on Grid Australia's proposal may not be published until after release of the AER's Final decision on Powerlink's revenue cap in April 2012.

Powerlink put forward three possible options to address its risk exposure:

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503 Powerlink. *006—Insurance Pass Through Options*, 11 November 2011.

- additional opex allowance for 2012-13 to cover exposures relevant to the period from 1 July 2012 to the commencement of the AEMC's Final Rule
- via AEMC Final Rule on Grid Australia's Rule change proposal
- via an additional opex allowance for the next regulatory control period.

The AER considers that there is reasonable uncertainty in the timing and the outcome of Grid Australia's Rule change proposal that is currently before AEMC. The AEMC's Rule change is an external process to the AER's transmission determination and the AER makes its assessment of Powerlink's revenue proposal against the applicable (current) version of the NER. Therefore, if Powerlink were to submit an application for cost pass through, the AER would assess it in the context of the NER cost pass through criteria applicable at the time.

Under the NER propose-respond framework, the AER's decision on Powerlink's revenue cap for the next regulatory control period requires it to assess whether a proposed opex allowance meets the opex criteria and objectives. Powerlink did not propose opex for these risk exposures.

Network support costs

Network support refers to costs for non-network solutions used by a TNSP as an efficient alternative to network augmentation. Network support involves sourcing local generation in order to address network limitations. In certain circumstances, a TNSP may find it more cost effective to use generators to maintain system reliability, rather than undertake network augmentation (such as building additional transmission lines).

The AER is not satisfied the proposed network support of $8.3 million ($2011-12) reasonably reflect the opex criteria.[504] Powerlink's proposed network support, together with the AER's draft decision, is set out in table 4.12.

Table 4.12 AER draft decision on Powerlink's network support ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink's proposal	1.2	0.8	1.2	2.9	2.2	8.3
AER's draft decision	–	–	–	–	–	–

Source: Powerlink, *Regulatory proposal*, 31 May 2011, p. 97;.AER's analysis.

Powerlink did not provide sufficient evidence for the AER to be satisfied that its proposed network support complies with the NER requirements.[505] In particular:

- Powerlink did not carry out a regulatory investment test for transmission (RIT–T) in regard to the underlying capex projects that create the need for the proposed network support
- Powerlink has not entered into any contractual agreements for the provision of network support services in the next regulatory control period.

504 NER, clause 6A.6.6(c)..

505 NER, clause 6A.6.6 (c)(1)-(3)

The AER recognises the importance of network support as a potentially efficient means to defer or avoid network augmentation. These outcomes are beneficial to customers and consistent with the National Electricity Objectives (NEO). Network support costs incurred within a regulatory control period can be passed through to consumers. If Powerlink enters into contractual agreements with network support providers after commencement of the next regulatory control period, it can submit to the AER a network support pass through application under clause 6A.7.2 of the NER.[506]

Network support is classified as a component of opex (non-controllable opex). Powerlink's proposed total forecast opex for the next regulatory control period includes a network support component of 0.8 per cent ($8.3 million ($2011-12)).

The AER is required to approve the proposed forecast of required opex of a TNSP if it is satisfied that the total forecast opex for the regulatory control period reasonably reflects the opex criteria set out in clause 6A.6.6(c) of the NER. This attachment sets out the AER's decision on Powerlink's proposed network support.

Powerlink proposed $8.3 million ($2011-12) of network support for the next regulatory control period to address transmission limitations in North Queensland.[507] This amount represents 0.8 per cent of total proposed opex for the next regulatory control period. The proposed network support compares with $61.0 million ($2011-12) estimated to be incurred in the current regulatory control period–a decrease of 86.4 per cent.[508]

The proposed network support relates to five network augmentation projects. Two of these projects are committed in the current regulatory control period with a combined contribution of $76.6 million ($2011-12) to the proposed forecast capex.[509] The other three projects are currently uncommitted. Powerlink stated that the augmentation timing of these projects is reliant on network support to avoid AEMO directions.[510]

Powerlink used its network support forecast methodology to estimate network support requirements for the next regulatory control period. Powerlink stated this methodology was developed for assessing solutions to address transmission limitations under the RIT–T.[511]

Powerlink has not entered into any contractual agreements for the provision of network support in the next regulatory control period.[512]

The proposed network support is a component of total opex proposed by Powerlink so the AER must be satisfied that it reasonably reflects the opex criteria. The AER must be satisfied

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506 The AER recently published a procedural guideline to assist TNSPs in applying for network support pass through: AER, *Procedural guideline for preparing a transmission network support pass through application*, June 2011. http://www.aer.gov.au/content/index.phtml/itemId/742680

507 Powerlink, *Regulatory proposal*, 31 May 2011, p. 97.

508 Powerlink, *Regulatory proposal*, 31 May 2011, p. 37. The AER converted nominal amounts into ($2011-12) using CPI adjustments.

509 Powerlink, *Regulatory proposal*, Appendix M—Powerlink forecast network capital projects, May 2011, pp. 20, 28.

510 Powerlink, *Regulatory proposal*—2010 Grid Plan Volume 2 Section 3, May 2010, p. 50 (Planning Report NN_NQ_MG03). Powerlink provided this document to the AER on a confidential basis.

511 Powerlink, *Network support forecast methodology*, May 2010. Powerlink provided this document to The AER on a confidential basis.

512 Powerlink, *Response to information request of 15 June 2011*, 17 June 2011.

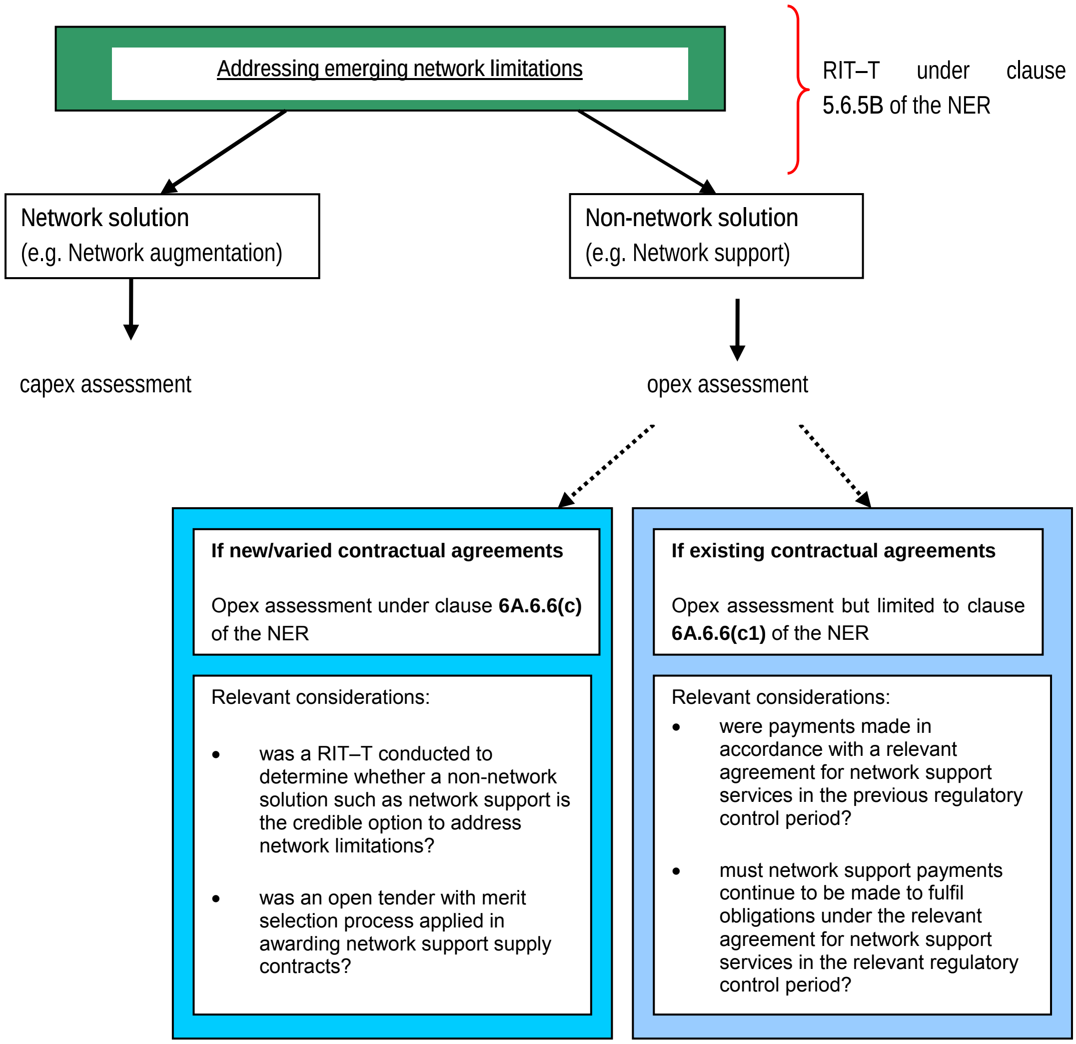
that the proposed network support complies with the NER requirements. The AER's assessment approach is summarised in figure 4.14.

The AER's assessment of the proposed network support will depend on whether the network support relates to:

- existing contractual agreements with network support providers under which payments will continue into the next regulatory control period–these agreements will generally have previously been assessed by the AER (unless they were initiated during the current regulatory control period)
- new contractual agreements with network support providers–agreements that will take effect within the next regulatory control period.

Powerlink has not entered into any supply agreements for the provision of network support services in the next regulatory control period. Therefore, the AER applied the assessment approach relevant for 'new/varied contractual agreements'. The assessment approach for 'new/varied contractual agreements' involves identifying whether the proposed network support reasonably reflects the opex criteria under clause 6A.6.6(c) of the NER.

Figure 4.14 The AER's assessment framework for Powerlink's proposed network support expenditure



Source: AER analysis

In the case of network support, the AER considers the proposed expenditure can be assessed against the opex criteria by addressing the following questions:

- did the TSNP apply a regulatory investment test for transmission (RIT–T) to evaluate options that address the relevant network limitations?
- did the TNSP implement an open tender and merit selection process for awarding the network supply contracts?

Network support agreements based on implementation of a RIT–T, and an open tender and merit selection process are likely to lead to efficient outcomes. In particular, network support costs resulting from these processes are likely to reflect the efficient costs that a prudent TNSP would incur in addressing its network limitations.

A RIT–T identifies, evaluates and compares network and non-network options to address network limitations. The purpose of the RIT–T is to identify the credible option that maximises the present value of net economic benefit to all market participants.[513] Where a TSNP has applied a RIT-T, this process will identify whether network support is the most preferred option to address network constraints. In turn, the outcomes of the RIT-T process can be used to determine whether the proposed network support reasonably reflects a realistic expectation of the demand forecast and the efficient cost inputs required to achieve the opex objectives.

Where network support is considered the credible option, the AER will need to assess whether the relevant network supply agreement reflects the efficient and prudent costs of addressing the identified network constraints. The procurement of network support services through an open tender and merit-based selection process should result in expenditure that satisfies opex criteria. Specifically, this process should lead to selection of a network support services provider which best satisfies the needs of the TSNP at the lowest available cost.

The AER assessed Powerlink's proposed network support against the framework outlined above. In deciding whether the proposed network support expenditure reasonably reflects the opex criteria, the AER had regard to:

- information contained in or accompanying Powerlink's regulatory proposal[514]
- Powerlink's response to the AER's information requests
- submissions received from stakeholders.[515]

Powerlink's proposed network support represents a significant decrease relative to that of the current regulatory control period. However, the AER is not satisfied the proposed network support reasonably reflect the opex criteria. Powerlink has no contracts in place for the next regulatory control period. Also, it has not completed the necessary processes in respect of some network limitations that might be addressed through network support. If network support

513 NER, clause 5.6.5B(b).

514 NER, clause 6A.6.6(e)(1).

515 NER, clause 6A.6.6(e)(2).

does arise during the next regulatory control period, it may qualify to be passed through under clause 6A.7.2 of the NER. The reasons for the AER's determination are further discussed below.

Powerlink used a forecasting model to determine the proposed support amount of $8.3 million ($2011-12). However, Powerlink did not carry out a RIT–T to determine whether network support is a credible option to address future network limitations in North Queensland.[516] Therefore, the AER has 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 required to achieve the opex objectives.

Three submissions received by the AER raised concerns that Powerlink has not sufficiently considered non-network solutions to address transmission network limitations.[517] A submission by an Energy Consumers Group operating in Queensland (the GROUP) stated the need for allowing pass through costs is not necessary if network support costs are an estimate of future costs.[518]

Powerlink's proposed network support relates to proposed network supply agreements for the next regulatory control period. Powerlink forecast the network support demand for the next regulatory period based on the assumption that it will be able to enter into contractual agreements with providers of network support service At this time, Powerlink has not conducted any process for awarding network supply agreements for the next regulatory control period.[519] Therefore, Powerlink has not been able to specify which network agreements the proposed allowance is intended to cover.

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. [520] Given this lack of information, the AER can not be satisfied that the proposed network support allowance reasonably reflects the efficient and prudent costs.

For the above reasons, the AER does not accept Powerlink's proposed network support, and substitutes a figure of $0.

The AER recognises the importance of network support, as it can defer or in some cases, avoid future network augmentation. Customers benefit from this deferred capital expenditure. The AER notes costs related to network support can be passed through to consumers. The NER make provision for an annual costs pass through mechanism under clause 6A.7.2. If Powerlink enters into contractual agreements with network support providers after

516 Powerlink, *Response to information request AER/016 of 5 August 2011*, 10 August 2011, p. 1.

517 These three include a submission by An Energy Consumer Group operating in Queensland (The GROUP), Wesfarmers, and Total Environmental Centre (TEC). These submissions can be accessed from: http://www.aer.gov.au/content/index.phtml/itemId/747312

518 The Group, *AER 2011 review of Queensland electricity transmission*, August 2011, p. 37. The Group is an energy consumers group operating in Queensland.

519 Powerlink, *Response to information request AER/016 request 5 August 2011*, 10 August 2011.

520 Powerlink, *Response to information request AER/016 request 5 August 2011*, 10 August 2011.

commencement of the next regulatory control period, it can submit a network support pass through application under clause 6A.7.2 of the NER.[521]

Debt raising costs

Debt raising costs are costs which are incurred each time debt is raised or refinanced. These costs may include underwriting fees, legal fees, company credit rating fees and other transaction costs. Debt raising costs are a legitimate expense for a benchmark efficient operator and an allowance should be provided to recover these costs.

The AER has decided not to accept Powerlink's proposed allowance for debt raising costs. The AER considers that Powerlink's proposed allowance does not reflect the efficient debt raising costs that a prudent operator in Powerlink's position would incur to achieve the opex objectives.

Specifically, the AER considers that the inclusion of establishment fees for a company credit rating is not appropriate, and the conversion of annual credit rating fees and annual registry fees is incorrect.

Powerlink's proposed debt raising costs of $20.3 million ($2011-12) over the next regulatory control period.[522] Powerlink determined the benchmark debt raising cost based on a unit rate of 9.1 basis points per annum (bppa), assuming 16 standard sized ($250 million) bond issues would be required to fund a total debt amount of $4 billion.[523]

Powerlink engaged PricewaterhouseCoopers (PwC) to provide advice for estimating the allowance for debt raising costs.[524]

The revenue and pricing principles under the NEL that each operator should be provided with a reasonable opportunity to recover at least the efficient costs incurred in providing direct control network services and complying with a regulatory obligation or requirement or making a regulatory payment.[525] Also relevant is the potential for under or over investment.[526] The opex criteria in clause 6A.6.6(c) of the NER require that the total of the forecast opex reasonably reflects the efficient costs of achieving the opex objectives and the costs that a prudent operator would in the circumstances of Powerlink require to achieve the opex objectives.[527] Further, the forecast opex is assessed with regard to, among other things, the benchmark opex that would be incurred by an efficient operator over the regulatory control period.[528]

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521 The AER recently publish a procedural guideline to assist TNSPs in the network support pass through application process—see AER, *Final Procedural guideline for preparing a transmission network support pass through application*, June 2011.

522 Powerlink, *Regulatory proposal* , 31 May 2011, p. 98.

523 Powerlink, *Regulatory proposal* , 31 May 2011, p. 98.

524 PricewaterhouseCoopers*, Powerlink Queensland 2013–2017 Revenue proposal: Appendix K—Debt and equity raising costs*, April 2011.

525 For electricity, this means efficient costs associated with direct control network services and regulatory obligations; see NEL, section 7A.

526 NEL, s.7A(6).

527 NER, clauses 6A.6.6(c)(1) and 6A.6.6(c)(2).

528 NER, clause 6A.6.6(e)(4).

The AER is required to assess Powerlink's proposal for debt raising costs with regard to the relevant criteria and objectives under the NER. In assessing a TNSP's proposal for debt raising costs the AER has relied on an approach based on the 2004 Allen Consulting Group (ACG) report commissioned by the ACCC.[529]

The ACG method involves two key steps. First, it identifies the types of transaction costs that an efficient and prudent operator would incur in raising debt. Second, it quantifies the level of these costs, taking into account the specific circumstances of the operator, with reference to competitive market rates for the relevant services.[530] The AER considers this method would appropriately estimate the prudent and efficient debt raising costs likely to be incurred by a benchmark efficient operator. This should, in turn, provide a forecast for debt raising costs consistent with the opex criteria under clause 6A.6.6 of the NER and the revenue and pricing principles under the NEL.

The ACG method involves calculating the benchmark bond size, and the number of bond issues required to rollover the benchmark debt share (60 per cent) of the RAB.[531] The allowance for debt raising costs is based on the direct costs of raising debt, such as underwriting fees, legal fees and credit rating fees. The AER's standard approach is to amortise the upfront costs that are incurred using the relevant nominal vanilla WACC over a ten year amortisation period. This is then expressed in bppa as an input into the post-tax revenue model (PTRM).

The AER has refined this approach by updating the individual costs over time and using a five year window of up to date bond data to reflect current market conditions. The AER most recently updated the individual costs in the 2009 South Australia and Queensland electricity distribution determinations.[532] For this draft decision the AER made further updates to certain inputs to reflect current costs.

The AER has applied the updated cost components to the ACG debt raising method to estimate the indicative costs and total allowance for Powerlink shown in table 4.13. As this draft decision is based on indicative rates, the AER will update this analysis for the final decision based on the debt component of the RAB and WACC determined at that time.

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529 ACG, *Debt and equity raising transaction costs—Final Report*, December 2004. The AER has applied this approach to assess debt raising costs in all its determinations.

530 ACG, *Debt and equity raising transaction costs—Final Report*, December 2004, p. 51–53.

531 ACG, *Debt and equity raising transaction costs—Final Report*, December 2004, p. xix.

532 AER, *Draft decision—Appendices South Australia draft distribution determination 2010-11 to 2014-15*, November 2009, p. 527; and AER, *Draft decision—Appendices Queensland draft distribution determination 2010-11 to 2014-15*, November 2009, p. 733.

Table 4.13 AER's draft decision on debt raising costs for Powerlink based on a nominal WACC of 8.31 per cent

Fee	Explanation	1 issue	4 issues	16 issues
Amount raised ($million, 2012)	Multiples of median MTN ($250m)	250	1000	4000
Gross underwriting fee	Median gross underwriting spread, upfront per issue, amortised	6.80	6.80	6.80
Legal and road show	$195, 000 upfront per issue, amortised	1.18	1.18	1.18
Company credit rating	$55, 000 per annum	2.20	0.55	0.14
Issue credit rating	4.5 basis points upfront per issue, amortised	0.68	0.68	0.68
Registry fees (initial)	$4000 upfront per issue, amortised	0.02	0.02	0.02
Registry fees (annual) (previously labelled Paying Fee)	$9000 per issue per annum	0.36	0.36	0.36
Total	**Basis points per annum**	**11.2**	**9.6**	**9.2**

Source: AER analysis.

The AER considers the benchmark debt raising unit rate of 9.2 bppa reflects the efficient and prudent costs under current market conditions. This unit rate has been applied for estimating Powerlink's allowance for debt raising costs.

This benchmark unit cost multiplied by the debt component of Powerlink's RAB results in a total allowance of $18.9 million ($2011-12) for debt raising costs for the next regulatory control period.

Powerlink relied on a report from its consultant PwC to estimate the allowance for debt raising costs. PwC's method is largely consistent with the AER's preferred method; however PwC proposed some additional debt raising cost items and different input costs for some existing cost categories. These issues are discussed below.

Gross underwriting fees

Based on the PwC report, Powerlink proposed 'arrangement/placement fees' of 7.2 bppa.

The AER accepts Powerlink's proposal for fees associated with underwriting and placing the debt issue.

PwC used the terminology 'arrangement/placement fees' to describe fees that the AER has previously termed as 'gross underwriting fees'.[533]

Gross underwriting fees have been applied by the AER in accordance with the cost categories set out in the 2004 ACG report. Originally these fees were not amortised but rather divided across the tenor of the bond. The method was updated by the AER in its 2009 South Australian electricity distribution determination to account for the amortisation of these upfront costs.[534] The PwC report calculates these fees in accordance with the revised AER method. The AER accepts the Powerlink proposal for these fees, subject to an update of the discount rate used to amortise the upfront costs.[535]

The AER considers that the terminology 'gross underwriting fees' is appropriate and notes that this is the term used by Bloomberg and in the 2004 ACG report to refer to fees associated with the placement of debt securities.[536] The terminology used by the AER reflects the explicit acknowledgement in the ACG report that these fees include some compensation for underwriting risk—that is, if the issue were not sold the underwriter would take it up and guarantee proceeds to the issuer.[537] Given that PwC has referred to the same data source and figures incorporating this component of underwriting risk, the AER does not consider that a change in terminology is necessary.[538]

Legal and road show fees

PwC proposed legal and road show costs of consisting of:

- issuer's legal counsel fees—$100 000 to $150 000 upfront per issue
- agent's/dealer's counsel fees—$20 000 to $30 000 upfront per issue
- agent's out of pocket expenses—$10 000 to $15 000 upfront per issue.

The AER has accepted the upper range proposed by PwC for each of these costs. Accordingly, the AER accepts the total legal and road show cost of $195 000 per issue.

Legal and road show fees have been applied by the AER in accordance with cost categories set out in the 2004 ACG report. These fees were updated by the AER in its 2009 South Australian electricity distribution determination.[539] The AER accepts that these costs are likely to have changed since 2009. PwC has provided an updated estimate of legal and road show fees based on recent interviews and communication with industry participants, legal firms and

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533 PwC, *Regulatory proposal*: Appendix K–Debt and equity raising costs, April 2011, p. 10–11.

534 AER, *Draft decision—Appendices, South Australia draft distribution determination 2010-11 to 2014-15*, November 2009, pp. 527–530.

535 Specifically, the final bppa (7.2 bppa) proposed by PwC report uses an indicative discount rate of 10 per cent and so differs slightly from that presented in this decision (which amortises using the WACC of 8.31 per cent).

536 ACG, *Debt and equity raising transaction costs—Final Report*, December 2004, p. 53.

537 ACG, *Debt and equity raising transaction costs—Final Report*, December 2004, p. 38.

538 See also AER, *Final decision—appendices, Victorian electricity distribution networks service providers, Distribution determination 2011–2015*, October 2010, Appendix N, pp. 487–498.

539 AER, *Draft decision—Appendices, South Australia draft distribution determination 2010-11 to 2014-15*, November 2009.

investment banks.[540] Based on this information, the AER is satisfied that the updated costs proposed by PwC are likely to reflect the efficient costs for these services at this time.

Credit rating agency costs

As part of the credit rating agency costs, PwC included:

- a credit rating establishment fee—$70 000 for the initial company credit rating
- an annual surveillance fee—$55 000 per annum for the company
- a bond program fee—$50 000 upfront per issue
- a bond issue fee (rebateable against the bond program fee)—4.5 basis points upfront per issue.

The AER rejects Powerlink's proposed initial credit rating fee.

The AER accepts Powerlink's proposal for an annual credit rating fee, but rejects Powerlink's method for converting this annual fee into a bppa unit rate.

The AER accepts Powerlink's proposal for an upfront bond issue fee, noting that this subsumes any requirement for a separate bond program fee.

The AER considers that the benchmark efficient operator for the purposes of estimating debt raising costs is an ongoing debt issuer. Therefore, a fee for establishing an initial company credit rating does not reflect the benchmark efficient costs that a prudent operator would incur. The AER considers that its approach is consistent with the opex criteria as otherwise the TSNP would be compensated for establishment costs it does not incur each time the AER makes its decision.

The AER accepts Powerlink's proposal for an annual credit rating fee for company surveillance ($55 000 per annum) and an upfront bond issue fee (4.5 basis points per bond issue).[541] Both cost categories were included in the AER's previous decisions, based on ACG's 2004 report. The AER last updated the values in 2009 in the South Australian distribution determination (to $50 000 per annum and 4.0 basis points, respectively).[542] The AER considers that these costs are likely to have changed since 2009. The AER accepts that Powerlink's proposed costs are based on current market rates and are likely to reflect the current efficient costs for these services.

However, the conversion of the $55 000 annual credit rating fee to a unit rate in bppa is slightly contentious. The PwC report stated that the AER's approach—based on the 2004 ACG report—miscalculated the annual company credit rating fee when converting to basis points per annum.[543] PwC considers that for one bond issue ($250 million) and an annual

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[540] Powerlink provided this list to the AER.

[541] PwC has estimated this value based on communications with a credit rating agency, see PwC, *Regulatory proposal: Appendix K—Debt and equity raising costs*, April 2011, p. 18.

[542] AER, *Draft decision—Appendices, South Australia draft distribution determination 2010-11 to 2014-15*, November 2009.

[543] PwC, *Regulatory proposal*: Appendix K–Debt and equity raising costs, April 2011, p. 12.

credit rating fee of $55 000 the correct figure is 0.22 bppa.[544] The AER considers that PwC (rather than the ACG report or the AER) appears have made an error, in that it spreads one year of the annual credit rating fee across ten years of debt. In the example given, the PwC calculation results in an annual allowance of $5500, which adds up to $55 000 across the ten year life of the debt.[545] However, across the ten year life of the debt the annual fee will be paid ten times, so the correct allowance needs to sum to $550 000 across this time. The AER bppa conversion correctly achieves this outcome.

PwC has also included a bond program fee of $50 000. However, this was excluded from the calculation of the debt raising costs unit rate found in table 4.3 in PwC's report.[546] This omission is because the upfront bond issue fee proposed by PwC is rebateable against the bond program fee. Given the benchmark bond issue size ($250 million), the upfront bond issue fee is always greater than the $50 000 bond program fee,[547] Hence, there is no need to separately adjust for the bond program fee when calculating the benchmark unit rate.

Registry costs

Registry costs are costs charged by bond registry organisations for registering investors in a bond. PwC proposed registry costs consisting of:[548]

- initial set up costs for establishing registry service for a bond—$4000 upfront per issue
- annual fee for registry service—$9000 per issue per annum.

The AER accepts Powerlink's proposal for including an initial set up cost of $4000 for establishing a registry service for each bond issue.

The AER accepts PwC's proposed annual fee of $9000 per bond issue per annum for registry costs.

The AER considers that the benchmark efficient operator for the purposes of estimating debt raising costs will incur costs for establishing and maintaining registry services for each bond issue. Hence, the operator should be provided a benchmark allowance to recover this cost.

Based on the findings in the 2004 ACG report, the AER initially applied registry costs of $3000 per bond issue per annum (labelled as 'registry fee') and $4 per $1 million in bond value per annum (labelled as 'paying fee', though the ACG report makes clear that this is a subcategory of the overall registry costs). These input costs were updated by the AER in 2009 for the South Australian electricity distribution determination.[549] The 'registry fee' was increased to $3500 by factoring in CPI, but a similar inflation adjustment to the paying fee was below the materiality threshold.

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544 PwC, *Regulatory proposal: Appendix K—Debt and equity raising costs*, April 2011, p. 19.

545 Since 1 basis point is 0.0001, the calculation is 0.000 022 x 250 000 000 = 5500.

546 PwC, *Regulatory proposal: Appendix K—Debt and equity raising costs*, April 2011, p. 19.

547 For a single $250 million bond issue, the 4.5 basis point bond issue fee will equate to $112 500.

548 PwC has estimated this value based on communications with a credit rating agency, see PwC, *Regulatory proposal: Appendix K—Debt and equity raising costs*, April 2011, p. 18.

549 AER, *Draft decision—Appendices, South Australia draft distribution determination 2010-11 to 2014-15*, November 2009, p. 527.

PwC proposed to alter the structure of registry fees to include a bond setup fee of $4000 upfront per bond issue, together with a continued service fee of $9000 per bond per annum. The AER considers that these costs are likely to have changed since 2009, and that this may include a change to the payment structure for these fees. Given that the cost proposed by PwC is based on current market rates for this service, the AER considers that it is likely to reflect the efficient cost for this service at this time.[550]

Other issues

The Energy Consumers Group operating in Queensland provided a submission on debt raising costs. The submission noted that Powerlink is provided with all its debt needs directly from the Queensland Treasury Corporation (QTC), therefore its actual debt raising costs are below Powerlink's proposed costs. [551]

However, given that the AER's approach is to estimate the prudent and efficient debt raising costs that would be incurred by a benchmark efficient operator over the regulatory control period, referring to actual debt raising costs is irrelevant in this context.

In forecasting opex, the AER's approach provides a forecast for the benchmark debt raising costs consistent with the opex criteria under clause 6A.6.6 of the NER and the revenue and pricing principles under the NEL.

4.5 Revisions

Revision 4.1: The AER adopts Powerlink's actual 2010-11 as the base reference year for controllable opex.

Revision 4.2: The AER has removed the movement in provisions from Powerlink's actual opex.

Revision 4.3: The AER applied a base year approach to Powerlink's routine maintenance expenditure.

Revision 4.4: The AER has excluded operational refurbishment from its base year approach and considered this as a step change.

Revision 4.5: The AER is not satisfied that Powerlink's proposed step change for land tax is consistent with a total forecast opex that reasonably reflects the opex criteria.

Revision 4.6: The AER is not satisfied that Powerlink's proposed step change for new office accommodation is consistent with a total forecast opex that reasonably reflects the opex criteria.

550 PwC obtained information on the current costs for this service from interviewing a bank analysing alternative registry services for bonds in the Australian market, See PwC, Powerlink *Regulatory proposal: Appendix K—Debt and equity raising costs*, April 2011, p. 18.

551 The Group, *AER 2011 review of Queensland electricity transmission*, August 2011, p. 37.

Revision 4.7: The AER is not satisfied that Powerlink's proposed step change for climate change investigation is consistent with a total forecast opex that reasonably reflects the opex criteria.

Revision 4.8: The AER is not satisfied that Powerlink's proposed step change for additional building maintenance is consistent with a total forecast opex that reasonably reflects the opex criteria.

Revision 4.9: The AER is not satisfied that Powerlink's proposed step change for South West Queensland expansion is consistent with a total forecast opex that reasonably reflects the opex criteria.

Revision 4.10: The AER does not accept the proposed self insurance allowance of \$9.3 million (\$2011-12) for the next regulatory control period as proposed by Powerlink. The AER substitutes an amount of \$7.3 million (\$2011-12).

5 Cost of capital

As part of making a determination on the annual building block revenue requirement for a TNSP, the AER is required to make a decision on the return on capital building block.[552] When the rate of return (or cost of capital) is applied to the value of the regulatory asset base (RAB) it results in the return on capital building block. This attachment sets out the AER's determination of the cost of capital to apply over the next regulatory control period. Under the NER the rate of return to be applied by the AER is based on the nominal vanilla weighted average cost of capital (WACC) formulation.[553] The NER requires the AER to apply the CAPM[554] to calculate the return on equity for TNSPs.[555]

5.1 Draft decision

The AER has not accepted Powerlink's proposed WACC of 10.30 per cent. The AER considers the proposed WACC does not reflect the return required by investors in a commercial enterprise with a similar nature and degree of non-diversifiable risk as that faced by Powerlink.[556]

For this draft decision, the AER has determined an indicative WACC of 8.31 per cent for Powerlink as set out in table 5.1. This WACC reflects market based parameters—nominal risk free rate and debt risk premium (DRP)—estimated over an indicative averaging period and will be updated for the final decision.

In establishing the WACC, the AER has accepted Powerlink's proposed averaging period to calculate the nominal risk free rate. The AER also accepts Powerlink's proposal to adopt the values for the equity beta, market risk premium (MRP) and gearing. However, the AER has not accepted Powerlink's proposed value for the DRP. The AER considers its method to calculate the DRP, based on the average of observed bond yields, appropriately incorporates relevant information from the market. This will contribute to a forward looking rate of return that is commensurate with the prevailing conditions in the market for funds and the risk involved in providing prescribed services. The AER accepts Powerlink's proposal to adopt the value of the assumed utilisation of imputation credits (gamma), which affects the corporate income tax building block allowance.

In addition to bottom-up analysis on the parameter inputs, the AER has also assessed the overall rate of return against market data to ensure that the WACC is appropriate.[557]

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552 NER, clause 6A.5.4(a)(2).

553 NER, clause 6A.6.2(b).

554 The CAPM is a well known and widely used model. It specifies a relationship between the expected return of a risky (in terms of uncertainty over future outcomes) asset and the level of systematic (non-diversifiable) risk.

555 NER, clause 6A.6.2(b).

556 NER, clause 6A.6.2(b).

557 NER, clause 6A.6.2(b).

Table 5.1 AER draft decision on WACC parameters

Parameter	AER draft decision
Nominal risk free rate (per cent)	4.32
Equity beta	0.80
Market risk premium (per cent)	6.50
Gearing level (debt/debt plus equity) (per cent)	60
Debt risk premium (per cent)	3.19
Assumed utilisation of imputation credits (gamma)[a]	0.65
Inflation forecast (per cent)	2.62
Cost of equity (per cent)	9.52
Cost of debt (per cent)	7.51
Nominal vanilla WACC (per cent)	8.31

(a) The gamma parameter affects the corporate income tax allowance, which is discussed in attachment 8.

5.2 Powerlink's proposal

Powerlink proposed a nominal vanilla WACC of 10.30 per cent.[558] Table 5.2 sets out Powerlink's proposed WACC parameters.

Powerlink proposed to apply the three WACC parameters with values set out in the AER's 2009 review of WACC parameters (WACC review)—equity beta, MRP and gearing level—to calculate the WACC.[559] Powerlink also proposed to apply the value of gamma specified in the WACC review as part of estimating its tax allowance.[560]

Powerlink nominated an averaging period to be used by the AER to estimate the nominal risk free rate. The risk free rate in Powerlink's revenue proposal is therefore based on an indicative averaging period. The risk free rate is to be updated based on the agreed averaging period in the future. Powerlink's proposed DRP has been estimated using the average of two Bloomberg extrapolated fair value curves (FVCs)—Bloomberg BBB rated 7 year FVC extrapolated to a term to maturity of 10 years, and Bloomberg BBB rated 5 year FVC extrapolated to a term to maturity of 10 years.

Powerlink proposed an inflation forecast that it stated is consistent with the AER's approach to estimate the expected inflation rate.

558 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 51.

559 Powerlink also proposed to use the credit rating of BBB+ as specified in the WACC review for the purposes of estimating the DRP.

560 Gamma affects the corporate income tax allowance, which is discussed in attachment 8.

Table 5.2 Powerlink proposed WACC parameters

Parameter	Powerlink proposal
Nominal risk free rate (per cent)	5.62
Equity beta	0.80
Market risk premium (per cent)	6.50
Gearing level (debt/debt plus equity) (per cent)	60
Debt risk premium (per cent)	4.34
Assumed utilisation of imputation credits (gamma)[a]	0.65
Inflation forecast (per cent)	2.50
Cost of equity (per cent)	9.96
Cost of debt (per cent)	10.82
Nominal vanilla WACC (per cent)	10.30

(a) The gamma parameter affects the corporate income tax allowance, which is discussed in attachment 8.
Source: Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 51.

5.3 Assessment approach

In May 2009, the AER completed its review of the WACC parameters (WACC review) as required under the NER.[561] The WACC parameter values, methods and credit rating level determined by the AER in the WACC review are outlined in table 5.3.

Table 5.3 AER parameters in the WACC review

Parameter	Value, method or credit rating level
Nominal risk free rate	Annualised yield on 10 year CGS based on agreed averaging period as close as practically possible to the commencement of regulatory control period
Equity beta	0.80
Market risk premium (per cent)	6.50
Gearing level (debt/debt plus equity) (per cent)	60.00
Debt risk premium credit rating level	BBB+
Assumed utilisation of imputation credits (gamma)[a]	0.65

(a) The gamma parameter affects the tax allowance and is discussed further in attachment 8.
Source: AER, *Statement of the revised WACC parameters (transmission)*, May 2009, p. 6.

561 NER, clause 6A.6.2(f)–(g).

The AER's transmission determination for Powerlink must use the values, methods and credit rating level determined in the WACC review because Powerlink's revenue proposal was submitted after the completion of that review.[562]

To determine the WACC, the values for two parameters (the nominal risk free rate and DRP) from recent daily market data must be estimated. The nominal risk free rate is estimated based on an averaging period as close as practically possible to the commencement of the regulatory control period, using Commonwealth government securities (CGS) data. The DRP is estimated using relevant data sources based on the same averaging period, and in accordance with a BBB+ credit rating and 10 year term.[563]

Ten year term

The AER's approach is to estimate all parameters—including the MRP and DRP—using a 10 year term. This provides internal consistency with the 10 year risk free rate.[564] Throughout the AER's approach, consideration of short-term conditions is only relevant to the extent that they influence the long-term (10 year) horizon.

Debt risk premium

Under clause 6A.6.2(e) of the NER, the AER must estimate the DRP as the margin between the risk free rate and the observed Australian benchmark corporate bond, based on the same term as the risk free rate. The AER's approach to estimate the DRP requires it to make decisions on:

- the benchmark assumptions for the cost of debt set out in the SRI
- the method used to estimate a DRP that conforms to these benchmark parameters, including appropriate data sources.

The AER specified in the WACC review that the benchmark term for the risk free rate—and therefore the term for the DRP—is 10 years, and that the benchmark credit rating is BBB+.[565]

The AER's method to estimate the DRP based on these benchmark parameters is to apply a sample based average of observed market data. The AER considers sufficient market data is now available to form a sample of bonds and to use the observed yields from that sample to determine a reasonable estimate of the benchmark DRP. The AER's approach is as follows:

- collate a sample of bonds that meet the following conditions:
  - Australian domestic corporate issuance
  - rated as either BBB, BBB+, or A– by Standard and Poor's
  - between 7 and 13 years remaining term to maturity

562 NER, clause 6A.6.2(h).

563 AER, *Statement of the revised WACC parameters (transmission)*, May 2009, p. 6.

564 AER, *Final decision*, *Review of weighted average cost of capital parameters*, 1 May 2009, p. 187.

565 AER, *Statement of the revised WACC parameters (transmission)*, May 2009, p. 6.

- yield data observed by Bloomberg or UBS during the averaging period[566]
- fixed interest rate, or floating interest rate where this can be reliably converted into a fixed interest rate equivalent[567]
- standard bonds (that is, not callable or subordinated debt), or non-standard bond type where this can be reliably converted into a standard bond equivalent
- there are no strong qualitative grounds to indicate the bond is unrepresentative of a benchmark 10 year, BBB+ rated Australian corporate bond.

- annualise the yields from the sample of bonds and convert to spreads (or DRP) over the estimated risk free rate
- calculate the DRP as the simple average of the spreads.[568]

The AER has included in its bond sample:

- Bonds with remaining terms to maturity between 7 and 13 years—The AER considers that a three year window either side of the benchmark term is wide enough to generate a sufficiently robust sample. This approach yields a sample that is centred on the 10 year benchmark. Also, given the large number of bond issuances with remaining terms of 5–7 years, widening the sample range to include the 5–7 year band would generally result in an average term well below the benchmark of 10 years.

- BBB, BBB+, and A– rated bonds—In the reasons for its decision on the DRP review for Jemena Gas Networks, the Tribunal recognised that bonds within this range of credit ratings can provide useful information regarding the benchmark term of debt.[569] To allow an efficient estimate of the DRP, the AER considers it is appropriate that the sample should, on average, have a BBB+ credit rating. Where there are at least as many BBB rated bonds as A– rated bonds, the distribution of credit ratings in the sample should not result in too low a DRP, to the extent that credit ratings influence yields.

- Floating rate bonds, converted to fixed rate equivalents—The Tribunal has stated that floating rate bonds should be included in analysis of the DRP, and treated as equivalent to fixed rate bonds.[570] In previous decisions, the AER has calculated fixed rate equivalent yields for floating rate bonds as the sum of the trading margins for individual bonds and the daily swap rates.[571] The AER will apply this method to data for floating rate bonds observed from UBS.

566 Where observed yields are available from both sources, the AER uses an average of the yields, otherwise the AER uses yields from whichever source provides available observations.

567 The AER derives fixed rate equivalent yields by summing historical floating rate trading margin and swap rate data, sourced from both Bloomberg and UBS.

568 The AER has applied a simple average on the basis that credit ratings and terms to maturity are imprecise indicators of expected yield. A simple average will equally reflect the DRPs of bonds deemed comparable to the benchmark. In comparison, a weighted average approach would require certain assumptions about the distribution of bond terms or credit ratings.

569 Australian Competition Tribunal, *Application by Jemena Gas Networks (NSW) Ltd*, June 2011, paragraph 55.

570 Australian Competition Tribunal, *Application by ActewAGL Distribution*, September 2010, paragraph 58.

571 For example, see AER, *Final decision*, *Envestra Ltd*, *Access arrangement proposal for the Qld gas network*, July 2011, p. 190.

The AER has not included in its sample:

- Callable bonds—The Tribunal has stated that it is appropriate to include bonds with non-standard features, such as callable bonds, if the yields on these bonds are able to be reliably adjusted to fixed rate equivalents.[572] The AER does not consider that sufficiently reliable adjustments are feasible. Given the scope of adjustments that need to be made, the AER therefore considers it appropriate that callable bonds are excluded from the sample used for this draft decision. In particular, the adjustments required include the following:[573]

  - Conversion of yield-to-call to yield-to-maturity: When callable bond data is published relative to the first call date, the maturity date on a callable bond must be adjusted from the first call date to the final maturity, so it can be compared with standard fixed rate bonds. The yield-to-call is the discount factor that equates the current price on a bond to the present value of the coupon payments up until the call date. In contrast, the yield-to-maturity is the discount factor that equates the price on a bond (the same price as in the yield-to-call calculation) to the present value of all coupon payments until maturity. These yields will necessarily be different in most cases.[574] The direction and magnitude of the (vertical) yield adjustment, however, will be dependent on the individual bond characteristics.

  - Difference in the risk free rate: When the remaining term on a callable bond is adjusted to the final maturity date, the effective DRP on the bond will be calculated using a higher risk free rate, due to the longer term.[575] Holding other factors constant, this should reduce the implied DRP for that adjusted bond.

  - Value of the call option: The call option on callable bonds has a negative value for investors. This is because an investor cannot know in advance when the bond will mature, as this depends on whether the issuer exercises the call option. This in turn depends principally on future debt market conditions. As a result, this creates uncertainty for investors who consequently require a higher yield to hold the debt. Yields on callable bonds must therefore be adjusted to extract this option value, in order to be compared on a like-for-like basis with fixed rate bonds.

  - The AER is aware of a method that applies the Bloomberg YASN function to make the adjustments discussed above. However, the AER has had technical issues with the application of the function, and is undertaking further analysis to address these issues. Accordingly, the AER considers the method for adjusting callable bonds is not, in the current circumstances, sufficiently reliable to include these bonds in the sample.

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572 Australian Competition Tribunal, *Application by Jemena Gas Networks (NSW) Ltd*, June 2011, paragraph 57.

573 These adjustments do not apply to 'make-whole' callable bonds, where the bond issuer is required to compensate the bond holder for the present value of future cash flows if the bond is called before the final maturity date. In these circumstances, the bond holder suffers little or no detriment if the bond is called early. See: Oakvale Capital, Report on the cost of debt during the averaging period: The impact of callable bonds, February 2011, p. 7.

574 These yields would only be the same in the specific cases where the yield-to-maturity and the yield-to-call are equal to the coupon rate

575 For example, the DRP on a bond listed at its call date in 5 years would subtract the 5 year risk free rate from the observed yield. If this is then adjusted to its yield to final maturity, at 10 years term, the DRP would be calculated using a (typically) higher 10 year risk free rate.

- Subordinated debt—In the event that a debt issuer defaults, subordinated bond holders would have only secondary claims to any outstanding senior (standard) debt. As investors holding subordinated debt are less likely to fully recover their initial investment (in the event of default), the yields on subordinated bonds are higher than the yields on senior debt.[576] Subordinated bonds are also typically more volatile than standard debt.[577]
  - Banks are the most common issuers of subordinated debt within the relevant AER's sample credit ratings band.[578] The Reserve Bank of Australia (RBA), in its September 2011 Financial Stability Review,[579] stated that:

    > Banks have continued to run down their stocks of subordinated debt over recent years, resulting in a decline in Tier 2 capital. They have done so because these instruments in their current form will not be eligible to be included in capital under the Basel III framework after the transition period ends.[580]

  - The AER considers that this signals a likely long-term reduction in the issuance of subordinated debt from Australian banks, and therefore from the BBB to A– credit rating band.
  - In the current circumstances, the AER does not consider it appropriate to include subordinated debt in the sample used for the purposes of this draft decision. Including subordinated debt in the sample without an appropriate adjustment to account for this risk will reduce the robustness of the sample, and will introduce an upward bias to the DRP estimate.
- The Bloomberg BBB rated FVC—The AER has excluded the Bloomberg BBB rated FVC from its sample, for the following reasons:
  - The Bloomberg FVC is an estimate made using a proprietary methodology that is neither transparent nor verifiable. Bloomberg stated that the FVC is not a predictive source of price information.[581] It is therefore not consistent with the AER's approach, comprised exclusively of observed bond data.
  - The Bloomberg 7 year BBB rated FVC (the longest BBB rated FVC currently published) does not currently reflect the available market evidence for long dated bonds, or the stated views of other independent market commentators. The AER

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576 Oakvale Capital, *Report on the cost of debt during the averaging period: The impact of callable bonds*, February 2011, p. ii.

577 AER, *Final decision*, *N.T Gas, Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, p. 169.

578 During Powerlink's averaging period, of the 27 subordinated Australian corporate bonds with terms to maturity of 5 to 15 years and credit ratings from BBB to A–, 23 were issued by commercial banks, 2 by an investment bank, and the remaining 2 by an insurance provider.

579 RBA, *Financial Stability Review*, September 2011, p. 34.

580 The Basel III Accord is an agreement formed through the Bank of International Settlements that governs global minimum requirements for bank capital adequacy. Capital adequacy requirements in turn influence the funding practices of banks. One of the key changes is the removal of 'softer forms of capital', such as subordinated debt, from eligible Tier 2 capital. These requirements are in their transitional phase. National implementation by member countries will commence on 1 January 2013. See: Bank for International Settlements, *Group of governors and heads of supervision announce higher global minimum capital standards*, September 2010, Available at: [http://www.bis.org/press/p100912.htm].

581 Bloomberg, *Letter to the AER*, 28 October 2011.

considers the Bloomberg BBB rated FVC does not reflect the prevailing cost of debt for the benchmark Australian corporate bond.

Expected inflation rate

The expected inflation rate is not a parameter relevant to the determination of the WACC.[582] However, it is used in the post-tax revenue model (PTRM)—for example to index the RAB—and is an implicit component of the nominal risk free rate. For this reason the AER's determination of the expected inflation rate is discussed in this attachment. The AER's approach to determine the best estimate of inflation is to adopt an average inflation forecast over a 10 year period. The AER uses the RBA's short-term inflation forecasts extending out to two years and the mid-point of its target inflation band of 2.5 per cent for the remaining eight years. The averaging of the individual forecasts derives the implied 10 year forecast of the annual expected inflation rate.

5.4 Reasons for draft decision

For this draft decision, the key issue for the AER in assessing Powerlink's proposed WACC is the value of the DRP. This section discusses the AER's assessment of Powerlink's DRP, and how the value adopted for this draft decision satisfies the regulatory requirements in the NER and NEL.

The AER's considerations in this section set out the following matters:

- parameter values specified in the WACC review
- parameters sampled from daily data—nominal risk free rate and DRP
- overall rate of return
- expected inflation rate.

5.4.1 Parameter values in the WACC review

In the WACC review, the AER specified a number of parameter values:[583]

- Equity beta of 0.8—The equity beta provides a measure of the 'riskiness' of an asset's return compared with the return on the entire market. The equity beta reflects the exposure of the asset to non-diversifiable (systematic) risk, which is the only form of risk that requires compensation under the CAPM. An equity beta of 1.0 implies that the firm's return has the same level of systematic risk as the overall market. An equity beta of less than 1.0 implies the firm's return is less sensitive to systematic risk than the overall market, and vice versa.
- MRP of 6.5 per cent—The MRP is the expected return over the risk free rate that investors require to invest in a well diversified portfolio of risky assets. The MRP represents the risk premium investors who invest in such a portfolio can expect to earn for

582 The WACC formulation is based on nominal parameters and does not incorporate an explicit inflation rate parameter.
583 AER, *Statement of the revised WACC parameters (transmission)*, May 2009, p. 6.

bearing only non-diversifiable (systematic) risk. The MRP is common to all assets in the economy and is not specific to an individual asset or business.

- Gearing level of 60 per cent—Gearing is defined as the ratio of the value of debt to total capital (that is, both debt and equity) and is used to weight the costs of debt and equity when formulating the WACC.

- Gamma of 0.65—Under the Australian imputation tax system, domestic investors receive a credit for tax paid at the company level (an 'imputation credit' or gamma) that offsets part or all of their personal income tax liabilities. For eligible shareholders, imputation credits represent a benefit from the investment in addition to any cash dividend or capital gains received.

For this draft decision, the AER adopts the parameter values for the equity beta, MRP and gearing specified in the WACC review to calculate Powerlink's WACC. The AER also adopts the gamma value specified in the WACC review for the purposes of estimating Powerlink's corporate income tax allowance (attachment 8).

Powerlink proposed to apply the values specified in the WACC review in respect of the equity beta, MRP and gearing to calculate its WACC.[584] Powerlink also proposed to apply the value of gamma specified in the WACC review for estimating its corporate income tax allowance.

Clause 6A.6.2(h) of the NER requires the AER to use the parameter values specified in the WACC review where a revenue proposal was submitted to the AER after the completion of that review. Powerlink's revenue proposal was submitted after the completion of the WACC review. Therefore, consistent with the NER requirements, the AER adopts these parameter values to calculate the WACC (and corporate income tax allowance where applicable).

5.4.2 Debt risk premium

The DRP is the margin above the nominal risk free rate that a debt holder would require in order for it to invest in a benchmark efficient firm. When combined with the nominal risk free rate, the DRP represents the cost of debt and is an input for calculating the WACC.

The cost of debt varies depending on the firm's default risk. The risk of default is generally taken into account by a firm's credit rating and reflects both the operational and financial risks of the debt issuance.[585] Typically, a lower credit rating is associated with a higher yield to maturity demanded by investors. The cost of debt will also vary depending on the term of the debt. Higher yields are often associated with longer terms of debt.

The AER does not accept Powerlink's proposed DRP. In particular, the AER considers it is not appropriate to rely on the extrapolated 5 and 7 year Bloomberg BBB rated FVCs to estimate the DRP. The AER has calculated the DRP based on the average of observed bond yields from the market. This approach results in the allowed cost of debt to reflect the current cost of borrowing.[586]

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584 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 49.

585 Other factors can affect bond yields, such as bond size, market sentiment, industry prospect and comparable bond issuances.

586 Based on the benchmark assumption of Australian corporate bond with a term of 10 years and credit rating of BBB+.

For this draft decision, the 40 business days moving average for observed bond yields for the period ending 14 October 2011, results in an indicative benchmark DRP of 3.19 per cent (effective annual compounding rate). The AER will update the DRP, based on the agreed averaging period, at the time of its final decision.[587]

Powerlink proposed to apply the benchmark term of 10 years and a credit rating of BBB+ set in the WACC review to estimate the DRP.[588] Consistent with the NER requirements, the AER adopts these benchmark assumptions for the purposes of estimating the DRP.[589]

Based on these benchmark assumptions, Powerlink proposed a DRP of 4.34 per cent. Powerlink proposed the approach to estimate the DRP using an average of the Bloomberg BBB rated 5 and 7 year FVCs, both extrapolated to 10 year terms to maturity.[590]

As part of assessing Powerlink's proposal, the AER has taken into account submissions on the DRP. The EUAA,[591] Wesfarmers,[592] and the Energy Consumers Group operating in Queensland[593] all submitted that Powerlink's proposed DRP is in excess of the debt margin Powerlink is likely to incur. All three parties stated that the AER's (then) current approach is delivering cost of debt outcomes well in excess of costs being incurred by the network businesses.

The AER considers its sample based approach is consistent with the requirement under the NER that the DRP be based on the observed annualised Australian benchmark corporate bond rate.[594] This is because observed yield data is the best available source of data on the prevailing market perceptions of investors. While some bonds may have specific characteristics, or may be perceived by investors as different to the AER's benchmark assumptions,[595] a sample based average containing sufficient market data should mitigate these differences to some extent. The sample based approach, with appropriately selected parameters,[596] would therefore provide an appropriate estimate of the benchmark DRP that is consistent with the NER requirements.

The AER considers its sample based approach is consistent with the requirements under the NER and NEL, for the following reasons:

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587 For internal consistency within the WACC formulation specified in clause 6.5.2(b), the same averaging period used to determine the nominal risk free rate will be used to determine the DRP (see section 5.4.3).

588 Powerlink, *Revenue Proposal*, June 2011, p. 49.

589 NER, clause 6A.6.6(h).

590 Powerlink, *Revenue Proposal*, June 2011, p. 49.

591 EUAA, *Submission to the Australian Energy Regulator on Powerlink's regulatory proposal 2012–2017*, August 2011, p. 14.

592 Wesfarmers, *Submission to the Australian Energy Regulator in relation to the Powerlink regulatory proposal 2012–2017*, August 2011, pp. 6–7.

593 The Group, *Queensland electricity transmission revenue reset*, *Powerlink application: A response by an Energy Consumers Group operating in Queensland*, August 2011, pp. 20–22.

594 NER, clause 6A.6.2(e).

595 The 10 year benchmark reflects consistency with the term of the risk free rate, while the BBB+ credit rating reflects what the AER determined during the WACC review following consideration of comparable energy businesses. AER, Statement of the revised WACC parameters (transmission), May 2009, p. 6.

596 Such parameters include the ranges of terms and credit ratings allowed in the sample, and the required adjustment for inclusion of non-standard bonds in the sample. These factors are discussed in the AER's approach to assessing the DRP, and should ensure that the sample consists only of bonds that are informative and relevant to the benchmark DRP.

- The AER's sample based approach closely reflects the observed Australian benchmark corporate bond rate,[597] as the input data is derived from observed yields on Australian corporate bonds.

- The sample parameters of the AER's approach are chosen to ensure a sufficient number of bonds that is, on average, a close match to the benchmark 10 year BBB+ standard fixed rate bond.[598]

For these reasons, the sample based DRP estimate should provide Powerlink with a reasonable opportunity to recover at least its efficient costs, and effective incentives to promote economic efficiency with respect to the provision of network services.[599]

The AER considers its sample based approach is also consistent with guidance from the Tribunal. In the reasons for its decision on the DRP review for ActewAGL, the Tribunal stated that:

> In a robust bond market, it would likely be possible for the AER to calculate the yield based on particular representative bonds issued in Australia in reasonably close proximity to the time of the AER's determination.
>
> In the absence of a deep market for corporate bonds, the AER will likely have to rely on published fair value curves to estimate benchmark debt financing costs.[600]

The AER considers this reasoning supports a view that:

- where market data is available, it is possible to estimate the DRP using this data

- where market data is not available, FVCs are a viable second-best alternative.

Applying the approach outlined above, the AER considers the sample size in the current circumstances comprising 9 bonds is sufficiently robust, particularly when compared with the deficiencies of Bloomberg's 5 and 7 year BBB rated FVCs.

Conversely, the AER considers that Powerlink's proposed DRP is excessive and does not satisfy the requirements of the NER and NEL.[601] In particular, the AER considers Powerlink has, in estimating the DRP, had insufficient regard to:

- achieving an outcome that is consistent with the NEO, in promoting efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity[602]

- the regulatory and commercial risks involved in providing the network service, and the economic costs and risks of the potential for under and over investment.[603]

The AER's approach to estimating the benchmark DRP has evolved and has been refined in response to changing circumstances of data availability and quality. In previous regulatory

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597 NER, clause 6A.6.2(e).

598 As defined in the WACC review, NER clause 6A.6.2(e).

599 NEL, part 1, section 7A)2)–(3).

600 Australian Competition Tribunal, *Application by ActewAGL Distribution*, September 2010, paragraphs 74–75.

601 NER, clauses 6.5.2 and 6.5.4.

602 NEL, part 1, section 7.

603 NEL, part 1, section 7A(5)–(6).

determinations, the AER used FVCs to estimate the DRP.[604] The AER's use of the FVC to estimate the DRP was principally a consequence of there being limited observable pricing data for relevant long-term corporate bond issuances. In making its December 2010 distribution determination for the Victorian electricity networks, the AER moved from exclusive reliance on the use of FVCs to a weighted average of the Bloomberg BBB rated (extrapolated) FVC and the observed APA Group bond yield to estimate the benchmark DRP.[605] Independent market evidence and commentary suggested the Bloomberg BBB rated FVC had not reflected improvements in Australian debt market conditions since the GFC. The AER considered the APA Group bond was a close comparator to the benchmark corporate bond, and that its observed yield should therefore be used to estimate the DRP.

In making its recent June/July 2011 gas access arrangement decisions,[606] the AER identified five recently available observations of long dated bonds that were close comparators to the benchmark corporate bond.[607] The observed yields on these bonds were consistent with those observed for the APA Group bond, having accounted for differences in credit rating and term. They provided further support for relying on the APA Group bond instead of only the Bloomberg FVC. Taking account of the evidence, the AER considered that more weight could be placed on the APA Group bond yield for the purposes of estimating the benchmark DRP.[608]

For the reasons discussed below, the AER does not consider it appropriate to continue relying on the Bloomberg BBB rated FVC to set the DRP. In light of the increased volume of observed market data currently available, and ongoing market evidence and commentary that suggest the Bloomberg BBB rated FVC does not reflect prevailing Australian bond market conditions, the AER considers the sample based average of relevant observed bonds would result in an appropriate estimate of the DRP.

Analysis of sample based approach

The AER's sample of bonds, as observed during the indicative averaging period, is set out in table 5.4. The sample has an average remaining term of approximately 10 years, and an average credit rating between BBB and BBB+. To the extent that lower credit ratings results in higher yields, the sample is likely to produce a conservative estimate of the DRP.

604 See for example AER, *Final decision*, *Queensland distribution determination 2010-11 to 2014-15*, May 2010, p. 252.

605 See AER, *Final decision*, *Victorian electricity distribution network service providers*, *Distribution determination 2011 to 2015*, October 2010, pp. 514–515.

606 See for example AER, *Final decision*, *Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 181–182.

607 SP AusNet and Stockland issued A– rated, 10-year bonds, and Brisbane Airport issued two BBB rated 8-year bonds, and observed yields for two BBB rated Sydney Airport floating rate notes (maturing in 2021 and 2022) became available.

608 AER, *Final decision*, *N.T. Gas*, *Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 167–178.

Table 5.4 Bond sample used to estimate the DRP

Bond issuance	Term to maturity (year)[a]	S&P credit rating	DRP (per cent)[b]
APA Group	8.8	BBB	3.09
Brisbane Airport	7.7	BBB	2.67
Sydney Airport	10.1	BBB	3.81
Sydney Airport	11.0	BBB	3.90
Dalrymple Bay Coal Terminal	9.7	BBB+	4.30
Dalrymple Bay Coal Terminal	11.2	BBB+	3.83
Coca Cola Amatil	10.0	A–	1.59
SPI Electricity and Gas	9.5	A–	2.63
Stockland Trust	9.1	A–	2.91
Average	**9.7**		**3.19**

(a) Term to maturity at the end of the averaging period.
(b) Based on 40 business day averaging period ending 14 October 2011.
Source: Bloomberg, UBS, AER analysis.

Based on the review of available data, the AER concludes that a DRP of 3.19 per cent satisfies the requirements of the NER.[609] The AER considers its DRP estimate will contribute to a rate of return that promotes efficient investment in Powerlink's network, and reflects the regulatory and commercial risks of providing its network services. Table 5.5 sets out the debt refinancing outlooks for various NSPs, compiled from market analyst reports.

Table 5.5 Market analyst outlooks

Company	Market analyst	Comments on debt outlook
APA Group (BBB)	Macquarie Equities Research	APA is expected to refinance $900 million bank debt at approximately 240 bps spreads
Spark Infrastructure Group (A–)	Macquarie Equities Research	Debt spreads relatively constant for A– rated stocks, with spreads at ~150bps compared to 160bps last year. SKI however demonstrated at both CHEDHA and ETSA they could raise debt at better spreads and, we believe, ahead of their budgets
DUET Group (BBB–)	Bank of America Merrill Lynch	The DUET Group (BBB–) has refinanced $3 billion of debt at approximately ~300 bps since April 2011. Recent refinancing by other BBB– assets has been conducted at ~330 bps

Source: Macquarie Equities Research, *APA Group—Predictable with a dividend twist*, August 2011, p. 2; Macquarie Equities Research, *Spark Infrastructure Group—An A– credit, A+ yield*, September 2011, p. 2; Bank of America Merrill Lynch, *DUET Group—Gearing fixed, 10% yield attractive*, August 2011, p. 4.

609 NER, clause 6A.6.2.

While this commentary is limited to specific providers of regulated network services, the AER notes the following:

- The three groups discussed account for 15 gas and electricity NSPs subject to full regulation.[610] The estimates can therefore inform the debt market outlook for at least a wide range of regulated utilities.

- Of these three groups, two have credit ratings within the AER's sample range to estimate the cost of debt (A– to BBB–). To the extent that credit ratings influence required spreads, the expected spreads for BBB+ rated debt should lie between those for A– (~150 basis points) and BBB– (~330 basis points) rated debt. As a BBB+ rating is closer to an A– rating (1 band removed) than a BBB– rating (2 bands removed), the AER considers it is reasonable to assume the expected spreads on a BBB+ should be closer to 150 basis points than to 330 basis points.

- The AER's estimated DRP (319 basis points) is within the top of the range considered in the market commentary.

Also, in discussing the AER's historical approach to estimating the DRP and the DRP outlook for Australian regulated utilities, market analyst Credit Suisse stated:

> It is clear why the AER is having some concerns with the current methodology, with recent regulatory decisions gaining a debt risk premium of over 400bp… In the most recent decision, the AER stated that, without its modification to the accepted methodology, the DRP would have hit 469bp. This is extraordinary when compared with BBB-band companies borrowing at rates more in the order of 300bp.[611]

This suggests a DRP of approximately 300 basis points is appropriate for the benchmark NSP. The AER's DRP estimate of 314 basis points is consistent with this commentary. Credit Suisse has also stated that DRP estimates derived using the proposed methodology are 'extraordinary'. The AER considers this supports a movement away from reliance on the Bloomberg BBB rated FVC, as approaches relying on the FVC have produced these extraordinary results.

The Bloomberg BBB rated FVC

The AER considers the Bloomberg BBB rated FVC is a second-best source of pricing information for estimating the benchmark DRP.[612] FVCs may be useful—and have been used—to estimate the DRP where insufficient relevant market data is available. The Bloomberg FVC is derived from estimates made by a market data provider, which are then reconciled with observed yield data drawn mostly from short dated bonds.[613] The proprietary techniques used to produce the yield estimates cannot be assessed by third parties. This

610 Specifically: APA Group–Amadeus Gas pipeline (gas transmission), APT Allgas (gas distribution), Central Ranges pipeline (gas transmission), Central Ranges network (gas distribution), Direct & Murraylink Interconnectors (electricity transmission), GasNet (gas distribution) Moomba to Sydney pipeline (gas transmission), Roma to Brisbane pipeline (gas transmission); Spark Infrastructure Group–ETSA Utilities (electricity distribution), Citipower (electricity distribution) and Powercor (electricity distribution); DUET Group–Dampier to Bunbury Pipeline (gas transmission), United Energy (electricity distribution), Multinet (gas distribution).

611 Credit Suisse, *Regulated utilities, sector review—Debt risk premium at risk in future WACCs*, November 2011, p. 3.

612 Australian Competition Tribunal, *Application by ActewAGL Distribution*, September 2010, paragraphs 74–75.

613 That is, with five or less years remaining term to maturity.

limits the ability of interested parties to gauge the efficiency of the underlying estimates, or to what extent they reflect the available market observed data. The AER understands the FVC:

- is not intended to be a predictive source of pricing information.[614] The AER considers it should be interpreted as a supplementary source of data where prices cannot be obtained for relevant bond comparators
- excludes floating rate bonds from the sample used to generate the FVC, which prevents representation of the full range of available information[615]
- is calculated by minimising the deviation between a predicted yield and the observed yield information in a constituent sample of bonds. Where there are few or no long dated bonds in the sample, the AER considers the scope for the FVC estimate to differ from a 'true' price at the benchmark term is likely to increase.

In its recent regulatory decisions for the Queensland, South Australian and Northern Territory gas service providers, and the Victorian electricity service providers, the AER estimated the DRP based on the spreads of the observed yields of the APA Group bond and the Bloomberg 7 year BBB rated FVC, extrapolated to 10 years.[616] In making these decisions, the AER considered the following:

- The Bloomberg BBB rated (extrapolated) FVC is not transparent, and the resulting spreads had behaved contrary to what would be expected under prevailing market conditions. Specifically, recent evidence published by the RBA in its bulletins suggested a narrowing of debt spreads since the global financial crisis (GFC), while the extrapolated FVC produced estimates that remained above levels observed during the GFC. The RBA's view was corroborated by reports from the International Monetary Fund (IMF), Organisation for Economic Cooperation and Development (OECD), and Moody's Investors Service—all indicating an improvement in Australian debt market conditions.[617]
- The (then) recent issuance of several long dated bonds further suggested the extrapolated Bloomberg BBB rated FVC was not a reliable estimator of long dated corporate bond yields. In contrast, the observed yields for bond issuances were consistent with those for the APA Group bond.[618]
- The bonds used to derive the Bloomberg BBB rated FVC consisted largely of bonds with less than 5 years term-to-maturity, which may have explained the disparities between the observed yields for long dated bonds and the Bloomberg FVC estimates.[619]
- Both Bloomberg and CBASpectrum had ceased publication of their 10 year FVCs, which might indicate a lack of confidence in the reliability of the FVC estimates for long-term debt.[620]

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614 Bloomberg, *Letter to the AER*, 28 October 2011.

615 Bloomberg, *Letter to the AER*, 28 October 2011.

616 Using the spread between the 7 and 10 year Bloomberg AAA rated FVCs, which is no longer available (publication ceased on 22 June 2010). The AER applied different proportions to the data sources to estimate the DRP in the Queensland/South Australian/Northern Territory gas and Victorian electricity decisions.

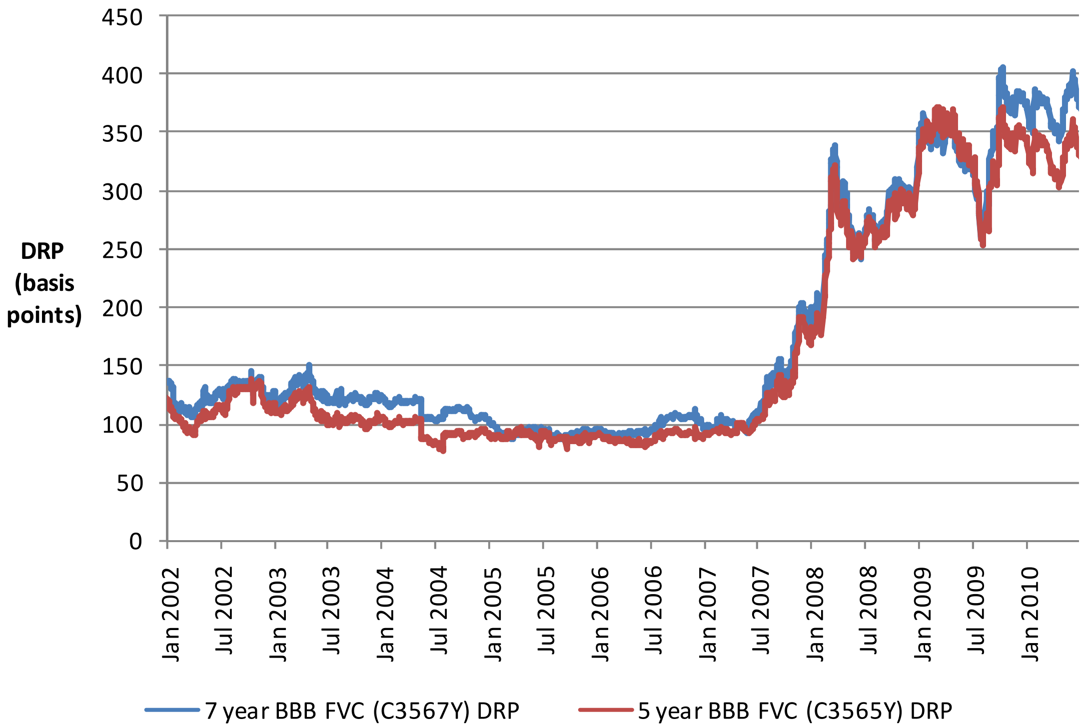
617 AER, *Final decision*, *N.T. Gas, Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 167–178.

618 AER, *Final decision*, *N.T Gas, Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 176–178.

619 AER, *Final decision*, *Victorian electricity distribution network service providers*, *Distribution determination 2011–2015*, October 2010, p. 509.

The AER maintains its view about the problems of relying on the Bloomberg BBB rated FVC to estimate the benchmark DRP. Further analysis since the time of those decisions shows that the long dated FVC estimates have remained at historical highs, despite consistent independent commentary indicating an improvement of Australian debt market conditions. Figure 5.1 shows that the Bloomberg BBB rated 5 and 7 year FVC spreads increased markedly from 2007–2009, and remain at (5 year FVC) or above (7 year FVC) the spreads observed during the GFC.

Figure 5.1 Implied DRP—Bloomberg 5 and 7 year BBB rated FVCs



Source: Bloomberg, RBA, AER Analysis.

In contrast, the RBA stated in its August 2011 Statement on Monetary Policy that:

> Spreads between corporate bond yields and CGS have increased a little over the past few months but remain well below the levels of the past few years.[621]

Market analyst JP Morgan, in discussing recent Australian regulated utility debt refinancing, stated that:

> The encouraging reality for the regulated utilities is that, for the moment at least, **global appetite for BBB rated Australian utility debt remains buoyant**. Refinancing of existing debt facilities, alongside the funding of future expansion projects, has driven significant debt issuance sector-wide. While margins remain higher than pre-GFC levels, **funding costs have diminished materially since 2008-09**.[622] (emphasis added)

[620] AER, *Final decision*, *N.T Gas*, *Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 167.

[621] RBA, *Statement on Monetary Policy*, August 2011, p. 60.

[622] JP Morgan, The Wire, NSW power selloff…Round 2; APA refinance, November 2011, p. 7.

Similarly, market analyst Bank of America Merrill Lynch recently stated, in discussing the expected cost of debt allowance for Multinet Gas Network (a regulated gas utility) by reference to recent regulatory decisions:

> We note the current WACC under MGN's current regulatory period is ~8.81%. Recent regulatory decisions for UED and ENV's gas distribution networks in SA and QLD suggests that a more favourable outcome could be expected. **But we note that debt markets have progressively improved.** As such, the debt premiums received by UED and ENV will likely represent the blue-sky scenario. We think that a debt risk premium of ~280bps is more likely.[623] (emphasis added)

Figure 5.2 shows the 5 year iTraxx credit default swap index (CDSI) plotted against the Bloomberg 5 year BBB rated FVCs.[624] The CDSI reflects the prevailing Australian market perceptions of market default risk, based on the prices of credit default swaps (CDSs) for highly liquid Australian corporate entities.[625] The liquidity of the underlying instruments makes the iTraxx CDSI a robust indicator of market perceptions on default risk.[626] In general, the DRP, for a standard fixed rate bond, exclusively reflects the risk that the investor will not be paid out in full for its investment. This in turn is based on the likelihood of default and the probability of recovery in the event of default. The Bloomberg FVCs therefore should move broadly in line with the CDSI, which also increases with heightened perceptions of default risk. At any point in time, the iTraxx yield should not necessarily be equal to the FVC prediction, because they are based on distinct financial instruments with different characteristics. Nonetheless, the overall shape of the curves should be similar.

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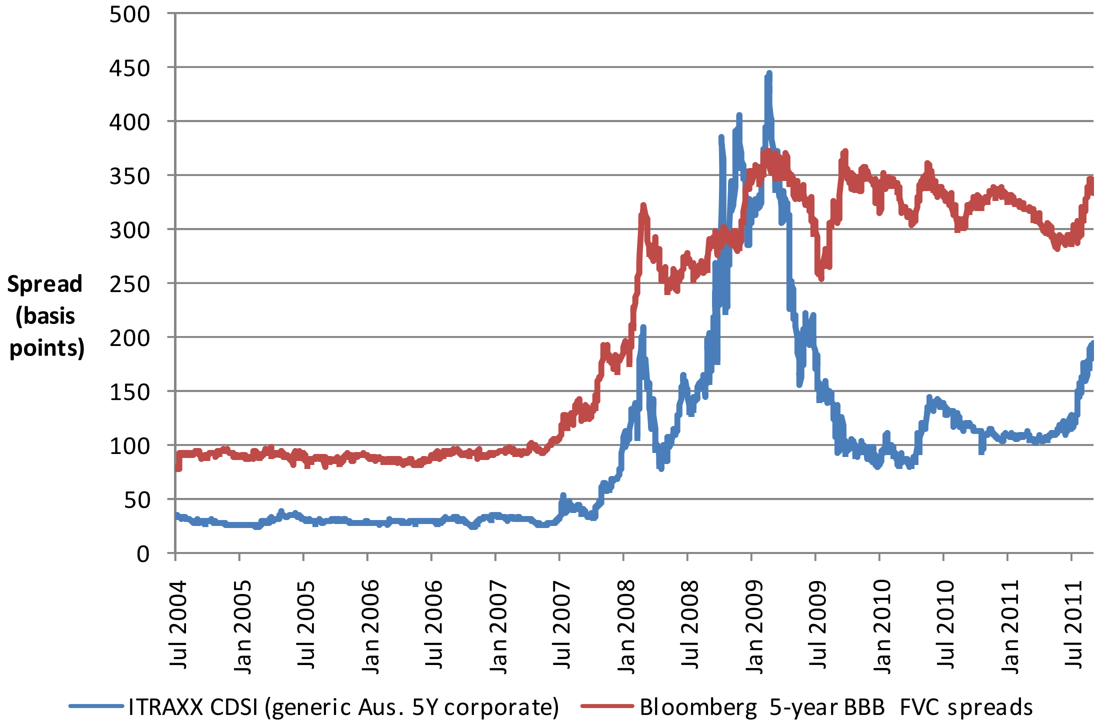
623 Merrill Lynch, *DUET Group—Earnings review*, August 2011, p. 6.

624 The 5 year iTraxx CDSI is the most liquid and most widely used index of its kind. The AER has therefore compared this series against the 5 year BBB rated FVC, to ensure that market perceptions of default risk are compared over the same term.

625 Credit default swaps (CDSs) are agreements between two parties (A and B) where party B purchases a CDS from party A relating to a specific debt issuer, and party A agrees in return to pay a specified value back to party B if the specified issuer defaults. The iTraxx CDSI is based on an equally weighted average of CDS prices for the 25 most liquid investment-grade Australian corporate entities.

626 Market analyst JP Morgan uses the iTraxx index as a 'gauge for the measurement of credit risk facing local borrowers'. See: JP Morgan, The Wire, NSW power selloff…Round 2; APA refinance, November 2011, p. 8.

Figure 5.2 Perceptions of default risk—iTraxx CDSI compared to the Bloomberg 5 year BBB rated FVC



Source: Bloomberg, RBA, AER analysis.

Before July 2008, the iTraxx CDSI and Bloomberg FVCs tracked closely. Between January 2009 and January 2010, the iTraxx CDSI decreased sharply from its peak during the GFC. This suggests that the perceived risk of default in the market had decreased markedly. In contrast, the Bloomberg BBB rated FVC has remained at levels at or near those observed during the GFC. The divergence between the CDSI and the FVC, suggests that reductions in the perceived risk of default for Australian corporates have not been observed in the Bloomberg BBB rated FVC. The Bloomberg BBB rated FVC therefore does not appear to reflect prevailing market conditions, and appears likely to overstate the benchmark DRP.

In circumstances where insufficient market data is available, the FVCs may be used to estimate the benchmark DRP. However, where sufficient market data is available, the AER considers that observable market data should be used as the primary source of pricing information. As the Bloomberg BBB rated FVC does not currently reflect the available market evidence for long dated bonds, or the stated views of other independent market commentators, the AER considers the Bloomberg BBB rated FVC does not reflect the prevailing cost of debt for the benchmark Australian corporate bond.

Extrapolation of the Bloomberg BBB rated FVC

Bloomberg does not currently publish any BBB or AAA FVCs at longer than 7 years term to maturity. It ceased publishing the 10 year BBB FVC in October 2007, and ceased publishing the 7 and 10 year AAA FVCs in June 2010. Consequently, Powerlink's proposed methodology uses spreads between the Bloomberg 5 and 7 year AAA rated FVCs and the 10 year AAA rated FVC to extrapolate the 7 year BBB rated FVC.[627] A similar approach, only extrapolating the 7 year BBB FVC, has been accepted by the AER in previous decisions, but these were made in closer proximity to the last published date of the AAA FVC spreads.[628] When the AER determines Powerlink's DRP for the final decision, the 7–10 year AAA rated FVC spread will be almost 2 years old. Continued extrapolation of the Bloomberg 7 year BBB rated FVC using this data relies on the assumption that the spreads between FVCs of different credit ratings and terms have not varied since June 2010. Powerlink has not provided any assessment to support the reliability of this assumption in its revenue proposal.

Figure 5.3 demonstrates that, the spreads between terms of the Bloomberg AAA and BBB rated FVCs have regularly and substantially changed since Bloomberg ceased publication of the 7 and 10 year AAA FVCs.[629] This is inconsistent with Powerlink's approach, which assumes these spreads are sufficiently stable that it would be appropriate to use the last recorded 7–10 year AAA rated FVC spread at the time of this final decision. Each series in figure 5.3 shows the difference in spread for the corresponding FVC with different terms.[630] In order to conclude that spreads between terms are relatively consistent, these series should be constant (or flat). In contrast, they vary by up to 50 basis points. A variation of 50 basis points in the extrapolation of the FVC could result in a 0.5 per cent difference to the DRP estimate, or approximately 0.3 per cent to the overall WACC. The AER considers it is not appropriate to assume that spreads between FVCs have been stable since the 7 and 10 year AAA FVCs were last published.

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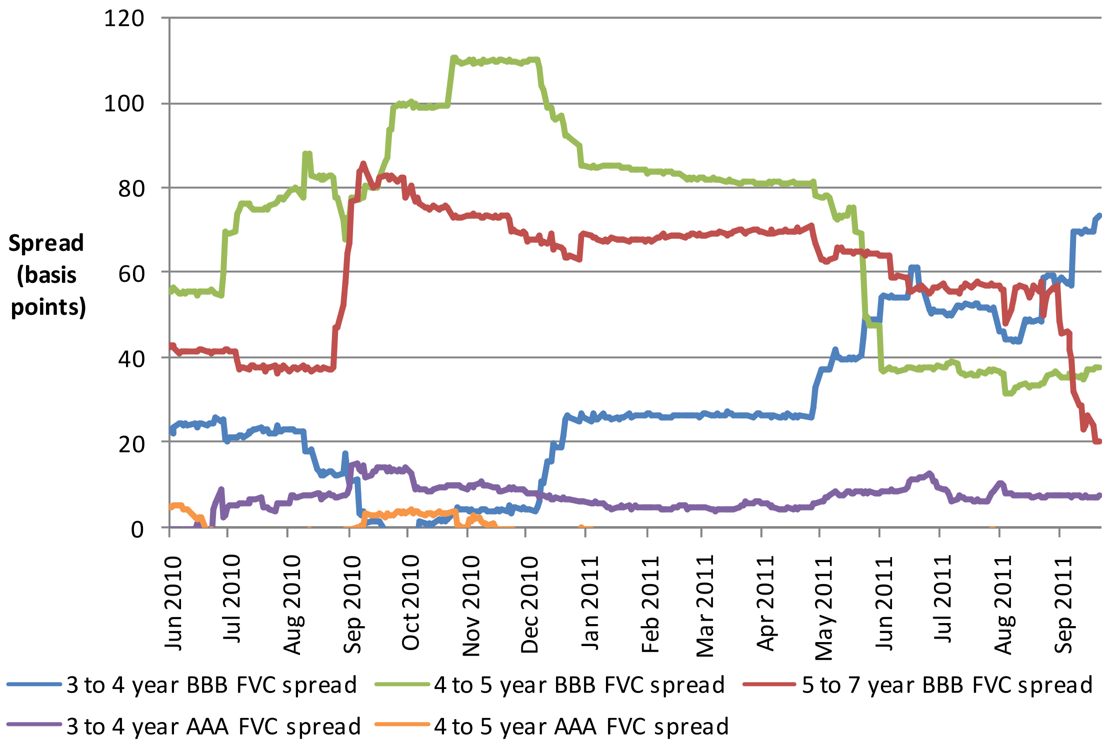
627 Specifically, Powerlink has proposed to use the last recorded 5–10 year AAA FVC spread to extrapolate the 5 year BBB FVC, and the last recorded 7–10 year AAA FVC spread to extrapolate the 7 year BBB FVC. The overall DRP estimate is an average of the two extrapolated values. See: PriceWaterhouseCoopers', Powerlink, Methodology to estimate the debt risk premium, April 2011, p. 10.

628 The Bloomberg 10 year AAA FVC was last published on 22 June 2010.

629 The BBB rated FVCs were used for this demonstration as they are both directly relevant to the benchmark cost of debt, and because there are no contemporaneous AAA rated FVCs at longer than 5 years with which to make such a comparison.

630 For example, the '3 to 4 year BBB FVC spread' is calculated as the implied 4 year DRP (being the 4 year FVC yield minus the 4 year risk free rate) minus the implied 3 year FVC DRP (being the 3 year FVC yield minus the 3 year risk free rate). Where the spread falls below zero, this suggests that the implied DRP for the shorter of the two terms is higher than the implied DRP for the longer term—that is, a negative sloping DRP. This may indicate that either the FVC yield at the shorter term exceeds that at the longer term, or it may indicate the risk free rate between terms increases by a greater margin than the FVC yields increase.

Figure 5.3 Bloomberg AAA and BBB rated FVC spreads since June 2010

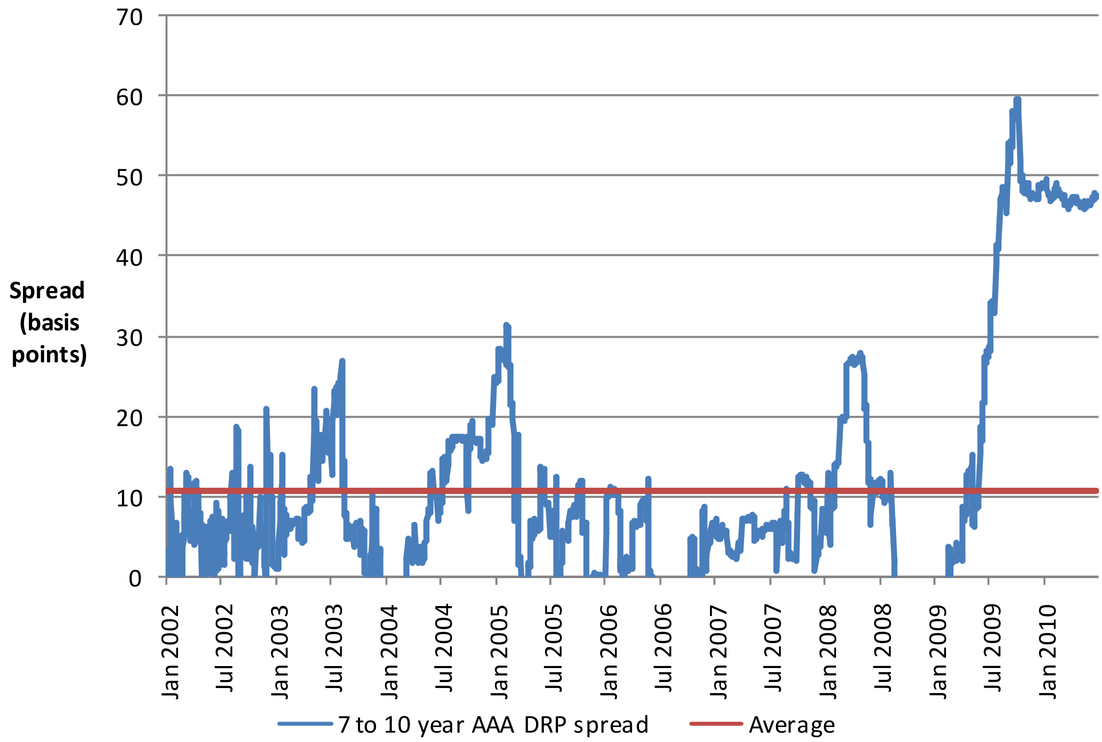


Source: Bloomberg, RBA, AER Analysis.

Bloomberg has not published the 7 or 10 year AAA rated FVCs since June 2010. Accordingly, there is no scope to check the recent stability of spreads between FVCs with longer terms. Figure 5.4 demonstrates, using the same method applied to derive figure 5.3, that the spreads between the 7 and 10 year AAA rated FVCs have not been constant over time. Further, during the period in which Powerlink's extrapolation is based (June 2010), the 7–10 year AAA rated FVC spread was nearly 50 basis points above its 10 year average. Based on the above analysis, the AER does not consider that Powerlink's extrapolation methodology reflects current circumstances in the Australian bond market. It is therefore not appropriate for the purposes of estimating the DRP in the current circumstances of data availability. In its submission to the AER, the Energy Consumers Group operating in Queensland submitted that Powerlink's proposed method for extrapolation would introduce markedly greater likelihood of error into an already error-prone approach.[631]

[631] The Group, Australian Energy Regulator, *Queensland electricity transmission revenue reset*, *Powerlink application*, *A response by an Energy Consumers Group operating in Queensland*, August 2011, p. 20.

Figure 5.4 **Historical DRP spreads between the 7 and 10 year AAA FVCs**



Source: Bloomberg, RBA, AER Analysis.

Sensitivity analysis

The AER, in developing its sample based approach, set parameters to define which bonds would be included in the sample. These decisions were made based on theoretical considerations, data reliability and past Tribunal guidance. The AER then performed the following sensitivity analysis on these parameters. Based these tests, the AER considers its sample based approach will closely reflect the benchmark Australian 10 year, BBB+ rated corporate bond.

Inclusion of BBB, BBB+ and A– rated bonds

Based on the averaging period employed for this draft decision, only two relevant bonds were available with BBB+ ratings. The AER considers this is too small a sample to form a robust estimate of the DRP. It is therefore appropriate also to include BBB and A– rated bonds in the sample.

The 7–13 year term range

The AER's approach uses a 7–13 year term range (symmetrical around the benchmark term of 10 years) to select bonds for the sample.[632] Table 5.6 sets out the sample sizes and DRP

632 Specifically, the 7–13 year term results in bonds in the sample with an average term to maturity of approximately 10 years. It also results in an equal number of issuances with credit ratings higher (A–) or lower (BBB) than the benchmark BBB+ rating. This should, holding other factors constant, balance the effect of bond specific factors, such as systematically higher or lower yields due to credit ratings. It should therefore result in a representative average.

estimates, using the AER's approach and various term ranges. On this basis, the AER considers the following:

- The 7–13 year sample produces a sample with an average credit rating between BBB and BBB+, and an average term of approximately 9.7 years.
- The narrower 9–11 year sample reduced the sample size by 50 per cent, and resulted in an average credit rating between BBB+ and A– and an average term of 9.9 years.
- The wider 5–15 year sample increased the sample size and produced a slightly higher DRP.[633] The AER considers the higher average DRP, despite a shorter average remaining term and credit rating between A and A–, suggests that factors other than credit rating and term influence yields.

Overall, the AER considers the 7–13 year sample produces a sufficiently robust sample size, an average term to maturity that closely matches the benchmark, and a conservative credit rating distribution.

Table 5.6 Sensitivity test—term range

Term range scenarios	DRP	Sample size	Average term to maturity	Credit rating distribution
9 – 11 years	3.19	6	9.9	BBB: 2 BBB+: 1 A–: 3
7 – 13 years	3.19	9	9.7	BBB: 4 BBB+: 2 A–: 3
5 – 15 years	3.25	13	9.2	BBB: 4 BBB+: 4 A–: 5

Source: Bloomberg, UBS, AER analysis.

Floating rate bonds

The AER's approach includes floating rate bonds in its sample. Table 5.7 sets out the sample sizes and DRP estimates, with floating rate bonds included and excluded. The AER considers:

- Inclusion of floating rate bonds increases the sample size, and provides an average credit rating of between BBB and BBB+ and an average term of approximately 9.7 years.
- Exclusion of the floating rate bonds reduces the sample size, and provides a credit rating of between BBB+ and A– and an average term of approximately 9 years.

Overall, the AER considers that the inclusion of the floating rate bonds provides a more robust sample that closely reflects the benchmark term and credit rating.

633 Although 21 bonds with remaining terms of 5–7 years were excluded from this potential sample due to non-standard features. Specifically, these bonds were either callable or subordinated or both.

Table 5.7 Sensitivity test—floating rate bonds

Callable bond scenarios	DRP	Sample size	Average term to maturity	Credit rating distribution
Including floating rate bonds	3.19	9	9.7	BBB: 4 BBB+: 2 A–: 3
Excluding floating rate bonds	2.58	5	9.0	BBB: 2 BBB+: 0 A–: 3

Source: Bloomberg, UBS, AER analysis.

Powerlink's reasonableness checks

Powerlink engaged PricewaterhouseCoopers (PwC) to derive a DRP estimate. PwC also presented analysis supporting its extrapolation of the Bloomberg BBB rated FVC, including a series of reasonableness checks. PwC did not undertake any reasonableness checks on the performance of the Bloomberg BBB rated FVC, and therefore did not consider the reasonableness of the overall estimate. The AER considers PwC's tests do not meaningfully support the reasonableness of Powerlink's proposed DRP. Instead, they cast doubt on the appropriateness of Powerlink's proposed method to estimate the DRP.

Straight-line extrapolation

PwC extrapolated the 7 year Bloomberg BBB rated FVC using a 'straight-line' approach. Specifically, PwC extended out to 10 years based on the spread between the 5 and 7 year BBB rated FVCs. The AER considers PwC's straight-line analysis is flawed, and does not support the reasonableness of Powerlink's proposed DRP method, for the following reasons:

- PwC has stated earlier in its report that the spread between the 5 and 7 year Bloomberg BBB rated FVC can be 'erratic and sensitive to the composition of bonds between those maturities'.[634] PwC has then relied on this erratic spread to confirm the reasonableness of its DRP estimate. The AER considers that a reasonableness test is of limited value when using admittedly erratic and sensitive data inputs.

- Straight-line extrapolation of the Bloomberg BBB rated FVC also relies on the assumption that required yields are directly and linearly related to term. The AER has previously rejected linear extrapolation of the 5 to 7 year Bloomberg BBB rated FVC spread on the basis it was a poor fit with the observed data.[635]

Linear regressions

PwC undertook a series of linear regressions to check the reasonableness of its extrapolation methodology for the Bloomberg BBB rated FVCs. The AER considers this analysis does not meaningfully support the reasonableness of Powerlink's proposed DRP, for the following reasons:

634 PricewaterhouseCoopers, Powerlink, Methodology to estimate the debt risk premium, April 2011, p. 11.

635 AER, Final decision Jemena Gas Networks, Access arrangement proposal for the NSW gas networks , June 2010, p. 188.

- The regressions are highly sensitive to the assumption that term increases linearly over time, which is inconsistent with the shape of the Bloomberg FVC.[636]

- PwC's linear regressions are based only on bonds with BBB+ credit ratings,[637] while the Tribunal has stated it is appropriate to have regard to bonds with other credit ratings (A– and BBB) near the benchmark.[638]

- Only one bond in PwC's sample has longer than 6 years (10.2 years) remaining term to maturity. The sample therefore disproportionately represents bond market conditions for shorter term issuances. As the increase in DRPs with term is commonly not linear, which can be observed in PwC's sample itself, this is likely to produce erroneous extrapolations.

- Of the 21 bonds in PwC's fixed and floating rate sample, 3 were issued by DBCT Finance. The average DRP for the DBCT yields is 4.84 per cent, including one bond with 0.7 year remaining term to maturity and a DRP of 4.66 per cent. In comparison, the average DRP for the entire sample is 2.62 per cent, suggesting the DRPs on DBCT yields are markedly above those for other bonds in the sample. The AER considers the yields on the DBCT bonds during Powerlink's indicative averaging period were driven by factors other than its credit rating.[639] In light of the AER's concerns with the DBCT yields during Powerlink's indicative averaging period, the AER considers that PwC's regression depends heavily on input data that does not reflect the benchmark Australian corporate bond.

- The AER has applied the same linear regression using PwC's data for Powerlink's indicative averaging period but excluding the DBCT bond. This produces a DRP estimate of 3.12 per cent.[640] While this result is based on a different averaging period to the AER's DRP estimate, it is consistent with the AER's DRP estimate of 3.19 per cent. In contrast, it suggests Powerlink's DRP estimate of 4.34 per cent is excessive.

Paired bonds analysis

PwC's paired bond analysis extrapolates the 5 and 7 year Bloomberg BBB rated FVCs by the average implied increase in the DRP per year of remaining term. It has used a sample of 18 bonds from 9 issuers. For each pair, PwC has subtracted the DRP of the shorter term bond from the DRP of the longer term bond. This spread in the DRPs is then divided by the difference in term to give an increase in DRP per year, which can then be used for extrapolations.

PwC has only used the average rise in DRP per year between bonds to test the extrapolation of the Bloomberg BBB rated FVCs from 7 years to 10 years. It has not reported this same extrapolation on the bond pairs from which the spreads were calculated. In comparison, the AER has extrapolated each of the pairs—rather than the Bloomberg BBB FVC—out to 10 years, using the same methodology. The AER considers that extrapolating the pairs is a more appropriate reasonableness check, as it does not implicitly assume the Bloomberg BBB rated

636 The Bloomberg FVC increases at varying rates between terms. See figure 5.5.

637 PricewaterhouseCoopers, Powerlink, *Methodology to estimate the debt risk premium*, April 2011, p. 32.

638 Australian Competition Tribunal, *Application by Jemena Gas Networks (NSW) Ltd*, June 2011, paragraph 55.

639 The AER set out its detailed reasons for this observation in its final decision for NT Gas. See: AER, Final decision, N.T Gas, Access arrangement proposal for the Amadeus Gas Pipeline, July 2011, pp. 179.

640 The AER considers this regression outcome is also flawed, due to the sample composition and erroneous assumptions, and has not given it weight in estimating the DRP. Nevertheless, the AER considers that PwC's analysis does not support the conclusions PwC formed.

FVC to 7 years is reasonable.[641] Using PwC's data, table 5.8 sets out the estimated DRPs derived by extrapolating each of the bond pairs to 10 years, and the entire sample average extrapolated to 10 years.

Table 5.8 AER's paired bonds analysis using PwC's data

Issuer	Credit rating	Bond 1 term (year)	Bond 1 DRP (per cent)	Bond 2 term (year)	Bond 2 DRP (per cent)	Average rise in DRP per year	DRP extrapolated to 10 year
CFS Property Trust	A	1.4	1.57	3.7	1.77	0.09	2.32
Telstra	A	4	1.49	9.3	2.22	0.14	2.31
Australia Pacific Airport	A–	3.3	1.98	5.3	2.46	0.24	3.60
Commonwealth Property Trust (CPT)	A–	0.2	1.34	5.7	0.72	– 0.11	0.24
SPI Electricity and Gas	A–	0.6	1.29	6.4	2.05	0.13	2.53
Stockland Property Trust	A–	0.2	1.37	3.8	1.97	0.17	3.00
Transurban Finance	A–	0.4	1.62	2.9	2.15	0.21	3.66
Volkswagen	A–	0.2	0.94	2.9	1.44	0.18	2.75
Mirvac	BBB	3.9	2.79	5.4	2.96	0.11	3.47
					Average	0.13	2.65
					Average exc. CPT	0.17	2.96

Source: PwC, AER analysis.

The AER does not accept PwC's analysis, for the following reasons:

- The AER considers credit ratings are a limited indicator of expected yields for bonds. The extrapolated 10 year DRP estimates for the A– rated bonds range from 0.24 per cent to 3.66 per cent. This suggests that credit ratings are an imprecise indicator of DRPs. Nevertheless, the average extrapolated DRP for the A– rated bonds is 2.63 per cent.

641 In contrast, as PwC has only checked the reasonableness of its extrapolation, it has implicitly assumed that its estimate up to the end-point of the currently published Bloomberg BBB FVC (7 years) is reasonable.

- The Mirvac BBB rated paired bonds, which are the only bond pair in the sample rated lower than the BBB+ benchmark, produce an extrapolated 10 year DRP estimate of 3.47 per cent.

- To the extent that credit ratings influence the DRP, the expected DRP for a 10 year BBB+ bond would lie between the extrapolated DRPs for A– bonds (2.63 per cent) and the extrapolated DRPs for BBB bonds (3.47 per cent). The average of these two DRPs is 3.05 per cent.

- This suggests the AER's DRP estimate of 3.19 per cent is conservative. In comparison, the AER considers that PwC's DRP estimate of 4.34 basis points for the same period is excessive.

- Only one of the issuances in PwC's sample of pairs is in the 7–10 year term extrapolation range that PwC is testing. The AER therefore considers PwC's analysis relies on assumptions about the linearity of yields that are contradicted by the data it used.

The APA Group Bond

Powerlink proposed that:

- the APA Group Bond was not reflective of the benchmark 10 year BBB+ corporate bond, due to specific bond characteristics that made it unusually desirable to investors[642]

- the AER had inappropriately placed significant weight on a single bond.[643]

The AER considers that the APA Group bond's characteristics are a close match to the benchmark corporate bond.[644] Its BBB rating, holding other factors equal, implies a higher expected yield than a BBB+ rated bond with the same term to maturity. The AER does not consider the observed yields on the APA Group bond are unusually low with respect to its credit rating or other benchmark characteristics. Figure 5.5 shows, conversely, that the observed spreads on the APA bond are consistent with those observed on other comparable bonds. In its decision for the Northern Territory gas access arrangement, the AER considered the consistency of the APA Group Bond with the Brisbane Airport, Sydney Airport, Stockland and SP AusNet bonds. Broadly, the observed yields on these comparator bonds were consistent with the APA Group bond yield. The Bloomberg (extrapolated) BBB rated FVC, in contrast, appeared not to be representative of prevailing bond market conditions for the AER's notional benchmark service provider. The extrapolated Bloomberg BBB rated FVC produced yields which were consistently above the observed market data by unexpectedly large magnitudes, even having accounted for differences in term and credit rating.[645] Figure 5.5 also shows that the Bloomberg (extrapolated) BBB rated FVC remains above the relevant observed market data.

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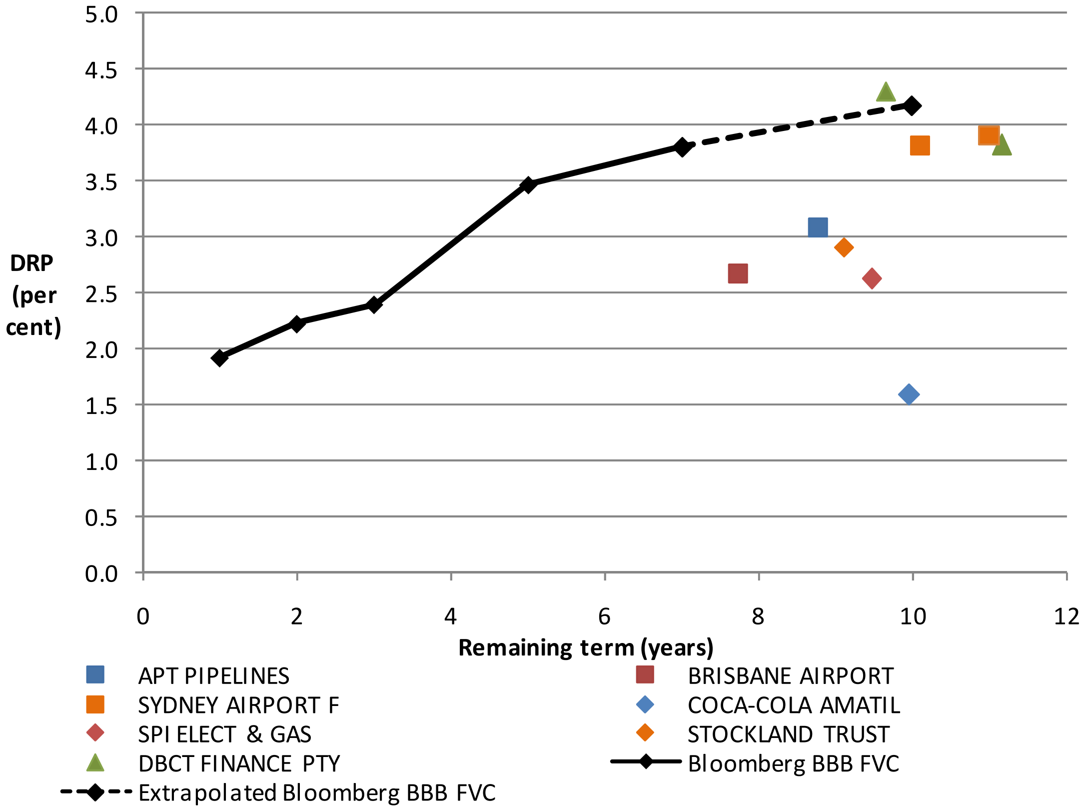
642 PricewaterhouseCoopers, Powerlink, *Methodology to estimate the debt risk premium*, April 2011, p. 24–25.

643 PricewaterhouseCoopers, Powerlink, *Methodology to estimate the debt risk premium*, April 2011, p. 21.

644 It has a BBB credit rating and 8.7 years remaining term to maturity. The AER understands that Bloomberg has included the APA Group bond as an input into the calculation of the 7 year BBB rated FVC on at least one business day. Due to the proprietary nature in which the FVC is calculated by Bloomberg, it is not clear how and to what extent the APA Group bond influenced the 7 year BBB rated FVC during its inclusion.

645 AER, *Final decision*, *N.T. Gas*, *Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 176–178.

Figure 5.5 **Bloomberg (extrapolated) BBB rated FVC compared to the relevant bond sample A– to BBB rated fixed and floating rate bonds**



Source: Bloomberg, UBS, AER analysis.

Powerlink's more general concerns about the weight placed on an individual bond are not directly applicable to the AER's updated approach,[646] as the AER has increased the sample of relevant observed bond data used to determine the DRP.[647] Previously, the AER has averaged the implied DRPs from the APA Group bond and the Bloomberg BBB rated FVC to estimate the benchmark DRP.[648] Under the AER's updated approach, the bond sample that the AER uses to estimate the DRP includes all observed long dated bonds, including the APA Group bond.[649]

5.4.3 Nominal risk free rate

The risk free rate measures the return an investor would expect from an asset with zero volatility and zero default risk. The yield on long-term CGS is often used as a proxy for the risk free rate because the risk of government default on interest and debt repayments is considered to be low.

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646 PricewaterhouseCoopers, Powerlink, *Methodology to estimate the debt risk premium*, April 2011, p. 15.

647 The AER's bond sample includes 9 bonds of 7–13 years term to maturity.

648 AER, *Final decision*, *N.T. Gas*, *Access arrangement proposal for the Amadeus Gas Pipeline*, July 2011, pp. 182.

649 For bonds with non-standard features or floating rate bonds, these are included in the sample where the fixed rate equivalent yields can be reliably obtained by adjusting for those features.

In the CAPM framework, all information used for deriving the rate of return should be as current as possible in order to achieve an unbiased forward looking rate. It may be theoretically correct to use the on the day rate as it represents the latest available information. However, this can expose the TNSP and customers to daily volatility. For this reason, an averaging method is used to minimise volatility in observed bond yields.

The AER accepted Powerlink's proposed averaging period of 40 business days to calculate the nominal risk free rate. For this draft decision, the moving average of 40 business days for CGS yields with a 10 year maturity for the period ending 14 October 2011, results in a risk free rate of 4.32 per cent (effective annual compounding rate).[650] The AER will update the risk free rate, based on the agreed averaging period, at the time of its final decision.[651]

Powerlink proposed an averaging period of 40 business days to calculate the risk free rate and requested the dates be kept confidential.[652]

In a letter dated 24 June 2011, the AER advised Powerlink that it accepted the proposed averaging period and agreed to the request that the period be kept confidential until expiry of that period in accordance with clause 6A.6.2(c)(2)(iii) of the NER.[653] The AER also noted Powerlink's proposal to reserve its right to approach the AER again during the revenue determination process to agree to an alternative averaging period, should abnormal conditions occur in the financial markets. In response the AER stated that this matter had been considered by the Federal Court of Australia. In the judgment handed down on 8 June 2011, the Court discussed this issue and clause 6.5.2(c)(2), where it held that:[654]

> The rule does not contemplate a revision of the averaging period where agreement had earlier been reached or the AER had specified a period.

Given this statement and that the AER has agreed to the proposed averaging period, the AER considers that Powerlink will be unable to amend the period.

5.4.4 Overall rate of return

This section presents the overall rate of return resulting from the individual parameters determined by the AER, as detailed above. The AER discusses whether the overall rate of return determined for this draft decision reflects the return required by investors in a commercial enterprise with a similar nature and degree of non-diversifiable risk as that faced by Powerlink.[655]

The techniques available to the AER to assess the overall rate of return can produce a broad range of plausible rates of return. In view of this, the AER primarily relies upon detailed analysis of the input parameters in accordance with established finance practice to determine

650 CGS yields sourced from the Reserve Bank of Australia: http://www.rba.gov.au/statistics/tables/xls/f16.xls
651 The same averaging period will be used to calculate the DRP.
652 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 49.
653 AER, *Timeline for transmission determination process and decision on proposed risk free rate averaging period*, 24 June 2011, p. 2.
654 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639*, paragraph 85. The AER notes that clause 6A.6.2(c)(2) of the NER, which is the relevant provision for TNSPs, is largely identical to clause 6.5.2(c)(2).
655 NER, clause 6A.6.2(b).

the rate of return. However, this overall rate of return analysis is an important 'reasonableness check' and the AER has had regard to it.

For this draft decision, the AER has determined an indicative overall rate of return using a nominal vanilla WACC of 8.31 per cent. This is based on a cost of equity of 9.52 per cent, a cost of debt of 3.19 per cent and a gearing level of 60 per cent. The AER considers that the overall rate of return accords with the broad range of estimates inferred from market sources. The overall rate of return provides Powerlink with a reasonable opportunity to recover at least its efficient costs.[656]

The AER considered the implications of the revised parameters values for the resulting overall rate of return at the time of the WACC review.[657] This included evaluation of the return to debt and equity holders, market data on overall rates of return, the interactions between individual parameters and the implementation of the CAPM.[658] The AER concluded that the revised parameters contributed to an overall rate of return that met the relevant legislative requirements.[659]

For this draft decision, those parameters specified in the WACC review as methods (not values) can now be estimated using the indicative averaging period for this draft determination.

The AER examined broker reports, regulated asset sales and trading multiples, and these analyses support the conclusion that the overall rate of return set by the AER reflects the return required by the relevant investors in the market.[660] When assessed together, the three information sources suggest that, if anything, the regulated cost of capital may be considered high relative to observed market rates of return. However, the AER appropriately interprets this analysis with caution, in view of the imprecision inherent in the techniques.

Broker reports

Equity analysts release broker reports on those listed companies operating regulated energy networks in Australia. These reports include a range of information and analysis on the current position of these companies, as well as forecasts or predictions of future performance. However, the broker reports generally do not state the full assumptions underlying their analysis, or provide thorough explanations of how they arrive at their forecasts and predictions. As such, caution should be exercised in the interpretation of these broker reports.[661] In particular, the AER considers that the price and dividend forecasts from these reports do not constitute a sufficiently reliable basis for calculation of an overall rate of

656 NEL, clause 7A(2).

657 AER, *Final decision*, *Electricity transmission and distribution network service providers*, *Review of the weighted average cost of capital parameters*, 1 May 2009, pp. 9–49.

658 AER, *Final decision*, *Electricity transmission and distribution network service providers*, *Review of the weighted average cost of capital parameters*, 1 May 2009, pp. 9–49, 61–66, 97–101, 333–341.

659 AER, *Final decision*, *Electricity transmission and distribution network service providers*, *Review of the weighted average cost of capital parameters*, 1 May 2009, pp. ii–vi, 47–49.

660 Relevant investors are those investing in a commercial enterprise with a similar nature and degree of non-diversifiable risk as that faced by Powerlink.

661 AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, pp. 153–154 (appendix A).

return.[662] However, the broker reports do reliably report discount rates, which are equivalent to the broker's estimate of the WACC for the company.

The AER has analysed recent equity broker reports, coinciding with the most recent round of earnings announcements for these companies.[663] Only those brokers who report the WACC in nominal vanilla form or provide sufficient detail to enable conversion to this form were considered. The reports considered were from:

- Credit Suisse
- Goldman Sachs
- JP Morgan.

The companies evaluated by the broker reports are:

- APA Group
- DUET Group
- Envestra Limited
- Spark Infrastructure Group
- SP AusNet.

It is important to note that the five listed companies undertake both regulated and unregulated activities which are assessed by the brokers in aggregate. However, only the regulated activities are directly relevant to the benchmark firm. In general, the regulated activities of the firms—operation of monopoly transmission and distribution networks—are less risky than the unregulated activities they undertake in competitive markets.[664] As they are less risky, the return required on regulated activities is less than the return required by the firm as a whole. This means that the overall rate of return implied by broker reports will overstate the rate of return for the benchmark firm. Therefore, the WACC for a regulated benchmark firm should be towards the lower end of the observed range, noting the large range of broker WACCs.

The broker reports' assessment of the five regulated companies reveals an aggregate range of nominal vanilla WACCs of 7.52 per cent to 10.64 per cent. As expected, the benchmark firm's nominal vanilla WACC of 8.31 per cent falls within the lower half of that range.

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662 AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, pp. 155–158 (appendix A); and AER, *Draft decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, February 2011, pp. 257–262 (appendix C).

663 Analysis of broker reports from an earlier period is contained in AER, Final decision, Envestra Limited Access arrangement proposal for the SA gas network, 1 July 2011 – 30 June 2016, June 2011, pp. 39–40, 154–155 (appendix A).

664 More specifically, the regulated activities have less exposure to systematic risk than the unregulated activities. Under the CAPM, diversifiable risk (for both regulated and unregulated activities) requires no compensation. See AER, Final decision, Envestra Limited Access arrangement proposal for the SA gas network, 1 July 2011 – 30 June 2016, June 2011, p. 154 (appendix A).

Asset sales

When a regulated asset is sold, comparison of the market value (the sale price) with the book value (the regulated asset price) provides an insight into the WACC required by the new owners.[665] If the market value exceeds book value, this implies that the regulatory rate of return is above that required by investors, and the converse when the book value exceeds market value. However, a range of other factors may contribute to a difference between the market and book values. Therefore, caution should be exercised before inferring that the difference indicates a disparity in WACCs—particularly where the difference is small.[666] Further, such asset sales in the market are relatively infrequent.

There has been one such sale in the period since the GFC, when Envestra purchased Country Energy's NSW gas network in October 2010. The regulated assets were sold at a price 25 per cent above the regulated asset value.[667] This is a substantial difference. Similarly, sales of regulated assets across the preceding decade all occurred at substantial premiums above the regulated asset base, with market values exceeding book values by between 20 and 119 per cent.[668] The AER considers that observed premiums of this magnitude are unlikely to be entirely explained by non-WACC factors. This suggests that the regulated cost of capital has been equal to or above the actual cost of capital faced by the businesses.

Trading multiples

Comparison of the asset value implied by share prices against the regulatory asset base—often expressed as a 'trading multiple', reflecting the excess of the market value over the book value—also provides insight into the market required rate of return. As with regulated asset sales, a trading multiple above one implies that the market discount rate is below the regulated WACC. Caution needs to be exercised because factors other than a WACC disparity may cause a difference between market value and book value. Further, the assessment relies on the assumption that share prices reflect the fundamental valuation of the company.[669]

Analysis conducted by Grant Samuel in the period after the GFC shows that trading multiples for listed businesses operating regulated networks have exceeded the value of the regulatory

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665 Kevin Davis, *Cost of equity issues: A report for the AER*, January 2011, p. 17; and AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, p. 159–160 (appendix A).

666 For example, the presence of (non-regulated) growth opportunities, adoption of a financial structure that differs from the benchmark or synergies arising from economies of scale across networks. AER, *Draft decision*, *Envestra Limited Access arrangement proposal for the SA gas network, 1 July 2011 – 30 June 2016*, February 2011, p. 254 (appendix C).

667 AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, p. 160 (appendix A).

668 AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, p. 41. The source document is Grant Samuel and Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, p. 78.

669 While this is not overly contentious as a general proposition, there will be periods (for instance, in times of significant market sentiment) where prices might be misaligned.

asset base by between 15 and 81 per cent.[670] The AER considers that premiums of this magnitude are unlikely to be entirely explained by non-WACC factors. This suggests that the regulated cost of capital has been equal to or above the actual cost of capital faced by the businesses.

Other techniques

In recent decisions, the AER has also evaluated other techniques for assessing the overall rate of return.[671] In general, the AER considers that these techniques are of limited usefulness because of inherent conceptual problems.[672]

5.4.5 Expected inflation rate

The expected inflation rate is not an explicit parameter within the calculation of the WACC. However, it is used in the PTRM to forecast nominal allowed revenues and to index the RAB. It is an implicit component of the nominal risk free rate, with implications for the return on both equity and debt. The inflation forecast must be consistent with the 10 year investment horizon of the risk free rate.

For this draft decision, the AER adopts an inflation forecast of 2.62 per cent per annum because it represents the best estimate for a 10 year period.

Powerlink stated that it has adopted the AER's approach to estimate the expected inflation rate and proposed an inflation forecast of 2.50 per cent.[673] Powerlink noted that the AER's approach to determine the best estimate of expected inflation is to use an average rate by applying the RBA's short-term inflation forecasts extending out to two years and adopting the mid-point of its target inflation band of 2.5 per cent for three years.

Powerlink appears to have interpreted that the AER's approach determines an inflation forecast over a 5 year period. However, the AER's approach to determine the best estimate of inflation is to adopt an average inflation forecast over a 10 year period.[674] As a result of the measurement period being 10 years, the AER uses the RBA's short-term inflation forecasts extending out to two years and the mid-point of its target inflation band of 2.5 per cent for the remaining eight years. An implied 10 year forecast of the annual expected inflation rate is derived by averaging the individual forecasts as shown in table 5.9.

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670 More specifically, this analysis was at 30 June 2009 and 30 June 2010. AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network*, 1 July 2011 – 30 June 2016, June 2011, p. 42,. The source document is Grant Samuel and Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, p. 77.

671 Specifically, analysis based on dividend yields, relative returns to debt and equity, credit rating metrics and the Miller-Modigliani theorem. AER, *Final decision*, *Envestra Limited Access arrangement proposal for the SA gas network, 1 July 2011 – 30 June 2016*, June 2011, pp. 42–43, 153–163 (appendix A).

672 This includes techniques that produce a very wide range of results such that no meaningful conclusion can be drawn from them.

673 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 51.

674 Consistent with the 10-year term of the bond rates used in the calculation of the WACC.

Table 5.9 AER inflation forecast (per cent)

	2012 to 2013	2013 to 2014	2014 to 2015	2015 to 2016	2016 to 2017	2017 to 2018	2018 to 2019	2019 to 2020	2020 to 2021	2021 to 2022	Geometric average
Forecast inflation	3.75	2.50[a]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.62

(a) The RBA has not yet released a forecast for the financial year ending June 2014. This forecast is expected to be available and will be adopted by the AER (including any updated forecasts) at the time of the final decision. The mid-point of the RBA's target inflation band has been adopted for the purposes of this draft decision.

Source: RBA, *Statement on monetary policy*, August 2011, p. 73.

The AER considers that the estimate of expected inflation should be updated to incorporate the latest available RBA forecasts closer to the time of the final decision. Inflation forecasts can change in line with market sensitive data and regulatory practice in Australia has been to update these forecasts at the time of making a decision. The AER will update its inflation forecast based on the latest RBA forecasts for 2012-13 and 2013-14 as close as is practical to the date of the final decision.

5.5 Revisions

Revision 5.1: The AER has determined a WACC of 8.31 per cent for Powerlink as set out in table 5.1

6 Regulatory asset base

The AER is required to make a decision on Powerlink's opening regulatory asset base (RAB) at the commencement of the next regulatory control period.[675] This attachment presents the decision of the opening RAB as at 1 July 2012, and the forecast RAB during the next regulatory control period.

6.1 Draft decision

The AER's draft decision on the opening RAB as at 1 July 2012 is $6575.9 million. This value differs slightly from Powerlink's proposed roll forward of the opening RAB for the reasons discussed in this attachment.

The AER forecasts Powerlink's RAB to be $8876.6 million by 30 June 2017, which represents a 35 per cent increase in the value of the RAB during the next regulatory control period. The forecast roll forward of the RAB over the next regulatory control period differs from Powerlink's due mainly to differences in indexation, depreciation and forecast capex.

The AER's roll forward of the RAB during the current regulatory control period, establishes the opening RAB value for the start of the next regulatory control period, and is shown in table 6.1. The AER's forecast roll forward of the RAB during the next regulatory control period is shown in table 6.2.

[675] NER, clause 6A.6.1.

Table 6.1 AER's draft decision on Powerlink's RAB for the current regulatory control period ($million, nominal)

	2007-08	2008-09	2009-10	2010-11[a]	2011-12[b]
Opening RAB	3752.8	4448.1	5016.0	5429.7	5830.2
Capital expenditure[c]	693.1	640.8	460.6	429.7	812.1
CPI indexation on opening RAB	159.2	109.7	145.0	180.8	145.8
Straight-line depreciation[d]	–157.0	–182.6	–192.0	–209.9	–225.3
Closing RAB as at 30 June	4448.1	5016.0	5429.7	5830.2	6562.8
Difference between forecast and actual capex (1 July 2006 to 30 June 2007)					–33.7
Return on difference for 2006-07 capex					–17.4
Difference between forecast and actual assets under construction ($2006-07)					42.3
Return on difference (assets under construction)					21.8
Opening RAB as at 1 July 2012					6575.9

(a) Based on estimated capex. The asset base roll forward will be updated for actual capex at the time of the AER final decision.
(b) Based on estimated capex and forecast inflation. The asset base roll forward will be updated for actual CPI at the time of the AER final decision. However, the update for actual capex will be made at the next reset.
(c) As incurred, net of disposals, and adjusted for actual CPI and WACC.
(d) Adjusted for actual CPI.

Table 6.2 AER's draft decision on Powerlink's RAB for the next regulatory control period ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17
Opening RAB	6575.9	7098.3	7546.4	8046.1	8524.9
Capital expenditure[a]	563.3	510.9	576.4	552.5	435.5
Inflation indexation on opening RAB	172.3	186.0	197.7	210.8	223.4
Straight-line depreciation	–213.2	–248.7	–274.4	–284.6	–307.2
Closing RAB	7098.3	7546.4	8046.1	8524.9	8876.6

(a) As incurred, and net of disposals. In accordance with the timing assumptions of the PTRM, the capex includes a half-WACC allowance to compensate for the six-month period before capex is added to the RAB for revenue modelling purposes.

6.2 Powerlink's proposal

Powerlink proposed an opening RAB of $3753 million as at 1 July 2007. This RAB value has been used to roll forward and establish an opening RAB of $6576 million as at 1 July 2012, the start of the next regulatory control period.[676]

Powerlink used the AER's asset base roll forward model (RFM) to establish its proposed opening RAB. Powerlink's roll forward modelling included a reduction of $14.5 million to reflect the value of proceeds of assets disposed during the current regulatory control period, and has adjusted its RAB for actual CPI.

Powerlink decreased its opening RAB value by $33.8 million to reflect lower than expected net actual capex incurred during the final year of the previous regulatory control period. It has also removed an amount of $17.5 million from its opening RAB to account for the return on capital associated with this lower than forecast capex. This underspend is however more than offset by a higher than forecast cost of assets under construction (as allowed in the current revenue determination) of $42.3 million. There is also an associated increase of $21.9 million to account for the return on capital associated with this difference during the current regulatory control period.

Powerlink's proposed roll forward of its RAB during the current regulatory control period and next regulatory control period is presented in tables 6.3 and 6.4 respectively.

[676] Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 48.

Table 6.3 Powerlink's proposed RAB for the current regulatory control period ($million, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12
Opening RAB	3752.8	4448.3	5016.2	5429.8	5830.4
Capital expenditure[a]	693.3	640.8	460.6	429.7	812.1
CPI indexation on opening RAB	159.2	109.7	145.0	180.8	145.8
Straight-line depreciation[b]	–157.0	–182.6	–192.0	–209.9	–225.3
Closing RAB	4448.3	5016.2	5429.8	5830.4	6562.9
Difference between forecast and actual capex ($2006-07)					–33.8
Return on difference for 2006-07 capex					–17.5
Difference between forecast and actual assets under construction ($2006-07)					42.3
Return on difference (assets under construction)					21.9
Closing RAB as at 30 June 2012					6575.8

(a) As incurred, net of disposals, and adjusted for actual CPI and WACC.
(b) Adjusted for actual CPI.
Source: Powerlink's proposed RFM, 31 May 2011.

Table 6.4 Powerlink's RAB for the next regulatory control period ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17
Opening RAB	6575.8	7419.9	8260.3	8864.9	9490.3
Capital expenditure[a]	919.6	933.3	710.6	755.7	627.6
Inflation indexation on opening RAB	164.4	185.5	206.5	221.6	237.3
Straight-line depreciation	–239.9	–278.4	–312.5	–351.9	–373.6
Closing RAB	7419.9	8260.3	8864.9	9490.3	9981.5

(a) As incurred, and net of disposals.
Source: Powerlink's proposed RFM, 31 May 2011.

6.3 Assessment approach

The AER is required to roll forward a TNSP's RAB during the current regulatory control period to establish an opening RAB for the next regulatory control period.[677] The RAB value can be adjusted for any differences in the forecast and actual capex and disposals. It may also be adjusted to reflect any changes in the use of the assets, with only assets used in the provision of prescribed transmission services to be included in the RAB.[678]

To determine the opening RAB for a transmission determination, the AER developed an asset base RFM in accordance with the requirements of the NER.[679] A TNSP must use the RFM in preparing its revenue proposal. The RFM rolls forward the RAB from the beginning of the final year of the previous regulatory control period, through the current regulatory control period, to the beginning of the next regulatory control period. The roll forward occurs for each year by:

- adding an inflation (indexation) adjustment for the relevant year. This adjustment must be consistent with the inflation factor used in the annual indexation of the maximum allowed revenue[680]
- adding capex for the relevant year.[681] Actual capex must be used where available. However, forecasts are typically required for the final year of the regulatory control period. These forecasts are then updated for actual amounts at the next determination. The AER will check actual capex amounts against regulatory accounts data
- subtracting depreciation for the relevant year. Depreciation based on actual capex is used to roll forward the RAB[682]
- subtracting any disposals for the relevant year.[683] The AER will check these amounts against regulatory accounts data.

These annual adjustments give the closing RAB for any particular year, which then becomes the opening RAB for the following year, during the regulatory control period. Through this process the RFM rolls forward the RAB to the end of the current regulatory control period. The post-tax revenue model (PTRM) for the next regulatory control period generally adopts the same roll forward approach as the RFM, although the adjustments to the RAB are based on forecasts, rather than actual amounts.

6.4 Reasons for draft decision

6.4.1 Opening RAB as at 1 July 2012

The AER broadly accepts Powerlink's proposed opening RAB as at 1 July 2012 and has determined it to be $6575.9 million. The AER made some input changes to the RFM

677 NER, clause 11.6.12(k) and clause S6A.2.1(f).
678 NER, clause S6A.2.1(f)(8).
679 NER, clause 6A.6.1(b).
680 NER, clause 6A.6.1(e)(3).
681 NER, clause S6A.2.1(f)(4).
682 NER, clause S6A.2.1(f)(5).
683 NER, clause S6A.2.1(f)(6).

submitted by Powerlink. The main input changes relate to the retrospective application of a new asset class (transmission line refit) to the roll forward calculations during the current regulatory control period. The AER does not consider this approach to be consistent with the requirements of the NER.

The AER reviewed the actual capex amounts included in the RFM and found these to reconcile with the regulatory accounting data, although forecasts were provided for 2010-11 and 2011-12.

The AER does not accept Powerlink's retrospective application of a new asset class for transmission lines refit works (Transmission line (LE)) in the roll forward calculations. Clause 6A.6.3(b)(3) of the NER requires that the roll forward depreciation inputs for asset classes must be consistent with those determined for the same assets on a prospective basis in the transmission determination for the current regulatory control period.[684] The 'Transmission line (LE)' asset class was not approved in the transmission determination for the current regulatory control period. Therefore, this asset class should not be included for capex depreciation purposes in the roll forward of the RAB. The AER has reallocated this expenditure to the 'Transmission lines (OH)' asset class. As this expenditure is only capitalised during the final year of the current regulatory control period, the reallocation does not affect the total value of the opening RAB as at 1 July 2012.

The AER also identified an input error with the forecast inflation for 2006-07 and amended this value from 2.44 per cent to 2.32 per cent.[685] This value is consistent with that approved for 2006-07 in the earlier determination for Powerlink.[686] Powerlink also advised the AER of an input error to an asset disposal figure for 2007-08.[687] The correct value for motor vehicle asset disposal is $1.19 million instead of $0.98 million. These amendments result in a net increase of approximately $0.1 million to the opening RAB as at 1 July 2012.

As part of finalising its decision, the AER will require Powerlink to provide an update of the forecast capex for 2010-11 in the RFM with actual capex. The latest forecast capex for 2011-12 in the RFM may also be updated at that time.

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684 Specifically, the economic lives, the depreciation methodologies and depreciation rates for asset classes used to roll forward the RAB in a period must be consistent with those determined on a prospective basis in the transmission determination for that period.

685 Cell G247 in the 'Input' tab of the RFM.

686 ACCC, *Decision*, *Queensland transmission network revenue cap 2002–2006-07*, 1 November 2001, p. 17.

687 Powerlink, *Response—Request AER/047—Reconciliation of historical capex and capitalisation inputs (RAB)*, 13 October 2011, p. 2.

6.4.2 Rearrangement of Kogan Creek – Braemar line assets

The AER accepts Powerlink's proposal to include in its opening RAB for the next regulatory control period an amount of $25.8 million (as at 1 July 2012). The AER is satisfied that the proposed value of these assets is reasonable for the purposes of inclusion to the RAB.

Powerlink proposed to convert approximately 30km of transmission line which is currently unregulated (non-prescribed), to a configuration that would see those assets begin providing prescribed transmission services. The assets in question are currently owned by Powerlink. However, they have been used solely to connect the Kogan Creek power station to Powerlink's Braemar switching station, thereby providing negotiated transmission services to the owner of Kogan Creek power station.[688]

In response to emerging network constraints, Powerlink examined the possibility of utilising these existing assets in a suite of other works in the region, rather than duplicating the lines. It conducted a regulatory test consultation and concluded that the most efficient solution would be the reconfiguration of these existing assets (in addition with other capital works), and their subsequent inclusion in the RAB.

The AER reviewed Powerlink's regulatory test documentation and supporting information. It also sought the advice of an independent engineering consultant (CHC Associates) to review the engineering aspects of the proposal. For the reasons discussed below, the AER considers Powerlink's proposal to include the assets in the opening RAB satisfies the requirements of clause S6.A.2.1(f)(8)(i) of the NER. These asset costs were incurred in connection with the provision of services that are not prescribed, and will subsequently be used for the provision of prescribed transmission services.

CHC Associates examined the available documentation, as well as seeking further clarification from Powerlink on some matters. CHC Associates considered that the proposed reconfiguration of the Kogan Creek–Braemar line assets was a reasonable and expected response to the emerging network constraint. It also considered the valuation of $25.8 million proposed by Powerlink was reasonable for these assets.[689]

The AER notes that Powerlink's proposed valuation of the assets is based on the historical actual asset cost, with appropriate depreciation applied to establish the written down asset value as at 1 July 2012. The AER reviewed these calculations and considers that Powerlink's valuation of these assets is appropriate for the purposes of rolling into the opening RAB for the next regulatory control period.

The AER acknowledges commentary submitted by the Energy Consumers Group operating in Queensland which questioned the extent that the reconfigured assets would be providing prescribed transmission services to new customers, and therefore the extent to which the costs should be recovered through the RAB.[690] The Energy Consumers Group submitted that if the new user of the reconfigured assets is another generator, then the assets should not be

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688 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 47.

689 CHC Associates, *Report to the AER—Review of the conversion of Breamer–Kogan Creek line assets*, 16 September 2011, p. 8.

690 The Group, *Queensland electricity transmission revenue reset*, *Powerlink application: A response by an Energy Consumers Group operating in Queensland*, 16 August 2011, pp. 17–18.

rolled into the RAB. Instead the owner of the Kogan Creek power station should somehow be reimbursed.

The AER has examined the information provided by Powerlink and is satisfied that only the costs of those assets which will be providing prescribed transmission services have been included to the RAB. This means that connection assets, including the termination of Kogan Creek power station's connection to the Powerlink network, will be treated as negotiated transmission services. These assets are not included in the RAB. Powerlink has also confirmed this in its response to submissions made on the revenue proposal.[691] It stated that individual large loads that connect to the Powerlink network will join under negotiated or non-regulated transmission services arrangements.[692]

It is also important to note that the Kogan Creek–Braemar line in question is currently fully owned by Powerlink, not CS Energy (the owner of Kogan Creek power station). Therefore, there appears to be no basis for reimbursement of any asset costs to Kogan Creek power station by new connecting generators. Individual large customers would access the Powerlink network under negotiated services arrangements.

The AER has also reviewed the treatment of these asset costs in the PTRM and is satisfied that they have been appropriately modelled. Specifically, the AER has confirmed that the assets have been rolled into the RAB at their depreciated actual cost. They have been assigned standard asset lives for depreciation purposes over the next regulatory control period, which are consistent with new transmission line assets. This assumption represents a conservative approach to further depreciating these assets going forward.

6.4.3 Redistribution of asset class values in the RAB as at 1 July 2012

The AER accepts Powerlink's proposed redistribution of asset class values in the opening RAB as at 1 July 2012.

Powerlink proposed to align its regulatory and financial asset bases to ensure consistency going forward. It has redistributed the values in the RAB roll forward asset classes in the proportions represented in its financial assets register.[693]

The AER reviewed the proposed redistributions to check that the total RAB value as at 1 July 2012 did not increase as a result of the changes, and that the redistributions did not result in a material short-term increase in Powerlink's depreciation allowance. Powerlink's proposed redistributions, in aggregate, resulted in the asset values being allocated into asset classes with longer asset lives. All things being equal, this resulted in a slightly lower overall depreciation allowance for the next regulatory control period relative to the scenario where the redistributions had not occurred. On balance, the AER considers the proposed redistribution of the asset class values to be reasonable.

Due to the AER's changes to the RFM as discussed in section 6.4.1, the opening RAB as at 1 July 2012 was increased by approximately $0.1 million. The AER has allocated this additional amount as an input to the opening RAB as at 1 July 2012 in the PTRM.[694]

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691 Powerlink, *Response to submissions on Powerlink's 2012–17 revenue proposal*, 30 August 2011, p. 3.

692 Powerlink, *Response to submissions on Powerlink's 2012–17 revenue proposal*, 30 August 2011, p. 3.

693 Powerlink, *Revenue proposal 2012–2017*, June 2011, p. 48.

6.4.4 Forecast closing RAB as at 30 June 2017

The AER forecasts the RAB to be $8876.6 million as at 30 June 2017.

The forecast of the closing RAB as at 30 June 2017 is impacted by input changes for the next regulatory control period made by the AER to the PTRM. These changes are:

- the opening RAB as at 1 July 2012, as discussed in section 6.4.1
- the inflation forecast for the next regulatory control period, as discussed in attachment 5
- forecast capex, as discussed in attachment 3
- forecast depreciation, as discussed in attachment 7.

6.5 Revisions

Revision 6.1: The AER has determined Powerlink's opening RAB as at 1 July 2012 to be $6575.9 million as set out in table 6.1.

Revision 6.2: The AER has determined Powerlink's forecast opening RAB for each year of the next regulatory control period as set out in table 6.2.

[694] For simplicity, given the magnitude of the amount involved, the AER has allocated the amount of $0.12 million wholly into the 'Transmission lines (OH)' asset class.

7 Depreciation

As part of making a determination on the annual building block revenue requirement for a TNSP, the AER is required to make a decision on the return of capital (or depreciation).[695] Regulatory depreciation is used to model the nominal asset values over the regulatory control period and the depreciation allowance in the annual building block revenue requirement. This attachment sets out the annual allowances for regulatory depreciation—that is, the sum of the straight-line depreciation (negative) and the annual inflation indexation (positive) on the regulatory asset base (RAB). The attachment also analyses Powerlink's proposed depreciation schedule, including an assessment of the standard asset lives and remaining asset lives used for depreciation purposes over the next regulatory control period.

7.1 Draft decision

The AER does not accept Powerlink's proposed regulatory depreciation allowance of $541.0 million ($nominal) for the next regulatory control period. The AER's adjustments to Powerlink's proposed opening RAB, forecast capex, and forecast inflation impact the forecast regulatory depreciation allowance under clause 6A.6.3(a)(1) of the NER.

The AER accepts Powerlink's proposed standard asset lives for asset classes which are consistent with those used in the current regulatory control period. The AER accepts Powerlink's proposed standard asset life of 15 years assigned to a new asset class of 'Transmission lines (LE)' for life extension or refit works.[696] However, the AER considers that this standard asset life is only appropriate for capex associated with surface preparation and painting works allocated to the new asset class. The AER requires other capex that results in a significant proportion of assets that have longer lives to be reallocated to the existing asset class of 'Transmission Lines (OH-inc wood poles)'.

The AER does not accept Powerlink's proposed remaining asset lives. The AER considers the proposed calculation of remaining asset lives using financial accounting data does not depreciate assets over their economic lives consistent with Powerlink's RAB. The AER has replaced Powerlink's proposed remaining asset lives with those calculated under a weighted average approach. The AER's adjustments result in a regulatory depreciation allowance of $338.0 million ($nominal) (a 37.5 per cent reduction) as shown in table 7.1.

695 NER, clause 6A.5.4(a)(3).

696 Powerlink refers to the asset class, Transmission lines (LE) as transmission line refit or life extension). To maintain consistency with the asset classification as per Powerlink's proposed PTRM, the AER has referred to the transmission line refit/life extension asset class as Transmission line (LE) throughout this attachment.

Table 7.1 AER's draft decision on Powerlink's depreciation allowance ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Straight-line depreciation	213.2	248.7	274.4	284.6	307.2	1328.1
Less: indexation on opening RAB	172.3	186.0	197.7	210.8	223.4	990.1
Regulatory depreciation	40.9	62.8	76.7	73.8	83.8	338.0

Source: AER analysis.

7.2 Powerlink's proposal

Powerlink proposed a forecast regulatory depreciation allowance of $541.0 million ($nominal) over the forthcoming regulatory control period as set out in table 7.2. To calculate the depreciation allowance Powerlink proposed:

- to use the straight-line depreciation methodology employed in the AER's post-tax revenue model (PTRM)
- to depreciate new assets (capex) according to the proposed standard asset lives for each asset class contained in table 10.1 of its proposal[697]
- to depreciate existing assets based on the values determined in the AER's roll forward model (RFM) over their remaining asset lives, with adjustments to align the asset values in the RAB with Powerlink's financial asset register.

Powerlink has proposed to use the same standard asset lives assigned to the asset classes from the current regulatory control period. In the forthcoming regulatory control period Powerlink proposed a new asset class of 'Transmission line (LE)'. Powerlink stated that previously transmission lines that underwent a refit were added to the 'Transmission line (OH-inc wood poles)' asset class, which has a standard asset life of 50 years. Powerlink did not consider a standard asset life of 50 years to be reflective of assets which have undergone a refit, whereby the underlying asset may be 45 years of age. Powerlink therefore proposed a standard asset life of 15 years be applied to forecast capex involving transmission lines which will undergo refit over the next regulatory control period. The proposed standard asset lives and remaining asset lives in Powerlink's revenue proposal are shown in table 7.3.

[697] Powerlink, *Regulatory proposal*, 31 May 2011, p. 107.

Table 7.2 Powerlink's proposed depreciation allowance ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Straight-line depreciation	239.9	278.4	312.5	351.9	373.6	1556.3
Less: indexation on opening RAB	164.4	185.5	206.5	221.6	237.3	1015.3
Regulatory depreciation	75.5	92.9	106.0	130.3	136.4	541.0

Source: Powerlink, *Regulatory proposal*, 31 May 2011, PTRM.

7.3 Assessment approach

The AER is required to determine the regulatory depreciation allowance as a part of a TNSP's annual building block revenue requirement.[698] The AER's calculation of Powerlink's regulatory depreciation building block is an output of the PTRM and depends on several components. The calculation of depreciation in each year is governed by the value of assets included in the RAB at the beginning of the regulatory year and the depreciation schedules. The AER's standard approach to calculating depreciation is to employ the straight-line method as set out in the PTRM. The AER considers that the straight-line method of depreciation satisfies the NER requirements in clause 6A.6.3(b). It provides an expenditure profile that reflects the nature of the assets over their economic life.[699] Regulatory practice has been to assign a standard asset life to each category of assets that represents the economic or technical life of the asset or class of assets. The AER must consider if the proposed depreciation schedules conform to the following requirements:

- the schedules depreciate using a profile that reflects the nature of the assets or category of assets over the economic life of that asset or category of assets.[700]
- the sum of the real value of the depreciation that is attributable to any asset of category of assets must be equivalent to the value at which that asset or category of assets was first included in the RAB for the relevant transmission system.[701]
- the proposed economic life of relevant assets, depreciation method and rates used to calculate the depreciation schedules for the current regulatory control period must be consistent with those approved in the previous transmission determination.[702]

To the extent that a TNSP's revenue proposal does not comply with the above requirements then the AER must determine the depreciation schedules for the purposes of calculating the depreciation for each regulatory year.[703]

The allowance for regulatory depreciation is an output of the PTRM. To determine the reasonableness of Powerlink's depreciation allowance the AER is required to undertake analysis of Powerlink's proposed inputs to the PTRM, such as:

698 NER, clause 6A.5.4(a)(3).
699 NER, clause 6A.6.3(b)(1).
700 NER, clause 6A.6.3(b)(1).
701 NER, clause 6A.6.3(b)(2).
702 NER, clause 6A.6.3(b)(3).
703 NER, clause 6A.6.3(a)(2)(ii).

- existing assets (opening RAB) and remaining asset life for each asset class
- new assets (capex) and standard asset life for each asset class.

The PTRM inputs include a remaining asset life for each asset class, which is used to calculate the depreciation of the opening RAB as at 1 July 2012. The AER's preferred method to determine the remaining asset lives is the weighted average method. The AER considers the weighted average method provides a better reflection of the mix of assets within an asset class and the economic life of the asset class, as required under clause 6A.6.3(b)(1) of the NER.[704] However, the AER recognises that a variety of methods can be employed to calculate the remaining asset lives which also satisfy this clause. Based on the considerations above, the AER is able to determine the reasonableness of Powerlink's proposed depreciation schedule and regulatory depreciation allowance under clause 6A.6.3(b) of the NER.

7.4 Reasons for draft decision

7.4.1 Regulatory depreciation allowance

The AER's draft decision on Powerlink's regulatory depreciation allowance is $338.0 million ($nominal). This represents a reduction of $203.1 million ($nominal) or 37.5 per cent of Powerlink's proposal.

The AER accepts Powerlink's proposal to use the straight-line method to calculate the regulatory depreciation allowance as set out in the PTRM. However, the AER does not accept Powerlink's proposed regulatory depreciation allowance of $541.0 million ($nominal) for the next regulatory control period.[705] This is because the AER's determinations regarding other components of Powerlink's revenue proposal impact the proposed regulatory depreciation allowance. These are discussed in other attachments and include:

- forecast capex (attachment 3)
- forecast inflation (attachment 5)
- the opening RAB (attachment 6).

This attachment sets out the AER's consideration of specific matters that impact on the estimate of regulatory depreciation over the next regulatory control period. These include the standard asset lives for the purposes of depreciating forecast capex, the allocation of capex to the proposed new asset class of 'Transmission line (LE)', and remaining asset lives for the purposes of depreciating existing assets in the opening RAB.

7.4.2 Standard asset lives

The AER accepts Powerlink's proposed standard asset lives.

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704 AER, *Explanatory statement*, *Proposed amendment*, *Electricity transmission network service providers roll forward model*, August 2010, p. 5.

705 NER, clauses 6A.6.3(a)(1) and 6A.6.3(b)(1).

Powerlink proposed asset classes with standard asset lives that are consistent with the AER's revenue cap decision for the current regulatory control period.[706] The AER reviewed Powerlink's standard asset lives and confirms they are consistent with those approved by the AER for regulatory depreciation purposes in the current regulatory control period. Powerlink also proposed a new asset class of 'Transmission line (LE)' with a standard asset life of 15 years. The AER considers the standard asset life is appropriate, but only in relation to the allocation of capex associated with surface preparation and painting works. The AER's consideration of Powerlink's allocation of capex to the 'Transmission line (LE)' asset class is discussed further in 7.4.3.

7.4.3 Allocation of capex to 'Transmission line (LE)' asset class

The AER does not accept Powerlink's proposed allocation of capex to the new asset class of 'Transmission lines (LE)'.

Powerlink proposed a new asset class of 'Transmission line (LE)' with a standard asset life of 15 years. Powerlink's responses to the AER's enquiries stated that the proposed standard asset life of 15 years is reflective of the expected average service life of anti-corrosive paint. The AER notes that painting and surface preparation forms a portion of the proposed refit works associated with the expenditure allocated to the 'Transmission lines (LE)' asset class.[707]

The AER considers 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. The Energy Consumers Group operating in Queensland submitted concerns that Powerlink's proposed new asset class would lead to the assignment of a standard asset life of 15 years to transmission lines subject to refit work.[708] The AER considers that capex associated with assets that have longer standard asset lives should not be allocated to this asset class for depreciation purposes.

Based upon further information Powerlink provided, the AER's analysis indicates that surface preparation and painting expenditure contributes approximately 20 per cent of the value of Powerlink's proposed capex allocated to the 'Transmission lines (LE)' asset class. 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 have much longer lives. The AER considers these assets that have longer lives are more consistent with the existing 'Transmission lines (OH-inc wood poles)' asset class that is assigned a standard asset life of 50 years. Therefore, the AER does not accept the standard asset life of 15 years reflects the nature and economic life of the assets that have longer lives under clause 6A.6.3(b)(1) of the NER.

The AER has determined the following adjustments to the proposed allocation of capex to the 'Transmission lines (LE)' asset class are required over the next regulatory control period:

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706 Powerlink, *Regulatory proposal*, 31 May 2011, p. 106.

707 Powerlink, *email response to request AER/038—Transmission line refit asset class*, 28 September 2011, p. 3.<confidential>

708 The Energy consumer group, *Queensland electricity transmission revenue reset*, *Powerlink application—A response*, August 2011, p. 25.

- The amount of capex allocated to the 'Transmission lines (LE)' asset class in each year of the next regulatory control period is to be reduced by the proportion of capex associated with assets that have longer lives.

- The amount of the capex associated with assets that have longer lives, previously allocated to the 'Transmission lines (LE)' asset class is to be reallocated to the 'Transmission lines (OH-inc wood poles)' asset class in each year of the next regulatory control period.

The AER considers these adjustments recognise the need to depreciate assets over an expected economic life that reflects the nature of the assets under clause 6A.6.3(b)(1) of the NER. In this case, the adjustment recognises the shorter expected asset life of capex associated with surface preparation and painting works. It also depreciates this capex over the appropriate standard asset life of 15 years. All things being equal, the effect of this change is to reduce Powerlink's regulatory depreciation allowance.

7.4.4 Remaining asset lives

The AER does not accept Powerlink's proposed remaining asset lives. The AER considers Powerlink's approach to calculating the remaining asset lives results in a depreciation profile that does not reflect the economic life of assets under clause 6A.6.3(b)(1) of the NER. The AER has calculated remaining asset lives using a weighted average approach for the purposes of determining depreciation of existing assets.

Powerlink stated that the proposed remaining asset lives have been calculated from the financial accounting asset register. Powerlink's methodology to calculate the remaining asset life for each asset class is described as follows:

- Calculate the remaining asset life from the financial asset register as at 30 June 2010 by dividing the net book value (NBV) by the following year's depreciation.

- The financial NBV and financial asset life details are rolled forward using forecast capex for the years 2010-11 and 2011-12.

- The remaining asset life is calculated from the forecast financial NBV at 30 June 2012 and the forecast depreciation in the year 2012-13.[709]

The AER requested further details about the method Powerlink used to calculate the proposed remaining lives. Powerlink advised the proposed remaining assets lives are based upon financial accounting data.[710] The 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 represents a disconnection between:

- the value of the assets contained within the RAB and roll forward over the current regulatory control period

- the rate at which these assets are depreciated from 1 July 2012.

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709 Powerlink, *Regulatory proposal*, 31 May 2011, pp. 107–108.

710 Powerlink, *Response to request AER/046—Remaining asset lives*, 20 October 2011, p. 1.<confidential>

The AER considers that the use of financial accounting values in the calculation of remaining asset lives are not representative of Powerlink's RAB. The inconsistency in asset values results in remaining asset lives and rates of depreciation which are not representative of the standard asset life of the asset at the time of its inclusion in the RAB. For example, the asset class of 'Transmission lines (OH-inc wood poles)' has an opening RAB value of $2406 million as at 1 July 2010. The value corresponding to the same asset class in Powerlink's modelling of remaining asset lives based upon its financial asset register is $2519 million as at 1 July 2010. Therefore, the AER does not accept Powerlink's approach results in a depreciation profile that reflects the nature of the asset classes over the economic life of the assets classes under clause 6A.6.3(b)(1) of the NER.

The NER requires the AER to determine the depreciation schedule in the event the proposed schedules do not conform to clause 6A.6.3(b) of the NER. The AER employed its preferred weighted average approach in the RFM to calculate Powerlink's remaining asset lives in determining the depreciation schedules.[711] The AER considers the weighted average approach provides a better reflection of the mix of assets within an asset class and the economic life of the asset class, as required under clause 6A.6.3(b)(1) of the NER.[712] The AER's remaining asset lives using the weighted average approach are as shown in table 7.3.

The AER notes that at the time of this draft decision the roll forward of the RAB includes forecast capex for 2010-11 and 2011-12. These capex figures will be updated for the final decision. Therefore, the AER's final decision will require a further recalculation of Powerlink's remaining asset lives to reflect the updated opening RAB.

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711 The weighted average method involves weighting within an asset class, the remaining life of each capital stream by the closing capital value of that capital stream as a proportion of the total closing capital value of the asset class.[711] The resulting individual values for each capital stream are then added together to obtain the overall weighted average remaining life of the asset class. A worked example is included in the 'Asset lives roll forward' worksheet of the AER's transmission RFM. See AER, Final decision, Amendment to electricity transmission network service providers roll forward model, December 2010, p. 7 and AER, Explanatory statement, Proposed amendment, Electricity transmission network service providers roll forward model, August 2010, p. 5.

712 AER, *Explanatory statement*, *Proposed amendment*, *Electricity transmission network service providers roll forward model*, August 2010, p. 5.

Table 7.3 Powerlink's proposed standard and remaining asset lives and the AER's draft decision (years)

Asset class	Standard asset life	Powerlink's proposed remaining asset life	AER's weighted average remaining asset life
Transmission lines (OH—inc. wood poles)	50	30.3	35.1
Transmission lines (UG)	45	30.2	28.4
Transmission lines (LE)	15	n/a	n/a
Substations primary plant	40	24.9	28.6
Substations secondary systems	15	8.4	9.2
Communications other assets	15	9.2	9.8
Communications—civil works	40	18.4	24.2
Network switching centres	12	10.3	9.4
Land	n/a	n/a	n/a
Easements	n/a	n/a	n/a
Commercial buildings	40	27.3	33.1
Computer equipment	5	3.7	3.2
Office furniture and miscellaneous	7	1.8	3.6
Office machines	7	2.1	4.5
Vehicles	7	5.0	5.9
Moveable plant	7	4.3	5.1
Insurance spares	n/a	n/a	n/a
Equity raising costs	43	39.0	39.0

Source: Powerlink, *Regulatory proposal*, 31 May 2011, *PTRM*; AER analysis.

7.5 Revisions

The AER requires the following revisions to Powerlink's proposal in relation to its forecast depreciation allowance.

Revision 7.1: The AER has determined Powerlink's forecast regulatory depreciation allowance to be $338.0 million ($nominal) over the next regulatory period as set out in table 7.1.

Revision 7.2: The AER has determined Powerlink's remaining asset lives as at the beginning of the next regulatory control to be those set out in table 7.3.

8 Corporate income taxation

As part of making a determination on the annual building block revenue requirement for a TNSP, the AER is required to make a decision on the estimated cost of corporate income tax.[713] This attachment sets out the AER's assessment of Powerlink's proposed corporate income tax liabilities for the next regulatory control period. Under a post–tax framework, a corporate income tax allowance is calculated as part of the building blocks assessment. The post–tax revenue model (PTRM) is used to calculate this allowance.

8.1 Draft decision

The AER does not accept Powerlink's proposed estimated cost of corporate income tax allowance of $124.1 million ($nominal) for the next regulatory control period. The AER's adjustments to other building blocks including the proposed return on capital and forecast opex also impact the estimated corporate income tax allowance under clause 6A.6.4 of the NER.

The AER accepts Powerlink's proposed method to establish the tax asset base (TAB) and the resulting opening value as at 1 July 2012. The AER accepts Powerlink's proposed standard tax asset lives with the exception of the standard tax asset life for equity raising costs. The AER has determined a standard tax asset life of 5 years for equity raising costs. The AER also accepts Powerlink's proposed standard tax asset life of 15 years assigned to a new asset class of 'Transmission lines (LE)' for life extension or refit works.[714] However, the AER considers that this standard asset life is only appropriate for capex associated with surface preparation and painting works allocated to the new asset class. The AER requires capex associated with longer asset lives be reallocated to the existing asset class of 'Transmission Lines (OH—inc wood poles)'.

The AER does 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 rejected Powerlink's method to calculate the remaining asset lives for the opening RAB. The AER has applied a weighted average approach to determine revised remaining tax asset lives for Powerlink.

The AER's adjustments result in an estimated cost of corporate income tax allowance of $88.4 million (nominal), as shown in table 8.1. Based on the approach to modelling the cash flows in the PTRM, the AER has derived an effective tax rate of 20.75 per cent for this draft decision.

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713 NER clause, 6A.5.4(a)(4).

714 Powerlink refers to the asset class, Transmission lines (LE) as transmission line refit or life extension). To maintain consistency with the asset classification as per Powerlink's proposed PTRM, the AER has referred to the transmission line refit/life extension asset class as Transmission line (LE) throughout this attachment.

Table 8.1 AER's draft decision on corporate income tax allowance for Powerlink ($million, nominal)

	2012-13	2013-14	2014- 15	2015-16	2016-17	Total
Tax payable	43.0	45.5	52.3	53.5	58.3	252.6
Less: value of imputation credits	27.9	29.6	34.0	34.8	37.9	164.2
Net corporate income tax allowance	15.0	15.9	18.3	18.7	20.4	88.4

Note: Totals may not add up due to rounding.
Source: AER analysis.

8.2 Powerlink's proposal

Powerlink proposed a corporate income tax allowance of $124.1 million ($nominal) over the next regulatory control period as set out in table 8.2.[715] To calculate the corporate income tax allowance Powerlink has used the AER's PTRM. The PTRM determines the notional taxable income and tax payable based on benchmark cash flows—that is, benchmark gearing. It also takes into account the deductions for tax depreciation calculated from the TAB.

Powerlink's TAB as at 1 July 2007 is rolled forward based on the standard tax asset lives and remaining asset lives approved in the 2007 determination for the current regulatory period. Powerlink has adjusted the opening TAB values for each asset class to align with the asset values in its financial asset register. Powerlink proposed an alternative method to calculate the remaining tax asset lives. It proposed the same remaining asset lives apply for both the RAB and TAB. The standard tax asset lives and remaining tax asset lives for each asset class as at 1 July 2012 are shown in table 8.2.

Table 8.2 Powerlink's proposed corporate income tax allowance ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Tax payable	57.5	63.3	72.4	78.1	83.2	354.6
Less: value of imputation credits	37.4	41.1	47.1	50.8	54.1	230.5
Net corporate income tax allowance	20.1	22.2	25.3	27.4	29.1	124.1

Source: Powerlink, *Regulatory proposal*, 31 May 2011, p. 52.

8.3 Assessment approach

The AER is required to estimate the cost of corporate income tax for each year of the next regulatory control period for the TNSP under clause 6A.6.4(a) of the NER. This involves determining the estimate of the taxable income that would be earned by a benchmark efficient TNSP determined through the PTRM. The statutory income tax rate is then applied to the estimated taxable income to arrive at a notional amount of tax payable. The AER then applies

[715] Powerlink, *Regulatory proposal*, 31 May 2011, p.52.

a discount to that notional amount of tax payable to account for the assumed utilisation of imputation credits (gamma). The final estimate of tax payable net of assumed utilised imputation credits is then included as a separate building block in determining the TNSP's annual building block revenue requirement.

Using the PTRM, the AER has modelled Powerlink's benchmark corporate income tax liability during the next regulatory control period based on the tax depreciation and cash flow allowances provided in this draft decision. The amount of tax payable is estimated using the benchmark 60 per cent gearing, rather than Powerlink's actual gearing, and a statutory company income tax rate of 30 per cent. To estimate the corporate income tax allowance, the AER requires a TAB to determine the depreciation for tax purposes. The tax depreciation is offset against the business's forecast income to estimate the taxable income. The value of gamma of 0.65 has been applied when calculating the net tax allowance.[716]

Under the post–tax nominal framework, the application of the statutory tax rate generates an effective tax. The effective tax rate is defined as the difference between pre–tax and post–tax rates of return. It is sensitive to several factors, including the corporate tax rate and the range of available tax concessions that serve to lessen tax liabilities or defer them to a later period.

8.4 Reasons for draft decision

8.4.1 Corporate income tax allowance

The AER does not accept Powerlink's proposed corporate income tax allowance of $124.1 million ($nominal) for the next regulatory control period. The AER's determinations regarding other components of Powerlink's revenue proposal have a consequential impact on the corporate income tax allowance. The AER's determinations on these other components are discussed in the following attachments:

- the roll forward of the opening RAB (attachment 6)
- forecast capex (attachment 3)
- forecast opex (attachment 4)
- cost of capital (attachment 5).

This attachment sets out the AER's consideration of specific matters that impact on the estimate of depreciation for tax purposes over the next regulatory control period. These include the opening TAB as at 1 July 2012, standard tax asset lives, the allocation of capex to the proposed new asset class of 'Transmission line (LE)', and remaining tax asset lives.

8.4.2 Opening TAB as at 1 July 2012

The AER accepts Powerlink's opening TAB value as at 1 July 2012 of $4487 million, subject to some input adjustments to the RFM. The AER reviewed Powerlink's roll forward of the opening TAB as at 1 July 2012. The AER considers some expenditure input changes are

[716] The value of gamma is also discussed in attachment 5 regarding the cost of capital.

required to the roll forward of the TAB. These changes correspond with the changes made to the roll forward of the RAB contained in the RFM submitted by Powerlink.[717] The AER's changes to the roll forward of the TAB have a small impact on the value of Powerlink's proposed opening TAB as at 1 July 2012.[718]

The AER reviewed the actual capex amounts included in the RFM and found these to reconcile with the regulatory accounts data, although forecasts were provided for 2010-11 and 2011-12. As part of finalising its decision, the AER will require Powerlink to provide an update of the forecast capex for 2010-11 in the RFM with actual capex. The latest forecast capex for 2011-12 in the RFM may also be updated at that time.

The AER accepts 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.[719] It has redistributed the opening values in the TAB roll forward asset classes in the proportions represented in its financial assets register.

The AER reviewed the proposed redistributions to check:

- the total TAB value as at 1 July 2012 did not increase as a result of the reallocation of assets
- that it did not result in a material short-term increase in Powerlink's estimated cost of corporate tax allowance.

The AER considers Powerlink's proposed redistributions, in aggregate, resulted in the asset values being allocated into asset classes with longer asset lives. All things being equal, this resulted in a slightly higher estimated cost of corporate tax for the next regulatory control period relative to the scenario where the redistributions had not occurred. On balance, the AER considers the impact of the proposed redistribution of the asset class values on the estimated cost of corporate tax to be immaterial. Consistent with the consideration of the opening RAB, the AER accepts Powerlink's proposed redistribution in respect of the opening TAB.

8.4.3 Standard tax asset lives

The AER accepts Powerlink's proposed standard tax asset lives, with the exception of the standard tax asset life for equity raising costs.

Powerlink proposed asset classes with standard tax asset lives that are consistent with the AER's revenue cap decision for the current regulatory control period. The AER reviewed Powerlink's standard asset lives and confirms they are consistent with those approved by the AER for the purposes of tax depreciation in the current regulatory control period. The AER considers the proposed standard tax asset lives of Powerlink's asset classes are broadly

[717] The AER's consideration of these changes is discussed further in attachment 6 regarding the opening RAB.

[718] The input changes result in the total value of the TAB as at 1 July 2012 to be \$4486.9 million instead of \$4487.0 million.

[719] Powerlink also proposed similar alignment in respect of its opening RAB by redistributing the asset class values. The AER's consideration of this is discussed further in attachment 6 regarding the opening RAB.

consistent with those prescribed by the Commissioner for taxation in tax ruling 2011/2, with the exception of equity raising costs.[720]

The AER does not accept Powerlink's proposed tax standard life for equity raising costs. Powerlink proposed a tax standard life of 43 years for the equity raising costs asset class. The AER notes that an ATO determination requires equity raising costs to have a tax standard life of 5 years.[721] The AER will therefore apply a tax standard life of 5 years for equity raising costs in the PTRM for tax purposes.

The AER considers these proposed standard tax asset lives, including the change to the equity raising cost standard tax asset life, provide for an estimate of depreciation for tax purposes of a benchmark efficient TNSP.[722]

Powerlink also proposed a new asset class of 'Transmission line (LE)' with a standard asset life of 15 years. The AER considers the standard asset life is appropriate, but only in relation to the allocation of capex associated with surface preparation and painting works. The AER's consideration of Powerlink's allocation of capex to the 'Transmission line (LE)' asset class is discussed further in section 8.4.4.

8.4.4 Allocation of capex to 'Transmission line (LE)' asset class

The AER does not accept Powerlink's proposed allocation of capex to the new asset class of 'Transmission lines (LE)'.

Powerlink proposed a new asset class of 'Transmission lines (LE)' for life extension or refit works. The AER considers the standard tax asset life of 15 years is appropriate for capex associated with surface preparation and painting works allocated to that asset class. However, the AER considers the other capex allocated to this new asset class includes a significant proportion of assets that have an expected standard tax asset life greater than 15 years. Therefore, the capex associated with such assets that have longer lives should be reallocated to the existing asset class of 'Transmission Lines (OH-inc wood poles)'.[723] All things being equal, the effect of this change is to reduce the estimate of Powerlink's depreciation for tax purposes.

8.4.5 Remaining tax asset lives

The AER does not accept Powerlink's method for calculating the remaining tax assets lives as at 1 July 2012. In determining revised remaining tax asset lives, the AER has applied a weighted average approach.

Powerlink proposed the same set of remaining asset lives apply for both regulatory (opening RAB as at 1 July 2012) and tax (opening TAB as at 1 July 2012) depreciation purposes. The AER does not accept Powerlink's proposed remaining asset lives. The AER considers that

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720 ATO, *Taxation ruling*, *TR2011/2*, *Income tax: effective life of depreciating assets(applicable from 1 July 2011)*, July 2011, p. 121.< http://law.ato.gov.au/atolaw/view.htm?docid=%22TXR/TR20112/NAT/ATO/00001">

721 ATO, *Guide to depreciating assets 2001-02: Business» related costs—section 40-880 deductions*, ATO reference; NO NAT7170.

722 NER, clause 6A.6.4(a)(2).

723 The AER's consideration of this matter is discussed further in attachment 7 regarding regulatory depreciation.

Powerlink's method used 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 NER.[724] Accordingly, the AER does not consider Powerlink's proposed remaining asset lives should be used for tax depreciation purposes.[725]

The AER's RFM employs a weighted average method to calculate remaining tax asset lives for a TNSP.[726] The AER considers 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 result 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 clause 6A.6.4(a)(2) of the NER.

The AER's remaining tax asset lives using the weighted average approach are as shown in table 8.3. The AER notes that at the time of this draft decision the roll forward of the TAB includes forecast capex for 2010-11 and 2011-12. These capex figures will be updated for the final decision. Therefore, the AER's final decision will require a further recalculation of Powerlink's remaining tax asset lives to reflect the updated opening TAB.

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724 NER, clause 6A.6.3(b)(1).

725 The AER's consideration of this matter is discussed further in attachment 7 regarding regulatory depreciation.

726 The weighted average method involves weighting within an asset class, the remaining life of each capital stream by the closing capital value of that capital stream as a proportion of the total closing capital value of the asset class. The resulting individual values for each capital stream are then added together to obtain the overall weighted average remaining life of the asset class. A worked example is included in the 'Asset lives roll forward' worksheet of the AER's transmission RFM. See AER, Final decision, Amendment to electricity transmission network service providers roll forward model, December 2010, p. 7 and AER, Explanatory statement, Proposed amendment, Electricity transmission network service providers roll forward model, August 2010, p. 5.

Table 8.3 Powerlink's proposed standard and remaining tax asset lives and the AER's draft decision (year)

Asset class	Tax standard asset life	Powerlink's proposed remaining tax asset life	AER's weighted average tax remaining asset life
Transmission lines (OH—inc. wood poles)	47.5	30.3	36.0
Transmission lines (UG)	45.0	30.2	34.6
Transmission lines (LE)	15.0	15.0	0.0
Substations primary plant	40.0	24.9	30.4
Substations secondary systems	12.5	8.4	9.3
Communicating other assets	12.5	9.2	9.9
Communications—civil works	40.0	18.4	25.6
Network switching centres	12.0	10.3	10.7
Land	n/a	n/a	n/a
Easements	n/a	n/a	n/a
Commercial buildings	40.0	33.2	33.3
Computer equipment	2.5	2.2	2.0
Office furniture & miscellaneous	15.0	4.1	11.5
Office machines	10.0	4.4	7.4
Vehicles	7.0	4.8	6.0
Moveable plant	5.0	4.4	3.5
Insurance spares	n/a	n/a	n/a
Equity raising costs	5.0	39.0	39.0

Source: Powerlink, *Regulatory proposal*, 31 May 2011, PTRM; AER analysis.

8.5 Revisions

The AER requires the following revisions to Powerlink's proposal in relation to its forecast corporate income tax allowance.

Revision 8.1: The AER has determined Powerlink's estimated cost of corporate tax to be $88.4 million ($nominal) over the next regulatory period as set out in table 8.1.

Revision 8.2: The AER has determined Powerlink's standard and remaining tax asset lives as at the beginning of the next regulatory control to be those set out in table 8.3.

9 Maximum allowed revenue

This attachment sets out the AER's draft decision for Powerlink for the provision of prescribed transmission services during the next regulatory control period on the following matters:[727]

- the annual building block revenue requirement
- the X factor
- the annual expected maximum allowed revenue (MAR)
- the estimated total revenue cap, which is the sum of the annual expected MAR.

The AER determines Powerlink's annual building block revenue requirement using a building block approach. It determines the X factors by smoothing the annual building block revenue requirement over the regulatory control period. The X factor is used in the CPI–X methodology to determine the annual expected MAR (smoothed) for each regulatory year of the next regulatory control period.

9.1 Draft decision

The AER's determinations regarding Powerlink's proposed building block components have a consequential impact on the annual building block revenue requirement. The AER has recalculated the X factor and the annual expected MAR (smoothed) to reflect the AER's draft decision on Powerlink's annual building block revenue requirement.

For this draft decision, the AER has approved an estimated total revenue cap of $4562.8 million ($nominal) for Powerlink for the next regulatory control period.[728] The AER approved X factor is –2.33 per cent per annum from 2013-14 to 2016-17.[729]

Table 9.1 sets out the AER's draft decision on Powerlink's annual building block revenue requirement, the X factor, the annual expected MAR and the estimated total revenue cap for the next regulatory control period.

727 NER, clause 6A.4.2(a)(1)—(3) and clause 6A.6.8.

728 The estimated total revenue cap is equal to the total annual expected MAR.

729 Consistent with Powerlink's proposal, the AER has determined a constant X factor to apply over the next regulatory control period.

Table 9.1 AER's draft decision on Powerlink's annual building block revenue requirement, annual expected MAR, estimated total revenue cap and X factor ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Return on capital	546.7	590.2	627.4	669.0	708.8	3142.0
Regulatory depreciation[a]	40.9	62.8	76.7	73.8	83.8	338.0
Operating expenditure	184.5	193.1	201.1	211.3	222.3	1012.4
Efficiency benefit sharing scheme (carryover amounts)	–4.2	–0.4	–3.2	3.9	0.0	–4.0
Net tax allowance	15.0	15.9	18.3	18.7	20.4	88.4
Annual building block revenue requirement (unsmoothed)	783.0	861.5	920.3	976.7	1035.3	4576.8
Annual expected MAR (smoothed)[b]	825.5	866.9	910.4	956.0	1004.0	4562.8
X factor (%)	n/a	–2.33	–2.33	–2.33	–2.33	n/a

(a) Regulatory depreciation is straight-line depreciation net of the inflation indexation on the opening RAB.
(b) The estimated total revenue cap is equal to the total annual expected MAR.

9.2 Powerlink's proposal

Powerlink proposed a total expected revenue cap of $5954 million (nominal) for the next regulatory control period. It proposed an X factor of –8.06 per cent per annum from 2013-14 to 2016-17.[730] Table 9.2 sets out Powerlink's proposed annual building block revenue requirement, annual expected MAR and X factor for the next regulatory control period.

730 Powerlink, *Revenue proposal 2013–2017*, May 2011, pp. 112–113.

Table 9.2 Powerlink's proposed annual building block revenue requirement, annual expected MAR and X factor ($million, nominal)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Return on capital	677.6	764.5	851.1	913.4	977.9	4184.5
Regulatory depreciation	75.5	92.9	106.0	130.3	136.4	541.0
Total operating expenditure	187.4	200.4	215.5	237.1	253.9	1094.2
Net tax allowance	20.1	22.2	25.3	27.4	29.1	124.1
Annual building block revenue requirement (unsmoothed)	960.6	1080.0	1197.9	1308.2	1397.3	5944.0
Annual expected MAR (smoothed)	960.6	1064.0	1178.5	1305.3	1445.7	5954.0
X factors (per cent)	n/a	–8.06	–8.06	–8.06	–8.06	n/a

Source: Powerlink, *Regulatory proposal 2013–2017*, May 2011, pp. 112–113.

9.3 Assessment approach

The AER must make a decision on Powerlink's total revenue cap for the next regulatory control period and the MAR for each regulatory year of the next regulatory control period.[731] In making its decision, the AER adopts a building block approach.[732] Under this approach the AER determines the value of the building block components that make up the annual building block revenue requirement for each regulatory year. These components include:

- the return on capital, which is a function of the rate of return and the opening RAB (including the addition of capital expenditure)
- the return of capital (regulatory depreciation), which is based on straight-line depreciation net of the inflation indexation on the opening RAB
- operating expenditure
- the estimated cost of corporate income tax
- other amounts associated with any relevant schemes or carried over from a previous regulatory control period.

The AER developed the post-tax revenue model (PTRM), which brings together the various building block components and calculates the annual building block revenue requirement for each year of the regulatory control period.[733] The PTRM also calculates the X factors required under the CPI–X methodology which is used to escalate the MAR for each year (other than

[731] NER, clauses 6A.14.1(i) and (ii).
[732] NER, clause 6A.5.4.
[733] NER, clause 6A.5.

the first year) of the regulatory control period.[734] Using the X factors and annual building block revenue requirement, the annual expected MAR (smoothed) are forecast for each year of the regulatory control period. A TNSP's revenue proposal must be prepared using the AER's PTRM and comply with the requirements of the submission guidelines.[735]

The annual building block revenue requirement can be lumpy over the regulatory control period. To minimise price shocks, revenues are smoothed within a regulatory control period while maintaining the principle of cost recovery under the building block approach. Smoothing requires diverting some of the cost recovery to adjacent years within the regulatory control period so that the net present value of the annual expected MAR (smoothed revenues) is equal to the net present value of the annual building block revenue requirement (unsmoothed revenues). That is, a smoothed profile of the expected MAR is determined for the regulatory control period under the CPI–X methodology.

The expected MAR for the first year is generally set equal to the annual building block revenue requirement for the first year of the regulatory control period or a similar amount to the MAR for the last year of the previous regulatory control period:[736]

$$MAR_1 = AR_1 \text{ or } MAR_L$$

where:

MAR_1 = the maximum allowed revenue for year 1 of the next regulatory control period

AR_1 = the annual building block revenue requirement for year 1 of the next regulatory control period

MAR_L = the maximum allowed revenue for the last year of the previous regulatory control period.

The AER uses the PTRM to estimate the expected MAR for each year of the regulatory control period by escalating the previous year's expected MAR using a CPI–X method, based on the MAR that applies to the TNSP in the first year of the regulatory control period. The PTRM incorporates a forecast inflation rate to calculate the expected MAR in nominal dollar terms, whereas the actual MAR is adjusted for actual inflation. This annual adjustment process is set out below.

Annual adjustment process

The MAR for the subsequent year of the regulatory control period requires an annual adjustment based on the previous year's allowed revenue (AR).[737] That is, the subsequent year's AR is determined by adjusting the previous year's AR for actual inflation and the X factor:

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[734] NER, clause 6A.5.3 and 6A.6.8.

[735] NER, clause 6A.5.1(a).

[736] The MAR for year 1 of the next regulatory control period may include adjustment for the performance incentive that applied during the previous regulatory control period.

[737] In the case of making the annual adjustment for year 2, the previous year's AR would be the same as MAR_1 set in the AER's revenue determination.

$AR_t = AR_{t-1} \times (1 + \Delta CPI) \times (1 - X_t)$

where:

AR = the allowed revenue

t = time period/financial year (for t = 2, 3, 4, 5)

ΔCPI = the annual percentage change in the ABS Consumer price index all groups, weighted average of eight capital cities from March in year $t - 2$ to March in year $t - 1$

X = the smoothing factor.

The MAR is determined annually by adding to (or deducting from) the AR, the service target performance incentive scheme revenue increment (or revenue decrement)[738] in accordance with clause 6A.7.4 of the NER, and any approved pass through amounts in accordance with clauses 6A.7.2 and 6A.7.3.[739] Table 9.3 sets out the timing of the annual calculation of the AR and performance incentive:

MAR_t = (allowed revenue) + (performance incentive) + (pass through)

$$= AR_t + \left(\frac{(AR_{t-1} + AR_{t-2})}{2} \times S_{ct} \right) + P_t$$

where:

MAR = the maximum allowed revenue

AR = the allowed revenue

S = the revenue increment or decrement determined in accordance with the service target performance incentive scheme

P = the pass through amount that the AER has determined in accordance with clauses 6A.7.2 and 6A.7.3 of the NER

t = time period/financial year (for t = 2, 3, 4, 5)

ct = time period/calendar year (for ct = 2, 3, 4, 5).

738 NER, clauses 6A.7.4 and 6A.7.3.

739 As required under clause 6A.23.3(c)(2)(iii) of the NER, a TNSP must also adjust the MAR for under or over recovery amounts.

Table 9.3 Timing of the calculation of allowed revenues and the performance incentive

t	Allowed revenue (financial year)	*ct*	Performance incentive (calendar year)
2	1 July 2013–30 June 2014	2	1 January 2012–31 December 2012
3	1 July 2014–30 June 2015	3	1 January 2013–31 December 2013
4	1 July 2015–30 June 2016	4	1 January 2014–31 December 2014
5	1 July 2016–30 June 2017	5	1 January 2015–31 December 2015

Average transmission charges

The NER does not require an estimate of transmission price changes for a revenue determination of a TNSP. Nonetheless, the AER typically provides some indicative transmission price impacts flowing from the revenue determination. Although the AER assesses Powerlink's proposed pricing methodology, actual transmission charges established at particular connection points are not approved by the AER. Powerlink establishes its transmission charges in accordance with its approved pricing methodology and the NER.[740]

9.4 Reasons for draft decision

9.4.1 Annual building block revenue requirement

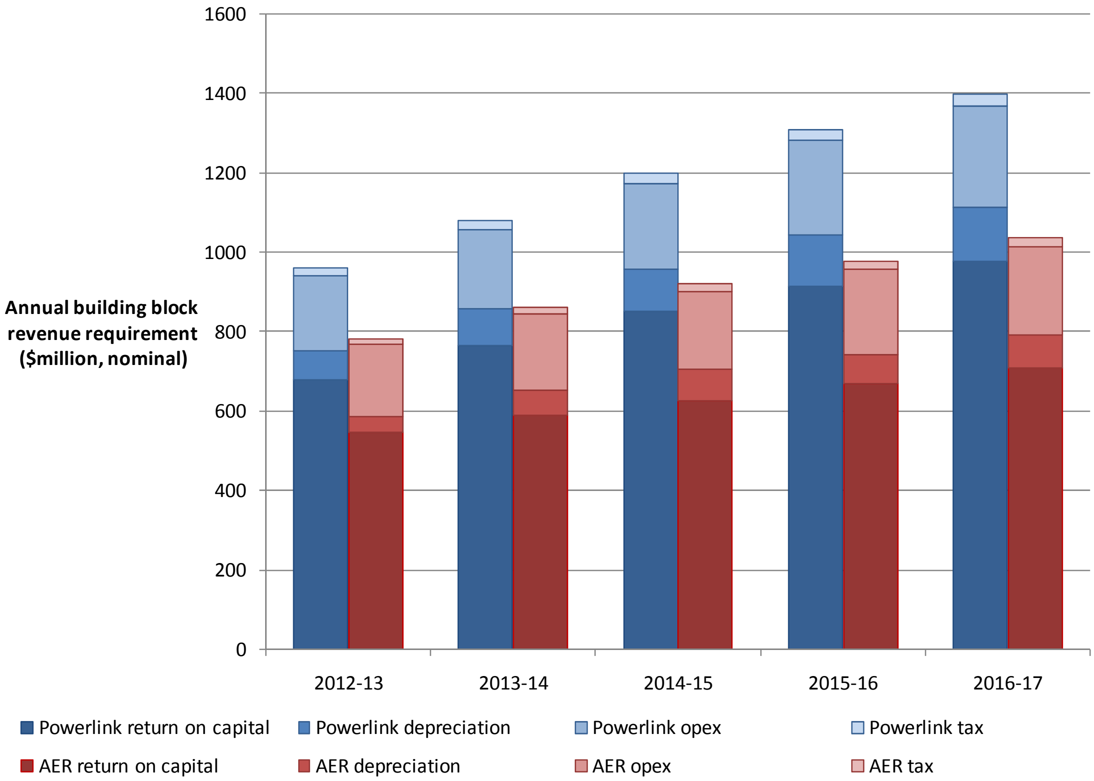
For this draft decision, the AER has determined a total annual building block revenue requirement of $4576.8 million ($nominal) for Powerlink for the next regulatory control period. This compares to Powerlink's proposed total annual building block revenue requirement of $5944.0 million ($nominal) for the next regulatory control period.[741]

Figure 9.1 shows the AER determined components that make up the annual building block revenue requirement for the next regulatory control period and the corresponding building blocks components from Powerlink's proposal.

[740] NER, clause 6A.24.1(d).

[741] Powerlink, *Revenue Proposal 2013–2017*, May 2011, p. 112.

Figure 9.1 AER draft decision and Powerlink proposed annual building block revenue requirement ($million, nominal)



Source: AER analysis.

The AER has calculated the annual building block revenue requirement for Powerlink based on the revised building block components. The revenues were affected by changes to Powerlink's proposed building block components. These changes include:

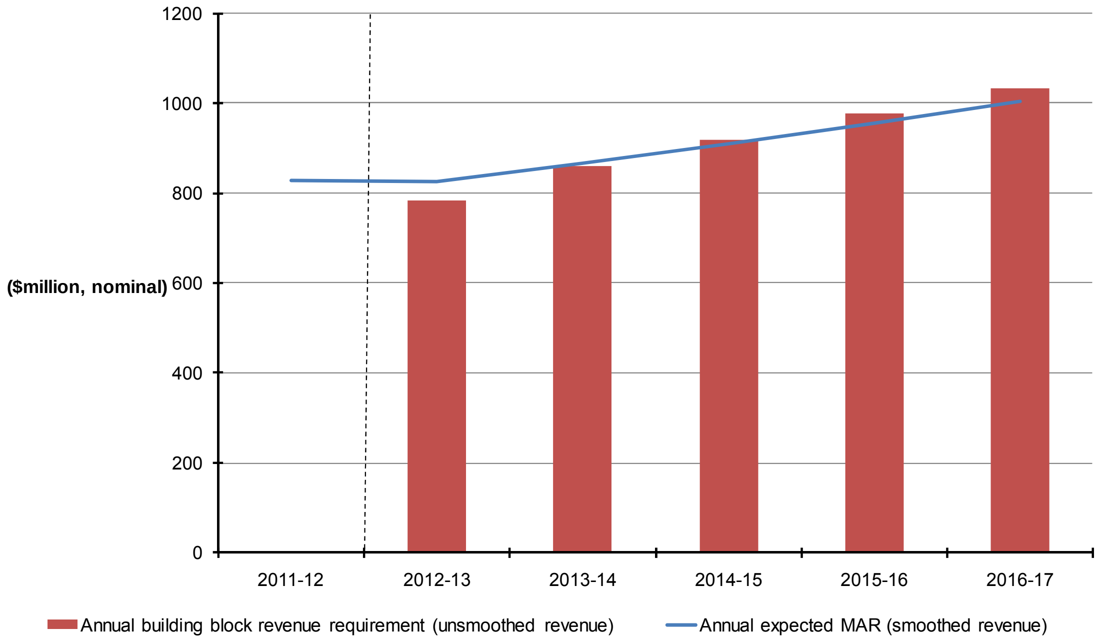
- the opening RAB as at 1 July 2012 (attachment 6) and forecast capital expenditure (attachment 3)
- the rate of return (attachment 5)
- forecast regulatory depreciation (attachment 7)
- forecast operating expenditure (attachment 4)
- the corporate income tax allowance (attachment 8).

9.4.2 X factor, annual expected MAR and estimated total revenue cap

For this draft decision, the AER has determined a revised X factor of –2.33 per cent per annum from 2013-14 to 2016-17. The net present value of the annual building block revenue requirement for the next regulatory control period is $3585.5 million ($nominal) as at 1 July 2012. Based on this net present value and applying the CPI–X method, the AER has determined the annual expected MAR (smoothed) for Powerlink that increases from $825.5 million in 2012-13 to $1004.0 million in 2016-17 ($nominal).

The resulting estimated total revenue cap for Powerlink that the AER has approved is $4562.8 million ($nominal) for the next regulatory control period. The total revenue cap is the sum of the annual expected MAR. Figure 9.2 shows the AER's draft decision on Powerlink's annual expected MAR (smoothed revenue) and the annual building block revenue requirement (unsmoothed revenue) for the next regulatory control period.

Figure 9.2 AER draft decision on Powerlink's annual expected MAR (smoothed) and annual building block revenue requirement (unsmoothed) ($million, nominal)



Source: AER analysis.

To determine the expected MAR over the next regulatory control period, the AER has set the MAR for the first regulatory year (2012-13) at $825.5 million ($nominal). This is higher than the annual building block revenue requirement for 2012-13, which is $783.0 million ($nominal). However, this MAR is similar to the amount for 2011-12.[742] The AER then applied an X factor of –2.33 per cent per annum to determine the expected MAR in subsequent years. The AER considers that this profile of X factors results in an expected MAR in the last year of the regulatory control period that is as close as reasonably possible to the annual building block revenue requirement for that year as required under the NER.[743] The AER considers a divergence of up to 3 per cent between the expected MAR and annual building block revenue requirement for the last year of the next regulatory control period is appropriate, if this can achieve smoother price changes for users over the regulatory control period. In the present circumstances, based on the X factors determined by the AER, this divergence is 3 per cent.

The AER notes stakeholder submissions raised concerns with the impact of Powerlink's revenue determination on the expected electricity price.[744] The AER has smoothed the

742 The MAR for the last year of the current regulatory control period (2011-12) is approximately $828 million.

743 NER, clause 6A.6.8(c)(2).

744 EUAA, *Submission to the Australian Energy Regulator on Powerlink's regulatory proposal 2012-2017*, August 2011, p. 7; Total Environment Centre, *Submission to the AER: Powerlink revenue determination 2013-2017: response to Powerlink's initial revenue proposal*, August 2011, p. 3.

estimated total revenue cap as much as possible, consistent with the requirements of the NER and NEL.

The average increase in AER approved expected MAR for Powerlink is 4.0 per cent per annum (nominal) over the next regulatory control period. This consists an initial decrease of 0.3 per cent from 2011-12 to 2012-13 and a subsequent average annual increase of 5.0 per cent during the remainder of the next regulatory control period. In real terms ($2011-12), the average increase in AER approved expected MAR for Powerlink is 1.3 per cent per annum over the next regulatory control period. This consists an initial decrease of 2.8 per cent from 2011-12 to 2012-13 and a subsequent average annual increase of 2.3 per cent during the remainder of the next regulatory control period.

The AER's draft decision results in an increase to Powerlink's total revenue cap relative to that in the current regulatory control period. This increase in revenue is primarily because of:

- a higher opening RAB than was forecast in the 2007-08 to 2011-12 revenue cap decision
- an increase to forecast RAB due to addition of capital expenditure over the next regulatory control period
- increased opex due to an expanding network, increased refurbishment requirements and higher cost of labour over the next regulatory control period.

9.4.3 Indicative average transmission price impact

The effect of the AER's draft decision on forecast average transmission charges can be estimated by taking the annual expected MAR and dividing it by forecast annual energy delivered in Queensland.[745] Based on this approach, the AER estimates that this draft decision will result in a 0.8 per cent per annum (nominal) increase in average transmission charges from 2011-12 to 2016-17. This estimated increase in average transmission charges is because the average increase in the AER approved MAR is higher than the average increase in Powerlink's forecast annual energy delivered over the next regulatory control period. The average increase in the AER approved MAR is 4.0 per cent per annum, whereas the average increase in the forecast energy delivered in Queensland is about 3.1 per cent per annum for the next regulatory control period.

Figure 9.3 shows the indicative average transmission charges resulting from this draft decision during the next regulatory control period compared with the average transmission charge for the last year of the current regulatory control period in nominal terms. Nominal average transmission charges are forecast to increase from around $16.70 per MWh in 2011-12 to $17.40 per MWh in 2016-17.

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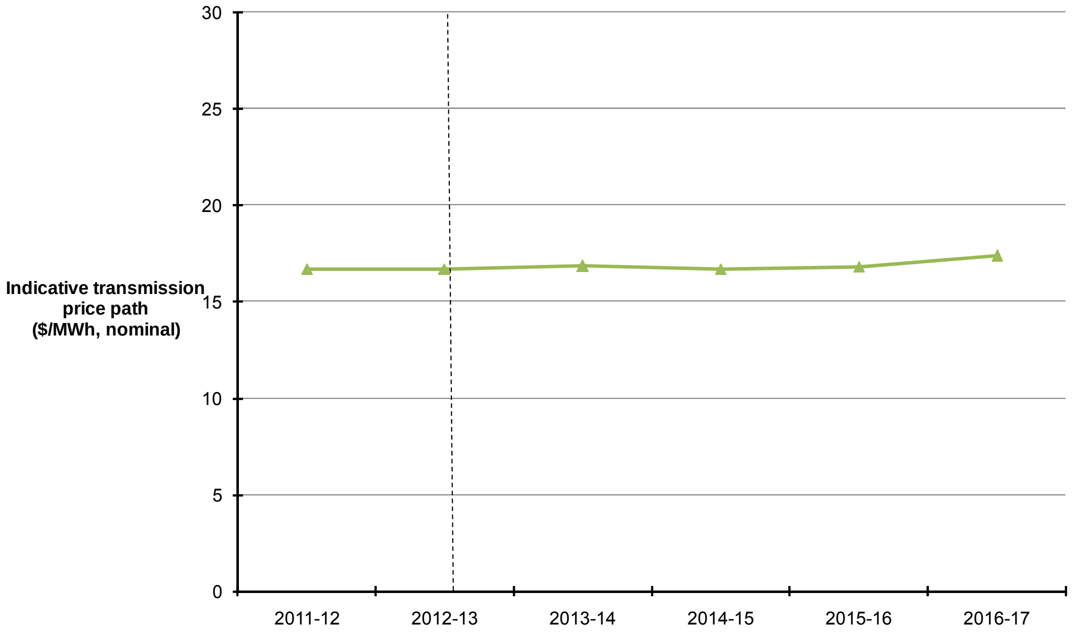
745 The forecast annual energy delivered figures are obtained from Powerlink, *2011 Annual Planning Report*, June 2011, p. 28. The AER has made downward adjustments to the energy delivered forecasts shown in Powerlink's 2011 Annual Planning Report. The AER's adjustments to the energy delivered forecasts are made based on the same proportion of the AER's adjustments to Powerlink's peak demand (as discussed in attachment 2). The adjustment to forecast energy delivered is necessary because of the reduced demand forecasts. However, the AER notes that its approach to adjust the energy delivered forecasts is only a high level approximation. For simplicity, it has not taken into account other matters that may also affect forecast energy delivered such as load factors when making this adjustment.

Transmission charges represent approximately 10 per cent on average of end user electricity charges in Queensland.[746] The AER estimates that the increase in average transmission charges under this draft decision will add approximately $1.40 per annum (or 0.1 per cent) to the average residential customer's annual electricity bill of $1655 during the next regulatory control period.[747]

Figure 9.3 Indicative transmission price path from 2011-12 to 2016-17 ($/MWh, nominal)



Source: AER analysis

746 Queensland Competition Authority, *Final decision – Benchmark retail cost index for electricity 2011-12*, May 2011, p. 44.

747 The average customer annual electricity bill was calculated based on average household electricity consumption of 8000 kWh per year and QCA determined domestic tariff of 20.69 c/kWh (excluding GST) for 2011-12. See Queensland Competition Authority, *Queensland Government gazette No.35: Retail electricity prices for non-market customers*, May 2011.

10 Service target performance incentive scheme

This attachment sets out the AER's draft decision on Powerlink's proposed parameter values and weightings for the service target performance incentive scheme (STPIS).[748] The structure of the STPIS has two components: a service component and a market impact component. This attachment deals with each component separately.

Service component

The service component of the AER's STPIS provides a financial incentive for TNSPs to maintain and improve their performance. This incentive counters the financial incentive under revenue regulation to pursue cost reductions at the expense of service performance. A TNSP's service performance is compared against the performance target for each parameter during the regulatory control period. Service performance improvements may result in a financial bonus for the TNSP, while decline in service performance may result in a financial penalty to the TNSP. The financial bonus (or penalty) has been limited to one per cent of the TNSP's maximum allowed revenue (MAR) for the relevant calendar year.

Under the STPIS regime, the AER must assess whether Powerlink's proposed performance targets, caps, collars and weightings comply with the STPIS requirements for each of the following parameters:[749]

- transmission circuit availability (with four sub-parameters):
  - transmission line availability
  - transformer availability
  - reactive plant availability
  - peak transmission circuit availability
- loss of supply (LOS) event frequency (with two sub-parameters):
  - large (>0.75 system minutes) LOS event frequency
  - moderate (>0.10 system minutes) LOS event frequency
- average outage duration.

The AER must accept Powerlink's proposed parameter values if they comply with the requirements specified in the STPIS.[750] It may reject the proposed parameter values and

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[748] The STPIS is established by clause 6A.7.4 of the NER.

[749] AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, Appendix B.

[750] AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(a).

weightings if the AER forms the opinion that they are inconsistent with the objectives of the STPIS.[751]

Market impact component

The market impact component provides financial rewards to TNSPs for improvements in its performance measure against a performance target. Powerlink may earn an additional revenue increment of up to two per cent of its maximum allowed revenue (MAR) for the relevant calendar year. Unlike the service component, there is no financial penalty associated with the market impact component.

The AER is required to make a decision on the performance target and the cap proposed by Powerlink for the market impact parameter (MIP).[752] The cap proposed by Powerlink must be equal to zero dispatch intervals.[753]

Powerlink has based its performance target on performance history data from the 2006–2010 calendar years. Powerlink proposed that the performance target take into account dispatch intervals related to outages on network assets which it intends to acquire, prior to the commencement of the 2012-13 to 2016-17 regulatory control period (the offset). Powerlink has not yet acquired these assets.

10.1 Draft decision

Service component

The AER considers that although Powerlink's proposed parameter values largely comply with the requirements of the STPIS, certain aspects of its proposal do not. These aspects are either not allowed under the STPIS, use inconsistent methodology, or propose weightings that do not accurately reflect the importance of certain parameter values. For this draft decision, the AER rejects Powerlink's:

- proposed adjustments for operational works on the transmission line and transformer availability performance targets. The AER recalculated Powerlink's caps and collars for the transmission line and transformer availability sub-parameters by referencing its draft decision on the performance targets for these sub-parameters.
- use of historical performance data over a 10 year period (2001–2010) for calculating the caps and collars for the LOS frequency sub-parameters. The AER used the most recent five years (2006–2010) performance data for calculating the caps of collars for these sub-parameters
- proposed weightings for the transmission circuit availability sub-parameters and LOS event frequency sub-parameters.

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751 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(m), 3.5(e) and 1.4.

752 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 4.2(a).

753 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 4.2(c).

Table 10.1 sets out AER's draft decision on Powerlink's performance targets, caps, collars and weightings for the service component of the STPIS. In the final decision, the AER will update Powerlink's performance targets, caps and collars for each parameter using Powerlink's performance data from 2007–2011 (see section 10.4.6)

Table 10.1 AER's draft decision on parameter values and weightings for the service component

Parameters				Proposed values
	Collar	Target	Cap	Weighting
Transmission circuit availability (%)				**MAR (per cent)**
Transmission line availability	97.60	98.76	99.92	0.10
Transformers availability	98.27	98.76	99.24	0.10
Reactive plant availability	94.45	97.15	99.84	0.15
Peak transmission circuit availability	98.31	98.76	99.20	0.10
Loss of supply event frequency (no.)				**MAR (per cent)**
>0.75 (y) system minutes	2	1	0	0.15
>0.10 (x) system minutes	6	4	2	0.30
Average outage duration (minutes)				**MAR (per cent)**
Average outage duration	1306	859	412	0.10
Total				**1.00**

Source: AER analysis.

Market impact component

A summary of the AER's draft decision on Powerlink's target and cap for the market impact component is set out in table 1.1 below:

Table 10.2 Summary of AER's draft decision on market impact parameter for the market impact component

Parameters			Proposed values
	Target	Cap	Weighting
			MAR (per cent)
Market impact parameter	1442	0	2

Source: AER analysis

In the final decision the AER will update Powerlink's performance target to reflect the most recent five years of performance history which will capture performance data for the 2007–2011 calendar years. Powerlink's proposed performance target was based on performance data available at the time which included the 2006–2010 calendar years only.

10.2 Powerlink's proposal

Service component

Table 10.3 sets out Powerlink's proposed performance targets, caps, collars and weightings for each parameter under the service component of the STPIS.

Table 10.3 Powerlink's proposed parameter values and weightings for the service component

Parameters				**Proposed values**
	Collar	**Target**	**Cap**	**Weighting**
Transmission circuit availability (%)				**MAR (per cent)**
Transmission line availability	97.51	98.67	99.83	0.175
Transformers availability	98.11	98.59	99.08	0.115
Reactive plant availability	94.45	97.15	99.84	0.090
Peak transmission circuit availability	98.31	98.76	99.20	0.070
Loss of supply event frequency (no.)				**MAR (per cent)**
>0.75 (y) system minutes	3	1	0	0.300
>0.10 (x) system minutes	10	4	3	0.150
Average outage duration (minutes)				**MAR (per cent)**
Average outage duration	1306	859	412	0.100

Source: Powerlink, *Revenue Proposal 2013–2017*, May 2011, p.126.

Market impact component

Powerlink proposed a performance target of 1953 dispatch intervals as its average performance history over 2006–2010 which includes the performance of the assets it intends to acquire. Powerlink's market impact parameter proposal is summarised in table 10.4 below.

Table 10.4 Powerlink's market impact parameter proposal

	2006	2007	2008	2009	2010
Binding dispatch intervals	4133	3479	1574	1298	1556
Exclusions	460	1777	1395	1155	138
Contribution to performance target	3673	1702	179	143	1418
Offset for binding dispatch intervals from network assets to be acquired	254	454	886	1051	4
Actual MIP performance	3927	2156	1065	1194	1422
Proposed performance target					1953
Proposed performance cap					–

Source: Powerlink, *Revenue Proposal 2013–17 Appendix O—Powerlink service target performance incentive scheme caps collars and weighting methodology*, May 2011, p.8.

10.3 Assessment approach

Service Component

In accordance with the requirements of the STPIS, AER's assessment approach for Powerlink's revenue proposal is to:

1. examine Powerlink's recording and reporting systems and processes to determine whether the data used to calculate the proposed values is accurate and reliable and has been consistently recorded based on the parameter definition under the STPIS.[754]
2. examine whether the proposed performance targets are equal to the average of the most recent five years performance data.[755]
3. consider whether the performance targets based on the proposed alternative methodology may be appropriate if the proposed target is not based on the methodology in step 2.[756]
4. consider whether any adjustments to the average performance history are warranted and reasonable.[757]
5. consider whether Powerlink's proposed caps and collars are calculated by reference to the corresponding performance targets and using a sound methodology.[758]

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754 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(d) and (g). The parameter definitions that apply to Powerlink for the next regulatory control period are set out on page 25 of the STPIS.

755 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(g). For the draft decision, the most recent five years refers to 2006 to 2010. For the final decision, the most recent five years will be from 2007 to 2011.

756 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(i) and (j).

757 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(k).

6. consider whether any adjustment to the performance target of a particular parameter has also been applied to the cap and collar of that parameter.[759]

7. consider whether or not Powerlink has demonstrated how its proposed weightings are consistent with the objectives of the scheme.[760]

8. consider whether or not Powerlink has taken into account the factors listed in the STPIS when proposing its weightings. In particular, the AER considers that the proposed weightings should reflect:[761]

   - the importance of the parameter and sub-parameter on the reliability of Powerlink's transmission network

   - the scope for further performance improvement

   - the extent to which the parameters and sub-parameter applying to Powerlink overlap

9. check whether or not the sum of the weightings is equal to the maximum revenue increment or decrement which is one per cent.[762]

10. consider whether any of the proposed values or weightings are inconsistent with the objectives of the scheme.[763] In particular, the AER considers that a proposed value or weighting should be rejected if it:

    - does not provide any incentive for Powerlink to maintain and improve reliability for its customers

    - does not assist in the setting of efficient capital and operating expenditure allowances by balancing the incentive for Powerlink to reduce actual expenditure with the need to maintain and improve reliability of the transmission system for its customers.

Market impact component

Clause 4.2(a) of the STPIS requires Powerlink to submit, in its revenue proposal, a performance target and a cap for the MIP. The MIP is defined as the number of dispatch intervals where an outage of a TNSP's network results in a network outage constraint with a marginal value of greater than $10/MWh (binding dispatch intervals).[764]

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758 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(e).

759 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(e).

760 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.5(a).

761 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.5(d).

762 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.5(b).

763 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 1.4.

764 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, appendix C.

Clause 4.2(d) of the STPIS requires, subject to clauses 4.2(e) and (f), the proposed performance target to be equal to the TNSP's average performance history over the five most recent years.

Clause 4.2(e) of the STPIS allows the AER to approve a performance target based on a different period if it is satisfied that this would be consistent with the objectives of the scheme set out in clause 1.4.

Clause 4.2(f) of the STPIS allows the performance target to be subject to reasonable adjustment to allow for:

a. statistical outliers
b. 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, and
c. material changes to an applicable regulatory obligation.

Clause 4.2(a) of the STPIS requires the AER to accept Powerlink's proposed values if they comply with the requirements specified in clause 4.2. Clause 4.2(g) states that the AER may reject the proposed values if they are inconsistent with the objectives of the STPIS. Clause 1.4 sets out the objectives of the STPIS.

The AER's approach to the assessment of the Powerlink's market impact parameter is outlined below.

Resources

To calculate both a TNSP's performance measure and performance target, the AER allocates each network outage constraint to the TNSP responsible for the constraint using:

1. the Market Information on Planned Network Outages, which is published every month by the Australian Energy Market Operator (AEMO) based on information provided by the TNSPs as required under clause 3.7A of the NER; or
2. the Network Outage Schedule, which is published by AEMO on its website based on information provided by the TNSPs; or
3. the description of the constraint ID published by AEMO; or
4. where it is not clear from (1), (2) or (3), the published market management system data or other information provided by AEMO.

Where the information described in (1), (2), (3) or (4) indicates that more than one TNSP is responsible for a single network outage constraint (for example an outage affecting an interconnector), the number of dispatch intervals is apportioned equally between the TNSPs.

MMS Data

According to the definition of the market impact parameter, the marginal value of a constraint is an indication of the change, at the margin, in the cost of producing electricity sufficient to meet demand brought about by a particular network outage constraint. Constraints with a marginal value less than –$10/MWh also produce a cost to the market.

When the STPIS was first introduced, AEMO published the marginal value of constraints within the market management system (MMS) database table called 'dispatchconstraint'. This table displays all marginal values as absolute values (i.e. no negative values appear).

In May 2009, AEMO began publishing the MMS database table 'mcc_constraintsolution'. The outputs of this table are produced by re-running the dispatch engine to relax violated constraints that appear in the 'dispatchconstraint' table. The marginal values produced by the 'mcc_constraintsolution' table are considered to be a better reflection of the true marginal value of the constraints. The 'mcc_constraintsolution' table contains both positive and negative marginal values.

The AER has advised all TNSPs subject to the MIP that 'mcc_constraintsolution' data should be used whenever available for the purposes of measuring performance and calculating the performance target. For this reason, marginal values less than –$10/MWh are included when assessing the market impact parameter.

10.4 Reasons for draft decision

Service component

The AER must assess whether Powerlink's proposed performance targets, caps, collars and weightings comply with the STPIS requirements for each of the parameters under the service component of the STPIS.[765] Although Powerlink's proposed parameter values largely comply with the requirements of the STPIS, certain aspects of its proposal do not. In assessing Powerlink's proposal for the service component of the STPIS, the AER identified the following issues:

- adjustments to performance targets
- data used for calculating the caps and collars for LOS event frequency sub-parameters
- weightings for the transmission circuit availability sub-parameters and LOS event frequency sub-parameters.

This section sets out the AER's considerations on these issues.

10.4.1 Adjustments to performance targets

The STPIS allows Powerlink to make reasonable adjustments to its proposed performance targets.[766] Powerlink made downward adjustments (or offsets) to the proposed transmission line and transformer availability performance targets. For the transformers availability sub-parameter, all the proposed offset are due to increased operational refurbishment works in the next regulatory control period. For the transmission line availability sub-parameter, over half of the proposed offset relates to increased capital works, and the rest is due to increased

765 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(a).

766 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(k).

operational refurbishment works.[767] The AER notes that the STPIS allow adjustments for capital works.[768] However, the scheme does not explicitly permit adjustment for operational works. The AER has accepted offsets for capital works in previous transmission determinations.[769] However, the AER is not aware of TNSPs seeking adjustments for operational works in the past.

For this draft decision, the AER:

- rejects the proposed offset for operational works to the transmission line and transformer availability performance targets
- accepts the proposed offset for capital works to the transmission line availability performance target
- recalculated Powerlink's caps and collars for the transmission line and transformer availability sub-parameters by referencing the AER decided performance targets in table 10.5.

Table 10.5 sets out Powerlink proposed and AER decided targets, caps and collars for each of the LOS event frequency sub-parameters.

Table 10.5 Powerlink's proposal and AER's draft decision on the targets, caps and collars for the transmission line and transformers availability sub-parameters

Sub-parameter	Collar (per cent)	Target (per cent)	Cap (per cent)
AER decision			
Transmission line availability	97.60	98.76	99.92
Transformers availability	98.27	98.76	99.24
Powerlink proposed			
Transmission line availability	97.51	98.67	99.83
Transformers availability	98.11	98.59	99.08

Source: AER analysis.

The AER cannot accept an adjustment if it does not fit within clause 3.3(k) of the STPIS. The AER notes that clause 3.3(k) does not explicitly permit adjustment for operational works. Also, The AER is not aware of TNSPs seeking adjustments for operational works in the past.

767 Powerlink, *Revenue Proposal–Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 15 and 16; Powerlink, STPIS data—2006 to 2010, Target, Caps, Collars and Weightings (confidential).

768 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(k)(2).

769 AER, *Final decision: 2009–2014 TransGrid transmission determination*, April 2009, p. 115; AER, *Final decision: 2008–2014 SP AusNet transmission determination*, January 2008, pp. 174–176.

Furthermore, the AER did not allow for major operational refurbishment project adjustment when it first developed the scheme. The reasons for the AER's decision were:[770]

> The AER is … unconvinced that an adjustment for major refurbishments is warranted. While performance may decline during the refurbishment, presumably the TNSP would experience a subsequent improvement in performance because of the refurbishment. The AER considers that adjusting performance targets for major refurbishments may result in users paying for the refurbishment through the TNSP's opex allowances and then paying again under the scheme for improvements in performance through the financial incentive.

The AER considers the proposed offsets for operational works are inconsistent with the objectives of the STPIS. The AER considers the service component of the STPIS is primarily concerned with influencing the operational management decisions of TNSPs to ensure that they consider the interests of their customers when seeking to reduce actual opex. It considers the opex refurbishment allowance is provided to Powerlink so that the reliability of the transmission lines and transformers are maintained in the next regulatory control period. Powerlink's performance level should be maintained if the proposed refurbishment works take place over the next regulatory control period. Further, 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. EMCa considered Powerlink could have avoided the need for much of the tower refurbishment works and the compressed timescale if Powerlink has monitored the condition of these transmission towers earlier and applied necessary maintenance strategies in the form of tower painting. [771] Therefore, the AER considers the proposed offsets for operational works is inconsistent with the objectives of the STPIS as adjustments for operational works do not provide incentive for Powerlink to maintain and improve the reliability of its transmission lines and transformers.

In relation to the offset for capital works, the AER notes the STPIS permits reasonable adjustments for capital works.[772] The AER has accepted offsets for capital works in previous transmission determinations.[773] EMCa considered that the proposed capex offset may not be justified as this was mainly due to Powerlink's late understanding of the condition of its transmission towers.[774] However, it did not raise any issues in relation to these transmission line life extension works in its review of Powerlink's proposed capital programs. It also considered that Powelrink's methodology for calculating proposed offsets is reasonable and appropriate.[775] Further, the AER notes that Powerlink has calculated the cap of the transmission line availability sub-parameter by referencing the performance target. The cap for transmission line availability sub-parameter will be over 100 per cent if no offset on the performance target is allowed.[776] This cap value is not reasonable as over 100 per cent availability is not possible to achieve. The AER considers that the proposed offset for capital

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770 AER, *Final decision: Electricity transmission network service providers, Service target performance incentive scheme, August 2007*, p. 9.

771 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 85.

772 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme,* March 2011, clause 3.3(k)(2).

773 AER, *Final decision: 2009–2014 TransGrid transmission determination*, April 2009, p. 115; AER, *Final decision: 2008–2014 SP AusNet transmission determination*, January 2008, pp. 174–176.

774 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, pp. 85 and 86.

775 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, pp. 85 and 86.

776 Powerlink, *Revenue Proposal–Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, p. 3; AER analysis.

works will slightly reduce the transmission line availability target and thus will result a more meaningful cap for this sub-parameter. It therefore considers the proposed offset to the transmission line availability performance target for increased capital works is reasonable.

Submissions from stakeholders raised concerns about the proposed offsets on performance targets. The Wesfarmers Limited and the Total Environment Centre (TEC) considered that the AER should apply 'stretch targets' to ensure consumers were not simply paying an incentive bonus for better performance that increased capex should provide.[777] The AER considers that the STPIS is primarily concerned with influencing the operational management decisions of TNSPs to ensure they consider the interest of customers when seeking to reduce actual opex. The STPIS allows reasonable adjustments for capital works in recognition that where there is a material increase in a TNSP's capital works program, operational management decisions alone may not make it possible for the TNSP to achieve target based on historical performance. Therefore, the AER considers the proposed offset for operational refurbishment works is not reasonable. However, it considers that the proposed offset for capital works is reasonable.

Powerlink has calculated the caps and collars of the transmission line and transformer availability sub-parameters by referencing its proposed performance targets. The AER recalculated Powerlink's caps and collars for these sub-parameters by referencing its draft decision on the performance targets in table 10.5.

10.4.2 Data used for calculating the caps and collars of LOS event frequency sub-parameters

There are two LOS event frequency sub-parameters that apply to Powerlink: the moderate (>0.10 system minutes) LOS frequency and the large (>0.75 system minutes) LOS frequency. This frequency of LOS parameter uses system minutes[778] to measure moderate and large unplanned system outage against the total energy that the network supplies.[779] Powerlink has calculated the performance targets for the LOS event frequency sub-parameters based on the most recent five year's performance data (2006–2010). For the caps and collars, Powerlink adopted the 'curves of best fit' methodology using most recent 10 years performance data (2001–2010).[780] The STPIS requires caps and collars to be calculated by referencing the proposed performance targets and using a sound methodology.[781]

For this draft decision, the AER:

- rejects Powerlink's use of 10 years historical data (2001–2010) for calculating the caps and collars for the LOS frequency sub-parameters

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777 The Energy Users Group operating in Queensland, *AER 2011 review of Queensland electricity transmission,* 2011, p. 62; Wesfarmers Limited, *Submission to Australian Energy Regulator in relation to the Powerlink Regulatory Proposal 2013–2017*, 2011; Total Environment Centre, *Submission to the AER: Powerlink revenue determination 2013–2017–response to Powerlink's initial revenue proposal*, August 2011, p. 9.

778 System minute is defined in Appendix B, Part 2, Parameter 2, of the STPIS

779 Powerlink, *Revenue Proposal 2013–2017*, May 2011, p. 121.

780 Powerlink, *Revenue Proposal—Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 5 and 6.

781 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme,* March 2011, clause 3.3(e).

- used the most recent five years performance data for calculating the caps and collars for the LOS frequency sub-parameters. For the draft decision, the most recent five years is 2006 to 2010. For the final decision, the most recent five years is from 2007 to 2011.

Table 10.6 sets out Powerlink's proposal and AER's draft decision on the caps and collars for each of the LOS event frequency sub-parameters.

Table 10.6 Powerlink's proposal and AER's draft decision on the caps and collars for the LOS event frequency sub-parameters

Sub-parameter	Collar (number of events)	Cap (number of events)
AER decision		
LOS event frequency (>0.75 (y) system minutes)	2	0
LOS event frequency (>0.10 (x) system minutes)	6	2
Powerlink proposed		
LOS event frequency (>0.75 (y) system minutes)	3	0
LOS event frequency (>0.10 (x) system minutes)	10	3

Source: Powerlink, *Revenue Proposal 2013–2017*, May 2011, p. 126; Powerlink, *response to information request AER/026 of 24 August 2011—STPIS: LOS caps and collars*, received 25 August 2011; EMCa, *Technical review for Powerlink 2013–2017 revenue determination*, September 2011, p. 89; AER analysis.

The AER considers the use of the curves of best fit methodology is reasonable. However, it considers the use of 10 years actual performance data is inconsistent with the data used to calculate the performance targets. Powerlink's performance targets are based on the most recent five years performance data.[782] The AER has previously rejected caps and collars based on performance data that are not consistent with the actual data used to calculate the corresponding performance target.[783]

The AER compared the mean of Powerlink's performance data for the LOS event frequency parameter over 10 years with that of 5 years. Table 10.7 shows that the means for 2001 to 2010 and 2001 to 2005 performance data are significantly higher than the mean of the last 5 years performance (2006–2010) for both sub-parameters. Figure 10.1 shows 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. This suggests that Powerlink's performance in those early years does not reflect its performance during the most recent five years (2006–2010). The AER has previously accepted the use of 10 years data in the TransGrid transmission determination. However, this was because the 10 year average of TransGrid's historical performance is relatively consistent with its most recent five year's average.[784]

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782 Powerlink, *Revenue Proposal—Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, p. 5.

783 AER, *Draft decision: 2008–2013 ElectraNet transmission determination*, 2007, p. 200.

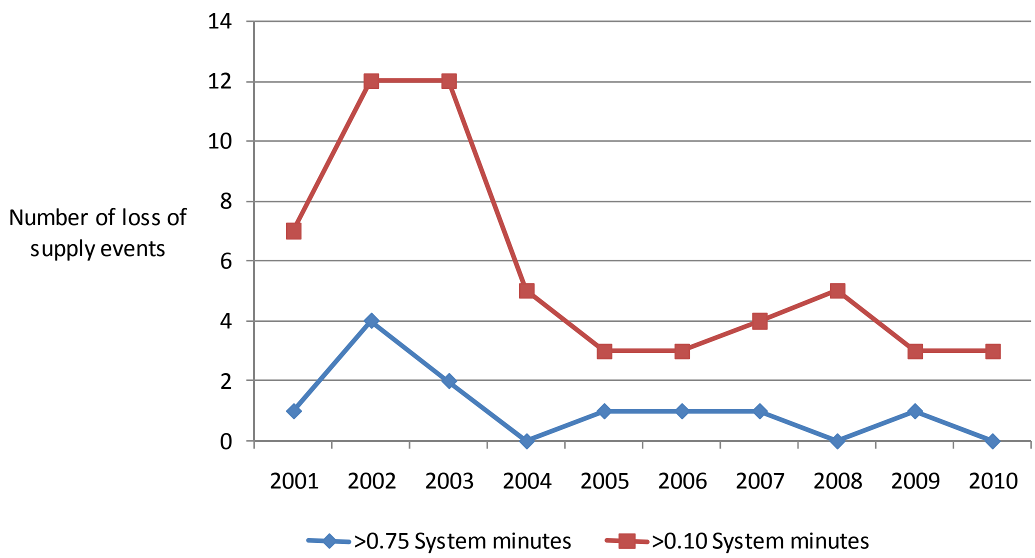
784 SAHA, *TransGrid Service Target Performance Incentive Scheme: targets, caps and collars relating to the loss of supply event frequency parameter*, table 4.1.1, March 2008, p. 10.

Table 10.7 AER analysis of Powerlink's loss of supply event frequency historical performance data

Period	Duration (years)	Mean (no. of events)	Variance (no. of events)
Loss of supply event frequency (>0.75 system minutes)			
2006–2010	5	0.6 (Powerlink proposed target)	0.30
2001–2005	5	1.6	2.30
2001–2010	10	1.1	1.43
Loss of supply event frequency (>0.1 system minutes)			
2006–2010	5	3.7 (Powerlink proposed target)	0.8
2001–2005	5	7.8	16.7
2001–2010	10	5.7	12.7

Source: AER analysis.

Figure 10.1 Powerlink's loss of supply event frequency, 2001 to 2010 actual data



Source: Powerlink, *Revenue Proposal—Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 5–6.

EMCa recommended retaining the 10 years data because it considered that this sample is already small. However, it cautioned that this does imply that the performance target, cap and collar are estimated on different data sets and are thus inconsistent. EMCa also considered that it may be logical to use the same 10 years data for the performance targets as allowed for in clause 3.3(h) of the STPIS.[785] The AER notes that clause 3.3(g) of the STPIS requires that the performance targets must be equal to the average performance history over the most recent five years. 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

[785] EMCa, *Technical review for Powerlink 2013–2017 revenue determination*, September 2011, p. 88.

objectives of the STPIS. The AER considers that it cannot approve a performance target based on a different period if Powerlink did not propose to use a different period in the revenue proposal. Powerlink proposed targets are based on the performance data of the most recent five year.[786] The AER considers the proposed caps and collars must be calculated by references to the proposed performance targets. Therefore, the AER disagrees with EMCa's recommendation on retaining the use of 10 years data for the caps and collars.

Overall, the AER considers Powerlink's proposed caps and collars LOS event frequency sub-parameters do not comply with the requirement of the STPIS because the caps and collars are not calculated by reference to the proposed performance targets.[787] Powerlink proposed targets are based on the performance data of the most recent five years. Therefore, the AER considers the caps and collars for these sub-parameters should be calculated using the curve of best fit analysis with the most recent five years performance data. For the draft decision, the most recent five years refers to 2006 to 2010. For the final decision, the most recent five years is from 2007 to 2011 (see section 10.4.6).

The AER requested Powerlink to calculate the caps and collars for each of the LOS event frequency sub-parameters using its 2006 to 2010 LOS event frequency performance data and the curve of best-fit method.[788] It notes that the collar for the large LOS events frequency (>0.75 system minutes) sub-parameter calculated using this method is one which is equal to the corresponding performance target. Powerlink stated that this outcome is nonsensical as it would result in a situation where Powerlink could receive both the financial penalty associated with the collar (maximum penalty) and target (no bonus or penalty). It thus proposed to set the collar to two events.[789] The AER agrees with Powerlink that the collar for the large LOS events frequency (>0.75 system minutes) sub-parameter should be adjusted to two events. Further, EMCa considered the use of a discrete distribution may provide a better approximation of the caps and collars for the LOS frequency values.[790] Powerlink has fitted its data with continues distributions. The AER considers the use the discrete distribution is more appropriate to fit the LOS event frequency data as these data represents discrete events. However, it notes that the caps and collars calculated using both types of distribution are largely the same. Further it notes that the collar for the moderate LOS events frequency (>0.10 system minutes) sub-parameter is six events when a discrete distribution is used to fit the data and five events when a continuous distribution is used.[791] The AER considers that a collar of six events is more reasonable as this will provide a symmetrical incentive for Powerlink under this sub-parameter.

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786 Powerlink, *Revenue Proposal–Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, p. 5.

787 AER, Final—*Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(e).

788 AER*, information request AER/026—STPIS: LOS caps and collars*, sent 24 August 2011.

789 Powerlink, *response to information request AER/026 of 24 August 2011–-STPIS: LOS caps and collars*, received 25 August 2011.

790 EMCa, *Technical review for Powerlink 2013–2017 revenue determination*, September 2011, p. 87.

791 EMCa, Technical review for Powerlink 2013–2017 revenue determination*, September 2011*, p. 89; Powerlink, *response to information request AER/026 of 24 August 2011–-STPIS: LOS caps and collars*, received 25 August 2011.

An energy users group in Queensland (Energy Users Group) considered that performance targets for the LOS event frequency parameter should not be rounded to integers.[792] However, the AER notes the STPIS requires that the performance targets, caps and collars for the LOS event frequency parameters must be rounded to the nearest integer number.[793] Therefore, the AER considers that it is appropriate for Powerlink to round the performance targets, caps and collar for LOS event frequency sub-parameters to the nearest integer number.

10.4.3 Weightings

The STPIS requires Powerlink to propose weightings for each of parameters (listed in appendix B) and demonstrate how these proposed weightings are consistent with the objectives listed in clause 1.4.[794] These objectives make reference to the principles in clause 6A.7.4(b) of the NER and the national electricity objective under section 7 of the National Electricity Law.

The AER rejects Powerlink's proposed weightings for the transmission circuit availability sub-parameters and the LOS event frequency sub-parameters. Table 10.8 sets out Powerlink's proposal and AER's draft decision on the weightings for the transmission circuit availability and LOS event frequency sub-parameters.

Table 10.8 Powerlink's proposal and AER's draft decision weightings for the transmission circuit availability and LOS event frequency sub-parameters

Parameters	Powerlink proposed (% of MAR)	AER draft decision (% of MAR)
Transmission circuit availability		
Transmission line availability	0.175	0.100
Transformers availability	0.115	0.100
Reactive plant availability	0.090	0.150
Peak transmission circuit availability	0.070	0.100
Loss of supply event frequency		
>0.75 (y) system minutes	0.300	0.150
>0.10 (x) system minutes	0.150	0.300

Source: AER analysis.

792 The Energy Users Group operating in Queensland, *AER 2011 review of Queensland electricity transmission*, 2011, p. 63.

793 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme, March 2011*, clause 3.3(l).

794 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme, March 2011*, clause 3.5(a).

Transmission circuit availability

Powerlink has allocated the lowest weight for its peak transmission circuit availability sub-parameter.[795] The AER considers that this allocation of weighting may not be appropriate because of the importance of transmission network reliability during the peak period. EMCa considered that the peak availability sub-parameter reflects the overall need to have highest performance from Powerlink's transmission circuit at the critical time.[796] The AER therefore considers that a higher weighting for peak transmission circuit would provide greater incentive for Powerlink to maintain the reliability of its network at the critical time.[797]

Further, Powerlink's proposed weighting for the reactive plant availability sub-parameter is lower than its proposed weightings for the transmission line and transformer availability sub-parameters.[798] EMCa noted Powerlink in many occasions has emphasised the importance of the reactive plaint on its transmission network.[799] EMCa considered on the Powerlink network, reactive plant is playing a far more significant role than on many TNSPs network worldwide. Further, it identified that there are potentially scope for improvement in the performance of this sub-parameter.[800] Therefore, the AER considers that the reactive plant sub-parameter should be allocated with a higher weight than the transmission line and transformer availability sub-parameters to reflect the importance of the reactive plant on the reliability of Powelink's network and the scope for further performance improvement.[801]

The AER notes Powerlink's weightings are based on the number of plant elements in each particular availability sub-parameter.[802] EMCa considered that all plant items should contribute equally to the overall transmission system service to provide reliable supply.[803] It recommended that equal weightings should be applied to each transmission circuit availability sub-parameters. However, it considers reactive plant availability sub-parameter should have a higher weight.[804] The AER considers this allocation of weightings is consistent with the requirements and objectives of the STPIS.[805]

Loss of supply event frequency sub-parameters

Powerlink has allocated a higher weighting to its large (>0.75 system minutes) LOS event frequency sub-parameter than the moderate (>0.10 system minutes) LOS event frequency sub-parameter. The AER notes that Powerlink is required to also count the large (>0.75 system minutes) LOS events as a moderate (>0.10 system minutes) LOS event in the next

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795 Powerlink, *Revenue Proposal 2013–2017*, p. 125.

796 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 90.

797 NER, clause (b)(1)(i).

798 Powerlink, *Revenue Proposal 2013–2017*, p. 125.

799 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 91.

800 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 91.

801 NER, clause 6A.7.4(b)(1) and AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2008, clause 3.5(d)(3).

802 Powerlink, *Revenue Proposal—Appendix O: Powerlink STPIS Target, Caps, Collars and Weighting Methodology*, May 2011, pp. 8–9.

803 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 90.

804 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, p. 91.

805 NER, clause (b)(1); AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(b)(4).

regulatory control period.[806] Powerlink is not required to do so in the current regulatory control period.[807]

The AER considers that the moderate (>0.10 system minutes) LOS event frequency sub-parameter should be allocated with a higher weight than the large (>0.75 system minutes) LOS event frequency sub-parameter. This is because a higher weight for moderate (>0.10 system minutes) will provide greater incentives for Powerlink to reduce the frequency of LOS as a whole, as a large LOS event is also counted as a moderate LOS event. Further, EMCa considered Powerlink's moderate (>0.10) LOS sub-parameter's target is easier to measure and interpret than the large (>0.75) LOS sub-parameter and is therefore likely to provide a more meaningful and stronger incentive.[808] The AER therefore considers that the weightings for the LOS parameters would provide greater incentives for Powerlink to improve reliability of its transmission system if they were reversed—that is a higher weight for the moderate (>0.10 system minutes) LOS event frequency sub-parameter.

Market impact component

10.4.4 Performance target

The AER does not approve of Powerlink's proposed performance target for the market impact component of the STPIS. Instead, the AER's draft decision is to substitute the proposed value of 1953 dispatch intervals with 1442 dispatch intervals. This target is the annual average of Powerlink's five year performance history of 7210 dispatch intervals, factoring into account the following adjustments made by the AER:

- adjustments to Powerlink's 2010 performance history
- rejecting Powerlink's proposed inclusion of the offset as it is not allowed under the market impact component.

In the final decision the AER will update Powerlink's performance target to be based on the most recent five years of performance history and include performance data for the 2011 calendar year.

Market impact parameter incentive payments are calculated based on the percentage reduction below the performance target in dispatch intervals related to outages having a market impact multiplied by 2 per cent of the calendar year adjusted MAR. Putting Powerlink's performance target of 1442 dispatch intervals in context with the future calculation of its performance incentive payment for the period 1 July to 31 December 2012,[809] for every dispatch interval reduction below the target Powerlink will receive approximately $5724.70.

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806 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, p. 25.

807 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2008, p. 42.

808 EMCa, *Technical review for Powerlink 2013–2017 revenue determination, September* 2011, pp. 91–92.

809 Powerlink's performance incentive payment from the period 1 January – 30 June 2012 will be calculated using the performance target provided in the AER's decision regarding the early application of Powerlink's market impact component.

Adjustment to Powerlink's performance history

The STPIS provides that the performance target must be equal to the TNSP's average performance history over the most recent five years unless the AER approves a different period that is consistent with the objectives of the scheme.

The AER has previously assessed Powerlink's 2006–2009 performance history when determining Powerlink's performance target for the early application of the market impact component of the STPIS (early application).[810] Powerlink's proposed performance history for 2006–2009 is consistent with the AER's early application decision.

As Powerlink's early application of the market impact component of the STPIS commenced on 13 July 2010, the AER has also assessed Powerlink's performance measure for 13 July – 31 December 2010. The AER determined that Powerlink's performance measure for this period was 11 dispatch intervals. Powerlink's initial revenue proposal did not take into account the AER's determination for Powerlink's 2010 performance measure and proposed a performance history of 4 dispatch intervals. Powerlink has since updated its 2010 performance history data to reflect the AER's decision.

Over the five most recent calendar years of Powerlink's performance history, 2006–2010, only the period from 1 January – 12 July 2010 was not subject to an earlier AER decision regarding the market impact component. The AER has adjusted Powerlink's proposed performance history for the period 1 January 2010 – 12 July 2010 from 1414 dispatch intervals to 1502 dispatch intervals. The adjustments were to account for:

- The inclusion of dispatch intervals in Powerlink's 2010 performance history associated with constraint sets used to manage outages that did not have a marginal value greater than $10/MWh (i.e. Q>GBMU_GBMU_MDSPT). It is likely Powerlink included the dispatch intervals because the marginal values were greater than $10/MWh based on the 'dispatchconstraint' table. However, the dispatch intervals do not have a marginal value greater than $10/MWh within the 'mcc_constraintsolution' table. As noted above, the mcc_constraintsolution table is a better reflection of the true marginal value of constraints and should be used over the 'dispatchconstraint' table when determining marginal values.

- Dispatch intervals associated with constraint sets used to manage outages in Queensland for which Powerlink is the requestor (i.e. Q>TV_TYP, CA_BPS_3B1F648C_01). The AER has confirmed with AEMO that Powerlink was the responsible party for the outages.

Details of each adjustment are summarised in table 1.9 below.

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[810] AER, *Final decision–early application of the market impact component of the service target performance incentive scheme for Powerlink—performance target*, June 2010.

Table 10.9 Adjustments to Powerlink's performance history for the period 1 January – 12 July 2010

Constraint ID[811]	Powerlink's proposed DI count	AER adjustment to DI count	Reason for adjustment	Exclusion clause	Date binding
#N-Q-MNSP1_I_E	0	2	Outage in QLD—see market notice 31863	N/A	05/05/2010
CA_BPS_3B1F648C_01	0	35	Outage in QLD—see market notice 18461	N/A	07/06/2010 08/06/2010
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
Q_RS_260	72	–3	Dispatch intervals had marginal value < $10/MWh	N/A	18/05/2010
Q^FNQ_-030	14	–2	Dispatch intervals had marginal value < $10/MWh	N/A	17/01/2010
Q>TV_TYP	0	109	Outage in QLD	N/A	11/04/2010

Source: AER analysis

Inclusion of offset

Powerlink's proposed performance target included an offset for dispatch intervals affected by network outages on assets it intends to acquire prior to the commencement of the next regulatory control period. Powerlink states this is to facilitate future prescribed capital augmentations to support increasing loads in South West Queensland.

811 Constraint's are numerical equations used by AEMO's dispatch engine to set the flow of electricity across the NEM given the physical limitations of the network. In this case, the listed constraints have been used by AEMO to set the flow of electricity to account for a particular outage on the transmission network in the NEM.

Powerlink's proposal has failed to specify how the scheme allows for the inclusion of the offset. The AER considers that Powerlink instead relies on a general notion of 'reasonableness' as the basis for inclusion.

In their submission[812], Energy Users Group noted that while the inclusion of the offset seemed reasonable, the AER should verify that the poor performance of those assets under the previous asset owner is not an area where Powerlink can quickly improve. If this was the case, Powerlink could use this acquisition to improve its profitability as this measure is exposed to 2 per cent of the MAR.

The AER rejects Powerlink's proposed inclusion of the offset in its performance target as the STPIS does not allow for the inclusion of the proposed offset. Clause 4.2(d) of the scheme provides that the proposed performance target must be based on the TNSP's average performance history over the most recent five years, subject to the parameter definition in appendix C. The definition of the market impact parameter in appendix C specifies that affected dispatch intervals must relate to 'an outage on a TNSP's network'. The proposed offset relates to dispatch intervals affected by network outages for assets that were not part of Powerlink's network.

The scheme allows for a reasonable adjustment to be made to the performance target provided one of the requirements in clause 4.2(f) is met. The inclusion of the offset is not a reasonable adjustment under this clause because:

- the offset does not meet the requirement in clause 4.2(f)(1) as it is not an abnormality in the dataset and hence not a statistical outlier
- the offset does not meet the requirement in clause 4.2(f)(2) as the proposed inclusion is not to account for the material effects on the TNSP's performance from changes to the age and ratings of assets forming part of its network; and
- the offset does not meet the requirement in clause 4.2(f)(3) as the acquisition of the network assets has not arisen due to a material change in an applicable regulatory obligation as defined in section 2D of the National Electricity Law.

In relation to the Energy Consumer Group's request to the AER to investigate the performance of these assets, the AER considers this is not required given the decision to reject the inclusion of the offset.

10.4.5 Performance cap

Under the STPIS, the proposed cap must equal zero dispatch intervals. In its proposal Powerlink submitted a proposed cap of zero dispatch intervals and therefore the AER approves Powerlink's proposed performance cap. This means that the maximum incentive payment is made when Powerlink achieves a performance measure of zero dispatch intervals.

812 The Energy Users Group operating in Queensland, *AER 2011 review of Queensland electricity transmission,* 2011, August 2011, p. 63.

10.4.6 Updating the performance targets, caps and collars to take into account 2011 performance data in the final decision

This section relates to both the service component and market impact component of the STPIS. Powerlink's proposed performance targets, caps and collars for the next regulatory control period are based on 2006–2010 performance data.[813] The performance data for 2011 are unavailable at the time of this draft decision and therefore have not been included in the calculation of the performance targets. Performance data for 2011 will be available early 2012, before the AER is required to make its final decision.

In the final decision, the AER will update Powerlink's performance targets, caps and collars under the service component and the performance target under the market impact component using Powerlink's performance data from 2007–2011.

The STPIS requires that the performance targets must be equal to the TNSP's average performance history over the most recent five years for both the service and market impact components.[814] It also requires the proposed caps and collars must be calculated by reference to the proposed performance targets for the service component.[815] For the purposes of the AER's draft decision, the most recent five years of performance history available is taken from the 2006–2010 calendar years. However, performance data for 2011 will be available before the AER is required to make its final decision.

The AER considers it is consistent with best regulatory practice that the performance target be updated in the final decision to account for 2011 performance history. It notes this does not place any additional resourcing requirements on Powerlink or the AER, as Powerlink must submit performance data for 2011 in early 2012 to the AER for the annual service standard compliance review. Consistent with the requirement of the STPIS, the AER therefore considers Powerlink's performance targets, caps and collars should be calculated using the performance history during 2007–2011 in the final decision.[816]

Energy Users Group considered that only performance data achieved under an incentive program such as the STPIS should be used for the basis of setting parameter values.[817] The AER notes that Powerlink was not subject to the STPIS during 2001 to 2006. However, the AER considers that the use of 2006 to 2010 performance data for the purpose of this draft decision complies with the requirements of the STPIS.[818] In the final decision, the AER will update the performance targets, caps and collars for the service component and the performance target for the market impact component using Powerlink's 2007 to 2011 performance data.

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813 Except the caps and collars for the LOS event frequency sub-parameters which Powerlink has based on 2001–2010 performance data.

814 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(g) and 4.2(d).

815 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(e).

816 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(g) and 4.2(d).

817 The Energy Users Group operating in Queensland, *AER 2011 review of Queensland electricity transmission,* 2011, p. 63.

818 AER, *Final—Electricity transmission network service providers, service target performance incentive scheme*, March 2011, clause 3.3(g) and 4.2(d).

10.5 Revisions

Revision 10.1: The AER rejected the proposed adjustments on the transmission line and transformer availability performance targets for operational works. It also recalculated Powerlink's caps and collars for the transmission line and transformer availability sub-parameters by referencing the AER's draft decision on these performance targets. Table 10.5 sets out the AER's draft decision on the performance targets, caps and collars for the transmission line and transformer availability sub-parameters.

Revision 10.2: The AER rejected Powerlink's use of 10 years historical data (2001–2010) for calculating the caps and collars for the LOS event frequency sub-parameters. It used the most recent five years performance data for calculating the caps and collars for the LOS frequency sub-parameters. For this draft decision, the most recent five years is 2006 to 2010. For the final decision, the most recent five years is from 2007 to 2011. Table 10.6 sets out AER's draft decision on the caps and collars for each of the LOS event frequency sub-parameters.

Revision 10.3: The AER rejected Powerlink's proposed weightings for the transmission circuit availability sub-parameters and the LOS event frequency sub-parameters. Table 10.8 sets out AER's draft decision on the weightings for the transmission circuit availability and LOS event frequency sub-parameters.

Revision 10.4: The AER rejected Powerlink's proposed performance target for the market impact component. Table 10.2 set out AER's draft decision on the performance target for the market impact parameter.

Revision 10.5: In the final decision, the AER will update Powerlink's performance targets, caps and collars under the service component and the performance target under the market impact component using Powerlink's performance data from 2007–2011.

11 Efficiency benefit sharing scheme

The AER is required to specify in this determination how it will apply the efficiency benefit sharing scheme (EBSS) to Powerlink.[819] The EBSS operates, in conjunction with the ex ante incentive framework, to provide transmission network service providers (TNSPs) with a continuous incentive to reduce operating expenditure (opex). It does this by allowing a TNSP to retain efficiency gains for five years before passing them to consumers.[820] It also removes the incentive for a TNSP to overspend in the opex base year to receive a higher opex allowance in the following regulatory control period.

Further, under transitional provisions in the NER, Powerlink operated under the electricity transmission EBSS during the current regulatory control period.[821] Powerlink will receive any increments or decrements accrued under the scheme in the next regulatory control period.[822]

11.1 Draft decision

The AER is not satisfied Powerlink's proposed EBSS carryover amounts, totalling –$1.3 million ($2011-12), from the application of the EBSS during the current regulatory control period comply with the requirements in the EBSS. The AER considers that the carryover amounts in table 11.5, totalling –$3.8 million ($2011-12), comply with the relevant requirements.

The AER will also apply the electricity transmission EBSS to Powerlink in the next regulatory control period. For the purposes of the EBSS the AER will adjust the forecast opex amounts for the cost consequences of actual demand being less than the low growth scenario, or greater than the medium growth scenario, used to develop the Powerlink's capex forecasts.

The AER will exclude the cost categories listed in section 11.4.2 from forecast and actual opex for the calculation of EBSS carryover amounts. The calculation of carryover amounts under the EBSS should include all other opex costs relating to prescribed transmission services.

Table 11.1 shows the total controllable opex forecasts that the AER will use to calculate efficiency gains and losses for the next regulatory control period, subject to adjustments required by the EBSS.

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819 NER, clauses 6A.4.2(a)(6) and 6A.14.1(1)(iv).

820 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 6.

821 NER, clause 11.6.12(l)

822 NER, clauses 6A.5.4(a)(5) and 6A.5.4(b)(5).

Table 11.1 Draft decision on Powerlink's forecast controllable opex for EBSS purposes ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Total forecast opex	176.9	180.4	184.6	187.4	192.1	921.5
Adjustment for debt raising costs	–3.5	–3.7	–3.8	–3.9	–4.1	–18.9
Adjustment for insurances	–8.5	–9.0	–9.8	–10.3	–11.0	–48.6
Adjustment for network support costs	0.0	0.0	0.0	0.0	0.0	0.0
Forecast opex for EBSS purposes	**164.9**	**167.7**	**171.0**	**173.2**	**177.1**	**854.0**

11.2 Powerlink's proposal

Rewards and penalties accrued during the current regulatory control period

Powerlink proposed the carryover amounts in table 11.2 from the application of the EBSS in the current regulatory control period.

Table 11.2 Powerlink proposed EBSS carryover amounts for 2007-08 to 2011-12 regulatory control period ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Carryover Amount	–0.8	–0.5	–1.1	1.0	–	–1.3

Source: Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 40.

Application of EBSS in the next regulatory control period

Powerlink proposed the AER exclude the cost of recognised pass through events from the opex amounts used to calculate carryover amounts in accordance with section 2.4.2 of the EBSS.[823] Powerlink also proposed to exclude:

- debt raising costs
- equity raising costs
- network support costs
- insurance costs
- self insurance costs.[824]

Powerlink proposed that its controllable opex forecast only be adjusted for the cost consequences of any difference between forecast and actual demand growth if total controllable opex for the next regulatory period exceeds 1 per cent more than its forecast

823 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 115.
824 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 115.

controllable opex.[825] Powerlink considered this approach would ensure any year-on-year movements in capex do not unduly impact either the opex forecasts or the incentives underpinning the EBSS. Powerlink considered that this approach would provide greater certainty.[826]

It proposed the opex amounts in table 11.3, which exclude the proposed uncontrollable cost categories, be the forecast opex used to calculate EBSS carryover amounts.

Table 11.3 Powerlink's proposed forecast opex for EBSS purposes ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Forecast opex	181.3	188.9	198.7	211.1	221.7	1001.8
Adjustment for debt raising costs	–3.5	–3.8	–4.1	–4.3	–4.5	–20.3
Adjustment for network support	–1.2	–0.8	–1.2	–2.9	–2.2	–8.3
Adjustment for insurances	–8.9	–9.4	–10.1	–10.7	–11.4	–50.5
Forecast opex for EBSS purposes	**167.8**	**174.9**	**183.3**	**193.2**	**203.5**	**922.7**

Source: Powerlink, *2013-17 Powerlink Queensland revenue proposal*, June 2011, p. 116.

11.3 Assessment approach

The AER is required to specify in its determination how the EBSS will be applied to Powerlink, and in doing so must have regard to clause 6A.6.5(b) of the NER.[827] The AER must approve the values proposed by Powerlink to be attributed to the EBSS parameters if it is satisfied that those values comply with the requirements set out in the EBSS.[828] The AER's two main considerations in determining how an EBSS will apply to Powerlink are:

1. the need to provide Powerlink with a continuous incentive, so far as is consistent with economic efficiency, to reduce opex[829]
2. the desirability of both rewarding Powerlink for efficiency gains and penalising it for efficiency losses.[830]

The AER also considered any incentives that Powerlink may have to inappropriately capitalise operating expenditure in determining how the EBSS will apply to it.[831]

825 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 115.
826 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, pp. 115–116.
827 NER, clauses 6A.4.2(5)–(6) and 6A.14.1(1)(iii)–(iv).
828 NER, clause 6A.14.3(4).
829 NER, clause 6A.6.5(b)(1).
830 NER, clause 6A.6.5(b)(2).
831 NER, clause 6A.6.5(b)(3).

11.4 Reasons for draft decision

The AER is required to specify in this draft decision how it will apply the efficiency benefit sharing scheme (EBSS) to Powerlink.[832] Two important aspects of the EBSS that need to be specified by the AER in this draft decision are:

- the method to be used to adjust forecast opex for the cost consequences of the difference between forecast and actual demand growth over the next regulatory control period[833]
- cost categories to be excluded from the EBSS that are uncontrollable or would adversely impact the operation of the scheme.[834]

The AER must also determine the revenue increments or decrements that have arisen from the application of the EBSS during the current regulatory control period.[835]

11.4.1 Demand growth adjustment

To calculate carryover amounts, the EBSS requires adjustment of Powerlink's forecast opex for the cost consequences of any differences between forecast and actual demand growth over the regulatory control period. These adjustments must be made using the same relationship between growth and expenditure used in establishing the forecast opex.[836] This approach ensures Powerlink is not rewarded (or penalised) for cost decreases (increases) due to network growth factors beyond its control.

To calculate the carryover amounts accrued during the next regulatory control period, forecast opex will be adjusted for the cost consequences of any difference between forecast and actual demand growth over the next regulatory control period. If actual demand growth is outside the low and medium growth scenarios in table 11.4 the AER will use the opex forecasts in attachment 4 to calculate EBSS carryovers, subject to other adjustments required by the EBSS.

For calculating the carryover amounts, section 2.4.2 of the EBSS requires the forecast opex to be adjusted for the cost consequences of any differences between forecast and actual demand growth over the regulatory control period. These adjustments must be made using the same relationship between growth and expenditure used in establishing the forecast opex.[837] To this end, the AER will recalculate the network growth component of Powerlink's opex forecasts to calculate EBSS carryovers (see section 4.4.2).

Powerlink proposed that, in the interests of efficiency and practicality, a proportionate approach should be applied to any adjustments for the cost consequences of the difference

832 NER, clauses 6A.4.2(a)(6) and 6A.14.1(1)(iv).

833 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

834 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

835 NER, clauses 6A.5.4(a)(5) and 6A.5.4(b)(5).

836 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

837 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

between forecast and actual demand growth in the next regulatory control period. Specifically, Powerlink proposed that its controllable opex forecasts only be adjusted where total controllable opex exceeds 1 per cent more than that forecast. Powerlink considered this approach would ensure any year-on-year movements in capex do not unduly impact either the opex forecasts or the incentives underpinning the EBSS. Powerlink considered that this approach would provide greater certainty.[838]

The AER, however, considers setting a trigger for adjusting the EBSS opex forecasts based on actual opex would not provide Powerlink a continuous incentive to reduce opex. The trigger should be an exogenous factor that Powerlink cannot influence and there should be no link between actual and forecast opex in the EBSS. Further, having the trigger based on actual opex could reward Powerlink for efficiency losses.

Powerlink noted that a proportionate approach had been applied by the AER to both TransGrid and Transend.[839] However, in both these decisions the trigger determined by the AER for adjusting forecast opex was actual demand being outside the range of scenarios modelled to develop the two TNSP's capex forecasts.[840] [841] This way actual opex is exogenous to the demand growth adjustment and the incentives provided by the EBSS are not distorted. To this end, Powerlink's forecast opex will be adjusted by the AER for the cost consequences of any difference between forecast and actual demand growth over the next regulatory control period if actual demand growth is outside the low and medium growth scenarios in table 11.4.[842]

Table 11.4 Powerlink's proposed forecast demand growth (MW)

	2012-13	2013-14	2014-15	2015-16	2016-17
Low growth outlook (50% PoE)	9 129	9 516	9 714	9 909	10 148
Medium growth outlook (50% PoE)	9 765	10 400	10 930	11 447	11 877
High growth outlook (50% PoE)	10 384	11 245	11 992	12 714	13 404

Source: Powerlink, *Annual planning report 2010*, p. 28.

To calculate its forecast opex, Powerlink applied network growth escalation based on growth in total asset value.[843] The growth in total asset value was forecast using Powerlink's probabilistic capex forecasting approach. The EBSS requires that this same approach be used to adjust for the cost consequences of the difference between forecast and actual demand growth in the next regulatory control period.[844] Should actual demand be less than the low demand growth scenario, total asset values, and from this opex, should be recalculated with 100 per cent weight applied to the low growth scenarios. If demand growth

838 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, pp. 115–116.

839 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 115.

840 AER, *TransGrid transmission determination 2009-10 to 2013-14: Final decision*, 28 April 2009, p. 104.

841 AER, *Transend transmission determination 2009-10 to 2013-14: Draft decision*, 21 November 2008, p. 207.

842 The AER is not satisfied that Powerlink's demand forecasts reasonably reflect as realistic expectation of demand over the next regulatory control period. Consequently the AER only used Powerlink's low and medium demand scenarios to forecast its augmentation capex requirement.

843 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 91.

844 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

is greater than the medium growth scenario 100 per cent weight should be applied to the medium growth scenario. And if demand growth exceeds the high growth scenario, 100 per cent weighting should be applied to the high growth scenario.

11.4.2 Excluded cost categories

The EBSS allows TNSPs to propose uncontrollable cost categories to be excluded from its operation. A TNSP is thus not rewarded (or penalised) for cost decreases (increases) over which it has limited control. TNSPs must propose cost categories for exclusion in their regulatory proposal before the commencement of the regulatory control period during which the EBSS will be applied. [845]

The AER will exclude the following cost categories from the EBSS for calculating EBSS carryovers:

- debt raising costs
- network support costs
- insurance costs
- self insurance costs
- movements in provisions.

These costs will be excluded in addition to the adjustments set out in section 2.4.2 of the EBSS, which exclude the cost of recognised pass through events.

The AER proposes to approve the cost categories proposed by Powerlink for exclusion from the EBSS with the exception of equity raising costs. These will be excluded to provide Powerlink a continuous incentive to reduce opex, to which the AER must have regard under the NER.[846] Excluding these cost categories provides a continuous incentive because actual opex in the base year is not used to set opex forecasts for these cost categories, which is assumed by the EBSS.

The AER also considers it inappropriate to include equity raising costs in the EBSS because, like debt raising costs, forecast equity raising costs are based on a benchmark efficient firm rather than historical costs. However, since equity raising costs are not provided as an opex allowance, equity raising costs are already excluded from the operation of the EBSS because they are not included in Powerlink's forecast opex.

The EBSS also requires that the AER must measure actual opex over the regulatory control period using the same cost categories and methodology as those the AER uses to calculate the forecast opex for that regulatory control period.[847] To determine Powerlink's forecast opex the AER has removed the movement in provisions from Powerlink's base year expenditure (attachment 4). Therefore the AER will exclude any movements in provisions from Powerlink's

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845 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.
846 NER, clause 6A.6. 5(b)(1).
847 AER, *Electricity TNSPs: EBSS*, September 2007, p. 7.

actual opex during the forthcoming regulatory control period consistent with section 2.4.2 of the EBSS.

11.4.3 Rewards and penalties accrued during the current regulatory control period

In accordance with transitional provisions in the NER, Powerlink has been subject to the electricity transmission EBSS during the current regulatory control period.[848] Powerlink will receive the increments or decrements accrued under the scheme in the next regulatory control period.[849]

The AER is not satisfied Powerlink's proposed EBSS carryovers comply with the scheme. Table 11.5 outlines the increments and decrements included as building blocks in the determination of Powerlink's annual revenue requirement.[850]

Table 11.5 AER conclusion on EBSS carryover amounts for 2007-08 to 2011-12 regulatory control period ($million, 2011-12)

	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Powerlink proposal	–0.8	–0.5	–1.1	1.0	–	–1.3
AER conclusion	–4.1	–0.4	–2.9	3.5	–	–4.0

Source: Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 40; AER analysis.

Under transitional rules, the electricity transmission EBSS was applied to Powerlink during the current regulatory control period.[851]

The EBSS allows uncontrollable cost categories to be excluded from its operation. The EBSS requires that TNSPs propose cost categories for exclusion in their regulatory proposal prior to the commencement of the regulatory control period during which the EBSS will be applied.[852] However, Powerlink was unable to propose any cost categories for exclusion from the EBSS in its last regulatory proposal in April 2006 because the electricity transmission EBSS was not published by the AER until September 2007.

Despite this, Powerlink proposed that the following costs be excluded from the calculation of EBSS carryover amounts accrued during the current regulatory control period:

- debt raising costs
- equity raising costs
- network support costs

848 NER, clause 11.6.12(l)
849 NER, clauses 6A.5.4(a)(5) and 6A.5.4(b)(5).
850 NER, clauses 6A.5.4(a)(5) and 6A.5.4(b)(5).
851 NER, clause 11.6.12(l)
852 AER, *Electricity transmission network service providers: Efficiency benefit sharing scheme*, September 2007, p. 7.

- insurance costs
- self insurance costs.[853]

Powerlink noted the AER excluded these costs from the application of the EBSS in other TNSP determinations.[854] The AER considers including these costs in the EBSS could reward Powerlink for efficiency losses or penalise it for efficiency gains, a factor the AER must have regard to in implementing the EBSS (section 11.4.2).[855] Consequently the AER has excluded these costs from both forecast and actual costs for the calculation of rewards and penalties accrued during the current regulatory control period.

The AER has also excluded movements in provisions from both forecast and actual opex. Because these have been excluded from Powerlink's base opex to forecast opex for the next regulatory control period including these costs could reward Powerlink for efficiency losses or penalise it for efficiency gains.[856]

Powerlink also proposed no adjustment be made to its opex forecasts for calculating carryovers accrued during the current regulatory control period. The AER agrees and has not adjusted Powerlink's opex forecasts.

The AER assessed Powerlink's calculation of EBSS carryovers and notes:

- forecast opex, including adjustments, did not reconcile with the forecast opex in Powerlink's PTRM for the current regulatory control period
- actual opex, including adjustments, did not reconcile with Powerlink's regulatory accounts
- inflation had not been applied consist with the roll forward model.

Correcting for these errors, the AER calculated the efficiency gains in table 11.6.

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853 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 39.
854 Powerlink, *2013–17 Powerlink Queensland revenue proposal*, June 2011, p. 39.
855 NER, clause 6A.6.5(b)(2).
856 NER, clause 6A.6.5(b)(2).

Table 11.6 Efficiency gains accrued during the current regulatory control period ($million, 2011-12)

	2007-08	2008-09	2009-10	2010-11	2011-12
Forecast opex	166.6	167.3	179.5	171.8	176.8
Forecast opex adjustments	–40.1	–32.9	–39.1	–23.2	–23.7
Adjusted forecast opex	**126.5**	**134.4**	**140.5**	**148.6**	**153.1**
Actual opex	164.6	155.3	163.2	157.7	163.8
Actual opex adjustments	–37.6	–23.1	–21.0	–7.9	0.0
Adjusted actual opex	**127.0**	**132.2**	**142.2**	**149.8**	**163.8**
Efficiency gains	**–3.7**	**2.5**	**–6.4**	**3.5**	**0.0**

Source: AER analysis.

Rolling these efficiency gains forwards for five years, in accordance with the EBSS, the AER calculated the EBSS carryovers in table 11.5.

11.5 Revisions

Revision 11.1: The AER will use the opex forecasts in table 11.1 to calculate EBSS carryovers, subject to other adjustments required by the EBSS.

Revision 11.2: Table 11.5 outlines the increments and decrements included as building blocks in the determination of Powerlink's annual revenue requirement.

12 Contingent projects

The AER must determine whether Powerlink's proposed contingent projects meet the NER contingent project criteria set out in clause 6A.8.1. The AER must also determine whether the trigger event for each contingent project is appropriate.

Generally, contingent projects are network augmentation projects that are significant, may arise in the regulatory control period but are not yet committed and are not provided for in the capital expenditure forecast. Such projects are linked to unique investment drivers (rather than general investment drivers such as expectations of load growth within a region) and are triggered by a defined 'trigger event'. If the trigger event occurs during the regulatory control period then the AER will separately assess the contingent project's costs upon application by Powerlink. However the trigger event must be described in such terms that the occurrence of that event or condition is all that is required for the revenue determination to be amended.[857] Therefore it is important that the trigger event be adequately defined and that the proposed contingent capital expenditure reasonably reflects the capital expenditure criteria.[858]

12.1 Draft decision

The AER is not satisfied that all of the 13 contingent projects proposed by Powerlink meet the NER criteria for contingent projects.[859]

- The AER is not satisfied that five of the proposed contingent projects meet the contingent project criteria.[860]
  - Two of these projects are driven by a potential increase to the mandated security of supply standards (in the respective area). The AER does not accept such a change is probable in the next regulatory control period.[861]
  - The AER does not accept the NEMLink project, is probable in the next regulatory control period.
  - The AER does not accept that the proposed Copper String contingent project in Mt Isa and projects in the Surat Basin which are driven by customer commitment of load are probable in the next regulatory control period.
- The AER is not satisfied that the proposed trigger event for eight proposed contingent projects was appropriately defined by Powerlink.[862] The AER accepts these eight proposed contingent projects, but has revised the project trigger event definition.

857 NER, clause 6A.8.1(c)(4).
858 NER, clause 6A.6.7(c)(1)–(3).
859 NER, clause 6A.8.1(b).
860 NER, clause 6A.8.1(b).
861 NER, clause 6A.8.1(c)(5).
862 NER, clause 6A.8.1(b)(4).

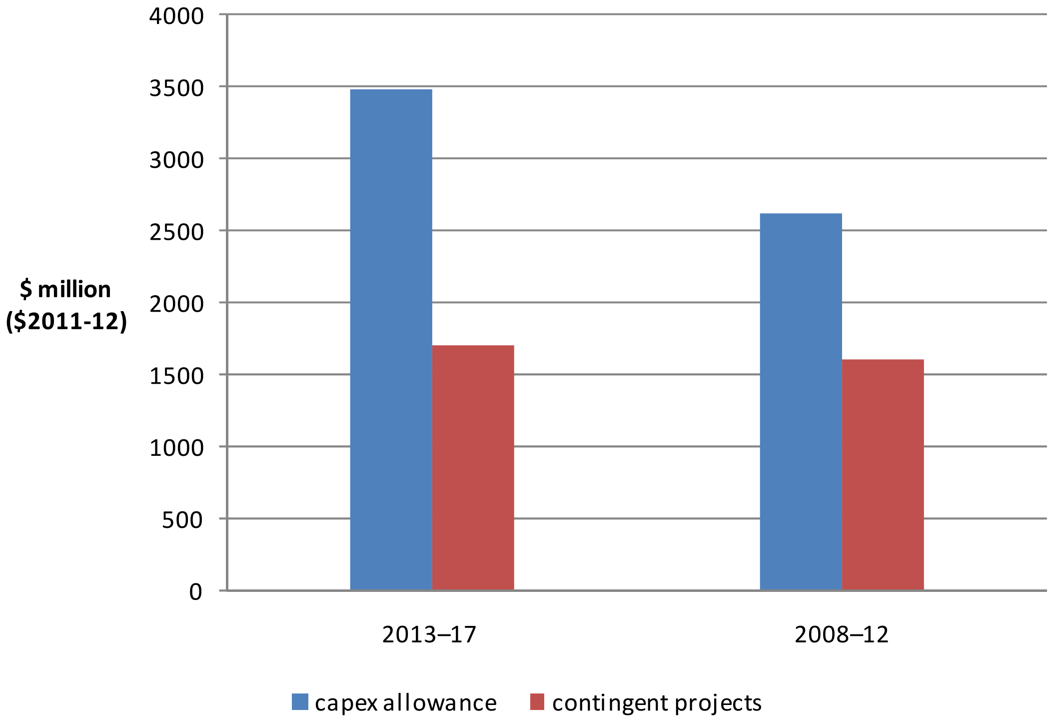
The AER's decision on each of the 13 contingent projects, including the AER's revised project trigger event definition is set out in table 12.2 in 12.6 attachment to contingent projects.

12.2 Powerlink's proposal

Powerlink proposed 13 contingent projects, with project costs ranging from $50.8 million to $788.0 million and the sum total of $1701.8 million.[863] This is of a similar magnitude as Powerlink's proposed load driven network augmentation. Table 12.1 sets out Powerlink's proposed contingent projects, triggers and indicative costs.

Figure 12.1 shows the actual and proposed costs of the contingent projects and the total capex allowance in the current and next regulatory control period.

Figure 12.1 Load driven capex and contingent projects ($million, 2011-12)



[863] Unless otherwise stated, all costs listed in this attachment are $million 2011-12

Table 12.1 Powerlink's proposed contingent projects, triggers and indicative costs

Project Name	**Proposed trigger event**	**Cost $million, ($2011-12)**
Western Downs to Columboola 275kV 3rd circuit	Commitment for net demand in the Surat area to exceed 850MW, or net generation export from the Surat area to exceed 850MW	59.5
Columboola to Wandoan South 275kV 3rd circuit	Commitment for net demand supplied from Wandoan South to exceed 850MW, or net generation export from the Wandoan South area to exceed 850MW	63.3
Mt Isa connection shared network works	Commitment of load in excess of 200MW to be connected to Woodstock 275kV Substation	74.4
Galilee Basin connection shared network works	Commitment of additional load in excess of 175MW to be connected to Lilyvale 275kV Substation	88.4
Moranbah area	Commitment of additional Northern Bowen Basin increasing peak demand in the North zone to in excess of 870MW	54.9
Bowen industrial estate	Commitment for additional load increasing demand supplied from the Strathmore-Bowen North 132kV feeders to in excess of 215MW	80.7
Callide to Moura transmission line and Calvale transformer	Commitment of additional load increasing demand supplied from the 132kV network to Moura in excess of 80MW	50.8
Gladstone State Development Area	Commitment of additional load in excess of 575MW within the GSDA and/or Curtis Island	115.7
Ebenezer 330/275/110kV establishment	Commitment of load in excess of 125MW around the Ebenezer area	62.7
N-2 security to essential loads (CBD)	Change in reliability standard for supply to essential loads	114.9
FNQ 275kV energisation	Change in reliability standard for supply to FNQ	87.9
NEMLink—Queensland component	Successful application of the regulatory test leading to the recommendation of NEMLink with expenditure during the next regulatory period	788.0
QNI upgrade—Queensland component	Successful application of the regulatory test leading to the recommendation of QNI during the next regulatory period	60.6
Total Indicative cost		**1701.8**

Source: Powerlink, *Revenue proposal*, Attachment N, p. 3; AER analysis (escalation)

12.3 Assessment approach

The AER reviewed each of Powerlink's proposed contingent projects in the context of the NER criteria, clause 6A.8.1. The focus of the review was threefold:

- whether the proposed contingent project is reasonably required to achieve any of the capital expenditure objectives
- whether the proposed contingent project expenditure reasonably reflects the capex criteria, and
- whether the trigger event is appropriate.

In reviewing Powerlink's proposed contingent projects the AER had regard to:

- Powerlink's 2011 annual planning report (APR) and specifically the forecast of connection point native demands (MW) coincident with state summer maximum demand in the relevant zone[864]
- Powerlink's forecast summer peak demand scenarios in any applicable regulatory tests, including the 2010 regulatory test for the Surat Basin[865]
- Powerlink's Planning criteria policy in the context of the Queensland Transmission Authority
- AEMO's 2010 National Transmission Network Development Plane (NTNDP)[866]
- AEMO's submission and Powerlink's response to AEMO's submission and other public submissions,[867] and
- EMCa's technical review of Powerlink's proposal, including the review of the proposed contingent projects and whether any projects in the forecast capex should be considered as contingent projects instead.[868]

12.4 Reasons for draft decision

The AER accepts eight of Powerlink's proposed contingent projects as contingent projects in the next regulatory control period. Powerlink proposed $1701.8 million of contingent project expenditure but the AER has approved $513.8 million (across the eight projects).

Two of the projects not accepted are driven by a potential increase to the mandated security of supply standards (in the respective area). The AER does not accept such a change is

864 Powerlink, *Annual Planning report*, 2011, Appendix B p. 98.
865 Powerlink, *Maintaining a reliable electricity supply to the Surat Basin north west area*, November 2010, p. 12.
866 NER, clause 6A.6(e)(11).
867 NER, clause 6A.6(e)(2).
868 NER, clause 6A.6(e)(10).

probable in the next regulatory control period.[869] The total expenditure for these projects is $202.8 million.

Two projects are National Transmission Network development projects—NEMLink and QNI. NEMLink is a conceptual project of the Australian Energy Market Operator (AEMO) and is the largest contingent project with proposed expenditure of $788.0 million. The AER does not accept that the NEMLink project is probable in the next regulatory control period and therefore has not accepted NEMLink as a contingent project. The QNI project worth $60.6 million, is accepted by the AER as a contingent project in the next regulatory control period, but the trigger event proposed by Powerlink does not meet the contingent project criteria.

The AER does not accept three of the proposed contingent projects that are driven by customer commitment of load (two in the Surat Basin area and one in Mt Isa). These projects total $197.2 million. The AER does not accept that these proposed projects are probable in the next regulatory control period.

12.4.1 Changes in reliability standards

The trigger event (proposed by Powerlink) for two proposed contingent projects is an 'increase to the reliability standards for supply'. The AER is not satisfied that the trigger events in relation to these two proposed contingent projects are appropriate, nor that the proposed contingent capital expenditure meets the capital expenditure criteria.[870] These projects are the:

- N-2 Security to essential loads (Brisbane) project, $114.9 million and
- far north Queensland energisation project, $87.9 million.

The Queensland Transmission Authority allows Powerlink a degree of discretion in the planning policy criteria Powerlink adopts.[871] Powerlink's planning policy assumes that Powerlink's network should be planned to 'N–1' criterion. [872] The AER is concerned that the trigger event, as described by Powerlink, could cover unilateral decisions by Powerlink to its planning policy.

The AER considers that it is appropriate for changes (increases) to reliability standards to be dealt with through amendments to the Transmission Authority; the trigger should not be at Powerlink's own discretion to amend or revise its own planning criteria policy. The formal process of issuing such an instrument would require extensive public consultation and consideration by the Queensland State Parliament. The AER is unaware of any intention by the designated minister to amend the Transmission Authority. The AER expects that, even if such a process were to commence in the early part of the next regulatory period, it is unlikely

869 NER, clause 6A.8.1(c)(5).

870 NER, clause 6A.8.1(b)(4) and NER, clause 6A.8.1(b)(2)(ii).

871 Powerlink, *Planning criteria policy*, v1.0, p. 3 states: 'These mandated obligations include a requirement to apply 'good electrical industry practise' which in-turn necessitates a range of supporting planning assumptions. These assumptions are referred to as the 'planning criteria'. Whilst the components or detail of the planning criteria are not specifically defined by the NER of in the State Government legislative requirements, the planning criteria must be defined and documented such that the required statutory outcomes are achieved.' (emphasis added)

872 Powerlink, *Planning criteria policy,* v1.0, p. 4.

that the increase in reliability standard would become effective in the next regulatory control period.Further, if the Transmission Authority were to be amended and take effect in the next regulatory control period, Powerlink may be able to apply for expenditure recognition under the positive regulatory pass-through rules.[873]

12.4.2 National transmission network developments and interconnectors

Powerlink has proposed two[874] contingent projects which relate to interconnections within the National Electricity Market (NEM); NEMLink ($788 million, Queensland component) and QNI upgrade ($60.6 million, Queensland component).

The AER does not accept NEMLink as a contingent project in the next regulatory control period because NEMLink is not probable to occur in the period. NEMLink is a 'conceptual project' of AEMO that is in the earliest stages of consideration.

EMCa also found QNI to be 'unlikely to proceed unless the possibility of NEMLink was ruled out in NEM planning'.[875] However, the AER accepts that there is a possibility that QNI, unlike NEMLink, may occur in the next regulatory control period and have further considered the project as a possible contingent project.

The trigger events proposed by Powerlink for QNI (and NEMLink) is the application of a regulatory investment test for transmission (RIT-T):

> The successful application of the RIT-T leading to the recommendation of the interconnection works during the next regulatory control period.[876]

The AER has, in previous TNSP decisions (including for Powerlink's current regulatory period), accepted the regulatory rest / RIT-T as a trigger event. However, the AER now considers that the RIT-T is a necessary, but not sufficient, condition for a trigger event and cannot itself be a trigger event. The AER considers this to be the correct interpretation of the relevant provisions because:

- the purpose of the RIT-T is to identify the investment option which maximises net economic benefits and, where applicable, meets the relevant jurisdictional or NER based reliability standards
- all transmission investments, other than those exempt from the requirements of the RIT-T, must undergo the RIT-T assessment process. Identifying the optimal investment option does not make the project reasonably necessary; it makes the investment decision making process transparent
- the RIT-T is a rule requirement for a project to proceed but not a 'driver' of the project. It does not trigger the 'need' for a project to proceed.

The RIT-T as a trigger event in of itself doesn't meet the NER criteria because:

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873 NER, clause 6A.7.2 and 6A.7.3.

874 The Gladstone State Development Area Connection Shared Network Works (Calvale to Larcom Creek) contingent project is also a National Development project identified by AEMO, however it has no cross-jurisdiction implications and is discussed in section 12.4.3.

875 EMCa, *Technical review*, 6 September 2011, p. 19.

876 Powerlink, *Revenue proposal*, pp.16–18.

- the 'successful application of the RIT-T leading to the recommendation of expenditure during the next regulatory control period' does not make undertaking the proposed contingent project necessary to achieve the capital expenditure objectives[877]

- the successful application of the RIT-T in itself does not 'generate increased costs or categories of costs' as required by the contingent project criteria[878]

- the 'recommendation of the interconnection works during the next regulatory period' is a condition or event that arguably affects the transmission network as a whole[879] (noting also that AEMO refers to these projects as 'the backbone of the national grid').[880]

EMCa found that QNI doesn't appear to meet the capex objectives because the justification relates to market benefits and EMCa considers that project doesn't meet the capital expenditure objectives required under the NER.[881]

AEMO's submission also recognises the difficulty of defining a trigger event for inter-connector projects such as these, where the RIT-T as a trigger for such projects does not meet the contingent project criteria:

> The trigger for these projects is not simple to define as it can be expected to link demand growth and new generation investment across the whole NEM. A potential trigger might be for AEMO to conduct the RIT-T assessment. This will ensure that these augmentations can be considered impartially and from a national, rather than regional, perspective.[882]

Powerlink, in its response to AEMO's submission, stated:

> ….Investments such as NEMLink or QNI Upgrade will require that the RIT-T assessments be conducted jointly with other TNSPs. Where applicable this joint assessment process would include AEMO…However the NER and NEL do not provide for AEMO, in its role as the National Transmission Planner, to conduct RIT-T assessments for the purposes of investment decision making…[883]

The AER considered alternative trigger event descriptions for the QNI Interconnector project. In particular the AER considered the possibility of using the 'mirror' trigger event for the NSW side of this same QNI interconnector project. The NSW component of the QNI interconnector project was included as a contingent project in TransGrid's current regulatory control period.[884] The TransGrid trigger event referred specifically to capacity constraints as determined by NEMMCO's (now AEMO's) constraint equations.

Powerlink, on the other hand, submitted that the identified need for the project is not reliability related:

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877 NER, clause 6A.8.1(c)(2).
878 NER, clause 6A.8.1(c)(3).
879 Which does not satisfy NER, clause 6A.8.1(C)(3).
880 AEMO, *Submission to Powerlink*, 12 September 2011, p. 4.
881 EMCa, *Technical review*, 6 September 2011, p. 19.
882 AEMO, *Submission*, 12 September 2011, p. 4.
883 Powerlink, *Response to AEMO submission*, 29 September 2011, p. 4.
884 AER, *TransGrid Final Decision*, 28 April 2009, p. 160.

> The identified need for an upgrade of QNI is not related to reliability corrective action. Hence any augmentation to QNI is required to deliver a positive net economic benefit outcome.[885]

The QNI project is advanced on market benefits and the AER accepts the difficulty imposing a trigger event that meets the contingent project criteria and the capex objectives. The AER accepts the conceptual need for the project, and recommends Powerlink describe a trigger that meets the NER criteria. The AER suggests that a starting point for the trigger for this project could be:

- the publication by AEMO of formal advice to the effect that augmentation of QNI (jointly by TransGrid and Powerlink) to the extent of a capacity increment of 150–200MW above the current capacity as determined by AEMO constraint equations, should be pursued within a timeframe that would require capex during the next regulatory control period
- the successful joint application of the RIT-T by Powerlink and TransGrid finding that net economic benefits compared to all other credible options across a range of reasonable scenarios are viable based on the principles and methodology of the RIT-T
- the financial commitment by Powerlink's board and TransGrid's board to undertake the project.

12.4.3 Commitment of specific load or generation at a specific location

Eight[886] of Powerlink's proposed contingent projects are triggered by the commitment of one large single, or multiple, customer loads in a specific location. The AER accepted that six of these projects meet the contingent project criteria, but the AER revised the trigger events. These revisions were to reflect the net effect of generation and load offsets, and that some of the load or generation may be handled through negotiated services.

The AER did not accept three projects because the AER does not consider these as probable within the next regulatory control period.

- Powerlink proposed the 'Mt Isa Connection shared network works' ($74.4 million). This contingent project is to supply electricity to the Xstrata Mount Isa mines and is driven by a development company CuString Pty Ltd and construction company Leighton Contractors Pty Ltd. On 6 October 2011 Xtrata announced they have entered into a 17 year contract with the Diamantina Power Station to supply gas energy to Xstrata.[887] This announcement makes Powerlink's Mt Isa Connection shared network works contingent project unviable.
- Powerlink proposed two projects as separate contingent projects, but the AER consider should be classified as a single contingent project because they have an identical trigger point location.[888] Both are linked to the solution of the same network constraints and limitations.[889] The AER has referred to these projects collectively as the 'Surat Basin contingent project'. These projects are: Western Downs – Columboola, 3rd circuit,

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885 Powerlink, confidential: Contingent Project CP.01125 QNI Upgrade (Queensland Component) A1036583, 27 June 2011 p. 8.
886 The AER has counted the Two Surat Basin projects as one.
887 Mt Isa Mines (Xstrata), *News release*, 6 October 2011.
888 NER, clause 6A.8.1(c)(3)—the trigger event is a condition or event that generates increased costs or categories of costs relate to a specific location.
889 EMCa, *Technical report*, 6 September 2011, p. 96.

$59.5m and Columboola – Wondoan South, 3rd circuit, $63.3m. The Surat Basin contingent project is preceded by two other projects which Powerlink has included in its proposed ex ante allowance. The two ex ante Surat Basin projects were the subject of the Surat Basin regulatory test which was applied in 2010 and which identified a staged solution.[890] Powerlink has not included the two preceding Surat Basin projects in the 2010 NTNDP which suggests that the contingent project is unlikely in the next regulatory control period and/or Powerlink is sufficiently uncertain of the timing of the project(s).

EMCa reached the view that the Surat basin contingent project should not be considered as contingent project for the following reasons:

- The trigger is either import to or export from the Surat Basin region exceeding 850MW. The information from Powerlink would suggest that growth in load or generation in the Surat Basin, Columboola–Wandoan area is equally likely; this in turn would suggest that there is likely to be considerable 'netting off' of load and generation in the region.
- The current 10 per cent probability of exceedence high scenario load forecast for the Surat Basin identifies a load at the beginning of the regulatory control period of approximately 100MW and does not identify load of 850MW until the following regulatory control period. Taking into account the comment made above; the AER considers that there is more than adequate 'headroom'.
- There is no suggestion that if generation development requires an export of greater than 850MW that such export is required for reasons of reliability. This, therefore, would constitute a market constraint on the export of generation and export of greater than 850MW should not be considered an allowable trigger.

The AER considers that, on the balance of evidence, the Surat Basin contingent projects are unlikely (not probable) to be required in the next regulatory control period. Further, the AER is aware that TRUenergy have recently proposed generation investment targeted at two key growth areas, with new gas fired electricity generators proposed for Ipswich to meet South East Queensland load, and Gladstone to meet growing industrial load.[891] The power stations, each initially proposed to be 500 MW, and scalable up to 1500 megawatts each, could represent a total investment of $3.6 billion and the permitting process will occur over the next 12 months. Subject to the receipt of all permitting and development approvals, construction could begin as early as 2013. The Blackstone Power Station will be built on an existing 500 hectare industrial park in Ipswich, close to the Swanbank B coal-fired power station that is due to cease operations in the first half of 2012.

The AEMO submission also raised additional concerns with this Surat Basin contingent project:

> Others [projects] are generation driven, for example the Western Downs to Columboola 275kV 3rd circuit. It is feasible for some of these augmentations to be classified as a negotiated service. The AER should assure itself that the classification of these services as prescribed services is appropriate….It is less clear how generation driven augmentations can be classified as providing prescribed services unless they can demonstrate 'system-side benefits'. Therefore all projects

890 Powerlink, *Maintaining a reliable electricity supply to the Surat Basin north west area*, November 2010.

891 http://www.truenergy.com.au/about/news/news.xhtml?newsitem=216

driven by generator connections should be included as contingent projects and must demonstrate net-positive benefits under RIT-T assessment.[892]

In response, Powerlink stated:

> AEMO has suggested that some of Powerlink's proposed augmentations are 'generation driven' and cites the Western Downs to Columboola 3rd 275kV circuit as an example. Powerlink can confirm that this project has been proposed as a contingent project and that the trigger event has been identified as 'commitment for net demand in the Surat area to exceed 850MW, or net generation export from the Surat area to exceed 850MW' In discussing the nature of the trigger Powerlink identified that the generation aspect of the trigger 'occurs when the amount of generation must be exported from the Surat area <u>in order for Powerlink to meet its mandated supply obligations exceeds 850MW</u>' (Powerlink added emphasis)[893]

and

> Consistent with the NER, Powerlink can confirm that no capital expenditure has been included in its revenue proposal for projects that are purely 'generation driven'. [894]

The AER accepts Powerlink's clarification that the projects are for prescribed transmission services.

12.5 Revisions

Revision 12.1: The AER accepts eight of the thirteen contingent projects proposed by Powerlink as contingent projects in the next regulatory control period. The AER has approved \$513.8 million (eight projects) of contingent project expenditure of Powerlink proposed \$1701.8 million (\$2011-12).

Revision 12.2: The AER has made changes to the trigger event definitions.

[892] AEMO, *Submission*, 12 September 2011, p. 4.
[893] Powerlink, *Response to AEMO submission*, 29 September 2011, p. 3.
[894] Powerlink, *Response to AEMO submission*, 29 September 2011, p.3

12.6 Attachment to contingent projects

Table 12.2 Powerlink's proposed contingent projects and AER draft decision

PROJECT (Powerlink reference)	Proposed cost $million ($2011-12)	Trigger event proposed by Powerlink	Trigger event revised by AER / AER decision	Indicative costs ($million, 2011-12)
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 does not accept this project as a contingent project. ■ Western Downs to Columboola and Columboola to Wandoan South considered collectively as one project 'Surat Basin contingent project' ■ The proposed expenditure does not reasonably reflect the capital expenditure criteria and the proposed trigger event is not adequately defined	–
Columboola to Wandoan South 275kV 3rd 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	■ As above	–
Mt Isa connection shared network works	74.4	Commitment of load in excess of 200MW to be connected to Woodstock 275kV Substation	■ The AER does not accept this project as a contingent project. ■ The proposed expenditure does not reasonably reflect the capital expenditure criteria because the project is not likely to be required in the next regulatory control period.	–

Galilee Basin connection shared network works	88.4	Commitment of additional load in excess of 175MW to be connected to Lilyvale 275kV Substation	The project is triggered by: ■ Commitment of net load in excess of 175MW above 2010 APR forecast of connection point native demand and/or Transformer capacity outlined in table C.2, to be connected to the Lilyvale 275kV substation AND ■ The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point AND ■ The effect of the net load in excess of 175MW above 2010 capacity connected to the Lilyvale 275kV substation will lead to additional power transfer on Stanwell–Broadsound circuits which has the effect of eroding capacity available for power transfer to North Queensland and an overload to the Central to North Queensland (CQ-NQ) intra-connector AND ■ Powerlink has completed a RIT-T assessment finding that the Galilee Basin connection shared network works is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the RIT-T AND ■ 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.	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 project is triggered by: ■ 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 ■ The connection agreement includes financial commitment by all customers affected by the net load increase at the	54.9

			connection point AND ■ The effect of the net load in excess of 870MW above 2010 peak capacity connected to the Peak Downs North 132kV substation will lead to an overload of the Nebo–Kemmis and Nebo–Moranbah circuits under N-1 conditions AND ■ Powerlink has completed a RIT-T assessment finding that the Moranbah area shared network works is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the RIT-T AND ■ 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.	
Bowen industrial estate	80.7	Commitment for additional load increasing demand supplied from the Strathmore-Bowen North 132kV feeders to in excess of 215MW	The project is triggered by: ■ 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 ■ The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point AND ■ The effect of the net load in excess of 215MW above 2010 capacity connected to the Abbot Point Development Area switching 132kV substation will lead to an overload of the Strathmore–Bowen North 132kV feeders under N-1 conditions AND ■ Powerlink has completed a RIT-T assessment finding that the Bowen industrial estate shared network works project is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the	80.7

			RIT-T AND ■ 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.	
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 project is triggered by: ■ Commitment of net load in excess of 80MW above 2010 capacity, to be connected on the 132kV network supplying Moura substation AND ■ The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point AND ■ The effect of the net load in excess of 80MW above 2010 peak capacity connected to the Moura 132kV substation will lead to an overload of the Callide–Moura 132kV circuits AND ■ Powerlink has completed a RIT-T assessment finding that the Callide to Moura transmission line and Calvale transformer project is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the RIT-T AND ■ 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	50.8

			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.	
Gladstone State Development Area (GSDA)	115.7	Commitment of additional load in excess of 575MW within the GSDA and/or Curtis Island	The project is triggered by: ■ Commitment of net load in excess of 575MW above 2010 APR medium outlook forecast levels in summer 2016/17) within the GSDA and/or Curtis Island AND ■ The connection agreement includes financial commitment by all customers affected by the net load increase at the connection point AND ■ The effect of the net load in excess of 575MW will lead to an overload of the Gladstone zone which has the effect that Powerlink is unable to meet its mandated supply obligations AND ■ Powerlink has completed a RIT-T assessment finding that Gladstone State Development Area project is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the RIT-T AND ■ 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.	115.7
Ebenezer 330/275/110kV establishment	62.7	Commitment of load in excess of 125MW around the Ebenezer area	The project is triggered by: ■ The Ebenezer regional industrial area is declared an industrial zone by the Department of Infrastructure and Planning, and Ipswich City Council AND	62.7

			▪ The Industrial land allocation plan is released and the industrial land commences allocation AND
			▪ There is a commitment for net load in excess of 125MW above 2010 APR medium outlook forecast levels around the Ebenezer area AND
			▪ connection agreement includes financial commitment by all customers affected by the net load increase at the connection point AND
			▪ The effect of the net load in excess of 125MW will lead to an overload of the surrounding Ebenezer area which has the effect that Powerlink is unable to meet its mandated supply obligations AND
			▪ Powerlink has completed a RIT-T assessment finding that the Ebenezer establishment project is the preferred option (as defined in the National Electricity Rules), based on the principles and methodology of the RIT-T AND
			▪ 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.	

N–2 security to essential loads (CBD)	114.9	Change in reliability standard for supply to essential loads	▪ The AER does not accept this project as a contingent project. ▪ The proposed expenditure does not reasonably reflect the capital expenditure criteria and the proposed trigger event is not adequately defined	–
FNQ 275kV energisation	87.9	Change in reliability standard for supply to FNQ	▪ The AER does not accept this project as a contingent project. ▪ The proposed expenditure does not reasonably reflect the capital expenditure criteria and the proposed trigger event	–

			is not adequately defined	
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 does not accept this project as a contingent project. ■ The proposed expenditure does not reasonably reflect the capital expenditure criteria; the AER considers NEMLink is unlikely to proceed in the next regulatory control period.	–
QNI upgrade—Queensland component	60.6	Successful application of the regulatory test leading to the recommendation of QNI during the next regulatory period	■ The publication by AEMO of formal advice to the effect that augmentation of QNI (jointly by TransGrid and Powerlink) to the extent of a capacity increment of 150–200MW above the current capacity as determined by AEMO constraint equations, should be pursued within a timeframe that would require capex during the next regulatory control period AND ■ The successful joint application of the RIT-T by Powerlink and TransGrid finding that the QNI upgrade has a positive net economic benefit and that it maximises net economic benefits compared to all other credible options across a range of reasonable scenarios (based on the principles and methodology of the RIT-T) AND ■ The financial commitment by Powerlink's board and TransGrid's board to the project. ■	60.6
			Total	513.8

13 Pricing Methodology

The AER is required to make a determination that specifies the pricing methodology that applies to a TNSP.[895] This attachment sets out the AER's considerations and conclusions on Powerlink's proposed pricing methodology.

A pricing methodology is a methodology, formula, process or approach that, when applied by a TNSP:

- allocates the aggregate annual revenue requirement (AARR) to the categories of prescribed transmission services provided by the TNSP and to transmission network connection points of network users
- determines the structure of the prices that a TNSP may charge for each of the categories of prescribed transmission services.[896]

Powerlink is the principal electricity transmission network provider in Queensland. Therefore, it is responsible for the allocation of the AARR for the provision of transmission services in Queensland and for calculating transmission services prices.

13.1 Draft decision

The AER approves the pricing methodology as proposed by Powerlink for the next regulatory control period. The AER is satisfied the proposed pricing methodology:

- gives effect to and complies with the pricing principles for prescribed transmission services
- complies with the additional information requirements of the pricing methodology guidelines.

13.2 Powerlink's proposal

On 31 May 2011 Powerlink submitted its proposed pricing methodology for the next regulatory control period to the AER.[897]

13.3 Assessment approach

Clause 6A.14.3(g) of the NER requires the AER to approve a TNSP's proposed pricing methodology if it is satisfied the proposed pricing methodology:

- gives effect to and complies with the pricing principles for prescribed transmission services of the NER[898]

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[895] NER, clause 6A.2.2(2).

[896] NER, clause 6A.24.1(b).

[897] The pricing methodology proposed by Powerlink can be accessed through the following link: http://www.aer.gov.au/content/index.phtml/itemId/747312

- complies with the additional information requirements of the pricing methodology guidelines.[899]

The pricing principles for prescribed transmission services outline high level principles for the development of transmission prices. The AER reviewed the proposed pricing methodology to assess whether each of the following give effect to and are consistent with the pricing principles for prescribed transmission services:

- the calculation of the AARR and its allocation to categories of prescribed transmission services[900] [901]
- the allocation of the Annual Service Revenue Requirement (ASRR) to transmission network connection points[902]
- the price structure.[903]

The AER's review of the proposed pricing methodology in regard to the pricing principles is limited to assessing whether it specifies the NER requirements.

The pricing methodology guidelines set out additional information that Powerlink is required to provide in conjunction with its proposed pricing methodology. The AER reviewed the proposed pricing methodology to assess whether it complies with the additional information and clarification requirements set out in the pricing methodology guidelines.

13.4 Reasons for draft decision

The AER considers the pricing methodology proposed by Powerlink for the next regulatory period satisfies the NER requirements and the pricing methodology guidelines.

13.4.1 Pricing principles

Calculation of AARR and its allocation to categories of prescribed transmission services

The AER reviewed Powerlink's proposed pricing methodology to assess the calculation and allocation of the AARR. The AER considers that Powerlink's proposed calculation of the AARR and its subsequent allocation to prescribed transmission services meets the NER requirements. The AER's assessment is summarised in table 13.1.

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898 NER, clause 6A.23.

899 AER, Electricity transmission network service provider-pricing methodology guidelines, October 2007 section 2.

900 NER, clause 6A.22.1.

901 NER, clause 6A.23.2.

902 NER, clause 6A.23.3.

903 NER, clause 6A.23.4.

Table 13.1 Powerlink's proposed calculation and allocation of AARR and the NER requirements

NER requirement	AER assessment
Requirement for at the AARR to be calculated as defined in the NER–clause 6A.22. 1	Clause 6.3 of Powerlink's proposed pricing methodology satisfies this requirement
Requirement for the AARR to be allocated to each category of prescribed transmission services in accordance with attributable cost share for each such category of services–clause 6A.23.2(a)	Clauses 6.5 to 6.7 and appendices A, B and D of Powerlink's proposed pricing methodology satisfy this requirements
Requirement for every portion of the AARR to be allocated and for the same portion of AARR not to be allocated more than once–clause 6A.23.2(c)	Clauses 6.5 to 6.7 and appendices A, B and D of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for adjusting attributable cost share and priority ordering approach to asset costs that would otherwise be attributed to the provision of more than one category of prescribed transmission services Prescribed TUOS Prescribed common transmission services Prescribed entry/exit services–clause 6A.23.2(d)[904]	Clauses 6.5 to 6.7 and appendices A, B and D of Powerlink's proposed pricing methodology satisfy this requirement

Allocation of ASRR to transmission network connection points

The AER reviewed Powerlink's proposed pricing methodology to assess the allocation of ASRR. The AER considers Powerlink's proposed allocation of ASRR to prescribed transmission services meets the NER requirements. The AER's assessment is set out in table 13.2.

904 This clause complements clause 6A.23.2(c). It applies to prevent any portion of AARR being allocated to more than one category of prescribed transmission services as a result of the application of attributable cost share.

Table 13.2 Powerlink's proposed allocation of ASRR and the NER requirements

NER requirement	AER assessment
Requirement for whole ASRR for prescribed entry services to be allocated to transmission network connection points in accordance with the attributable connection point cost share for prescribed entry services that are provided by the TNSP at that connection point–clause 6A.23. 3(a)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for the whole ASRR prescribed exit services to be allocated to transmission network connection points in accordance with the attributable connection point cost share for prescribed exit services that are provided by the TNSP at that connection point–clause 6A.23.3(b)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for the allocation of the ASRR for: prescribed TUOS services Locational components Pre-adjusted non-locational components –clause 6A.23.3(c)	Clauses 6.1 to 6.8 and Appendix B of of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for adjusting attributable cost share and priority ordering approach to asset costs that would otherwise be attributed to the provision of more than one category of prescribed transmission services Prescribed TUOS Prescribed common transmission services Prescribed entry/exit services–clause 6A.23.2(d)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for the recovery of ASRR for prescribed common transmission services and the operating and maintenance costs incurred in the provision of those services to be recovered through prices charged to transmission customer and network service provider transmission network connection points set in accordance with price structure principles set out in clause 6A.23.4–clause 6A.23.3(f)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement

Price structure

The AER reviewed Powerlink's proposed pricing methodology and its proposed development of different prices for the recovery of the ASRR. The AER considers Powerlink's proposed allocation of ASRR to prescribed transmission services meets the NER requirements. The AER's assessment is set out in table 13.3.

Table 13.3 Powerlink's proposed pricing structure and the NER requirements

NER requirement	AER assessment
Requirement for separate prices for each category of prescribed transmission services: Prescribed entry services; Prescribed exit services; Prescribed common transmission services; Prescribed TUOS services—locational component Prescribed TUOS services—adjusted Non-locational component—clause 6A.23. 4(b)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for fixed annual (amount) prices for prescribed entry services and prescribed exit services—clause 6A.23.4(c)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for postage-stamp prices for prescribed common transmission services–clause 6A.23.4(d)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for prices for locational component of prescribed TUOS services to be based on demand at times of greatest utilisation of the transmission network and for which network investment is most likely to be contemplated—clause 6A.23.4(e)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for prices for the locational component of the ASRR for prescribed TUOS services not to change by more than 2 per cent per annum compared with the load weighted average price for this component for the relevant region—clause 6A.23.4(f)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement
Requirement for prices for the adjusted non-locational component of prescribed TUOS services to be on a postage-stamp basis—clause 6A.23.4(j)	Clauses 6.1 to 6.8 and Appendix B of Powerlink's proposed pricing methodology satisfy this requirement

A submission by an Energy Consumer Group Operating in Queensland raised concerns about Powerlink's proposed approach for developing prices for non-locational TUOS and Common Services. The Energy Consumer Group raised a concern that basing the prices for non-locational TUOS and Common Services on the lower of the cost calculated from consumption or demand may result in cross subsidisation.[905]

Powerlink proposed to apply either the energy based price or the contract agreed maximum demand price at a connection point providing non-locational TUOS and common services.[906] However, Powerlink noted an exception applies to connection points where a customer has

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905 An Energy Consumer Group Operating in Queensland, *Australian Energy Regulator: Queensland electricity transmission revenue reset—Powerlink application: A response*, August 2011, p. 64.

906 An energy based price is a price per unit of historical metered energy or current metered energy at a connection point expressed as $/kWh. A contract agreed maximum demand price is a price per unit of contract agreed maximum demand at a connection point expressed as $/kWh/month. See Powerlink's proposed pricing methodology, clause, 6.9.3 and 6.9.4, pp. 13–14.

negotiated reduced charges for adjusted non-locational component of prescribed TUOS and common service in accordance with clause 6A.26.1 of the NER.[907]

The Energy Consumer Group submission does not represent Powerlink's approach accurately. Powerlink's pricing methodology does not refer to 'lower usage or demand'; rather, it makes mention of 'negotiated reduced charges'. The AER is satisfied Powerlink's pricing methodology complies with the NER requirements.

13.4.2 Assessment against the pricing methodology guidelines

The AER is satisfied the proposed pricing methodology complies with the information requirements of the pricing methodology guidelines. Key elements of Powerlink's proposed pricing methodology are permissible under the pricing methodology guidelines. These key elements are:

- calculation of the locational component of prescribed TUOS services costs using the cost reflective network pricing methodology
- the locational prescribed TUOS services price being based on an agreed nominated demand and the average half hourly demand
- the postage stamp pricing structure for non-locational component of prescribed TUOS services and prescribed common transmission services being base on contract agreed maximum demand or historical energy
- the methodology for implementation of the priority ordering being the priority ordering approach under clause 6A.23.3(d) of the NER
- a description of how asset costs which may be attributable to both prescribed entry services and prescribed exit services will be allocated at a connection point
- a description of billing arrangements under clause 6A.27 of the NER
- a description of prudential requirements as outlined in clause 6A.28 of the NER
- the inclusion of hypothetical worked examples
- a description of how Powerlink intends to monitor and develop records of its compliance with its approves pricing methodology.

For the above reasons, the AER approves the proposed pricing methodology.

[907] Powerlink, *Proposed pricing methodology*, May 2011, clause 6.9.3.

14 Negotiated services

The AER's transmission determination imposes controls over the prices and revenues that a TNSP can recover from the provision of prescribed transmission services. Negotiated transmission services do not have their terms and conditions determined by the AER. Under the NER, these services are subject to negotiation between parties, or alternatively arbitration and dispute resolution by a commercial arbitrator. These processes are facilitated through two instruments:

- a negotiating framework
- a negotiating transmission service criteria (NTSC).

A negotiating framework sets out procedures to be followed when negotiating terms and conditions of access for a negotiated transmission service.[908]

A NTSC sets out the criteria that a TNSP will apply in negotiating terms and conditions of access, including the prices and access charges for negotiated transmission services.[909] It also sets out the criteria that a commercial arbitrator will apply in resolving disputes about terms and conditions of access for negotiated transmission services.[910]

The AER is required to make a determination relating to Powerlink's negotiating framework[911] and the NTSC that are to apply to Powerlink in the next regulatory control period.[912] This attachment sets out the AER's considerations and conclusions on Powerlink's proposed negotiating framework and the NTSC.

14.1 Draft decision

The AER refuses to approve the negotiating framework as proposed by Powerlink for the next regulatory control period. The AER is not satisfied the proposed negotiating framework complies with the NER requirements set out in clause 6A.9.5(c).

- Powerlink's negotiating framework does not reflect clause 6A.9.5(c)(3)(i)-(ii) of the NER in a transparent manner. The AER considers clause 6.1.3 of the proposed negotiating framework should be amended to read:

  (i) The reasonable costs and/or the increase or decrease in costs (as appropriate) of providing the negotiated transmission service to the service applicant, and

  (ii) 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).

The proposed negotiating framework does not fully reflect clause 6A.9.5(c)(2) of the NER. In particular, it does not make provision for the service applicant to request from Powerlink additional commercial information or clarification of commercial information provided. The

908 NER, clause 6A.9.5(a).
909 NER, clause 6A.9.4(a)(1).
910 NER, clause 6A.9.4(a)(2).
911 NER, clause 6A.2.2(2).
912 NER, clause 6A.2.2(3).

AER considers the absence of such provisions may limit the ability of the service applicant to engage in effective negotiation for the supply of a negotiated transmission service. Therefore, the AER requires Powerlink to amend the proposed negotiating framework by including two additional clauses 6.1a and 6.1b, to the effect:

> 6.1a The service applicant may request Powerlink to provide any additional commercial information that is reasonably required by the service applicant to enable it to engage in effective negotiations with Powerlink in relation to the provision of a negotiated transmission service or to clarify any commercial information provided (6.1a)
>
> 6.1b Powerlink must use its reasonable endeavours to provide the service applicant with commercial information requested by the service applicant in accordance with paragraph 6.1a within 10 business days of the date of the request under paragraph 6.1a, or such period as agreed by the parties

The AER's draft decision is that the proposed NTSC published in June 2011 is to apply to Powerlink in the next regulatory control period in accordance with clause 6A.9.4 of the National Electricity Rules (NER).

- The proposed NTSC gives effect to the negotiated transmission services principles set out in clause 6A.9.1 of the NER.

14.2 Powerlink's Proposal

Negotiating framework

The negotiating framework proposed by Powerlink for the next regulatory period was set out in Attachment R to Powerlink's proposal.[913]

Negotiated transmission services criteria

The AER published its proposed NTSC in June 2011 as required under clause 6A.11.3 of the NER.[914]

Section 14.6 sets out the proposed NTSC that is to apply to Powerlink in the next regulatory control period.

14.3 Assessment approach

Negotiating framework

A negotiating framework that complies with the NER requirements must specify each of the requirements set out in clause 6A.9.5(c). The specific requirements set out in clause 6A.9.5(c) are summarised in table 13.3 below. The AER examined whether Powerlink's proposed negotiating framework met these requirements.

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913 http://www.aer.gov.au/content/index.phtml/itemId/747312

914 AER, *Call for submissions*, *proposed negotiated transmission service criteria for Powerlink*, June 2011. See http://www.aer.gov.au/content/index.phtml/itemId/747312

Negotiated transmission services criteria

The AER considers a NTSC that adopts the negotiated transmission service principles as criteria would satisfy the NER requirements. Therefore, the assessment of the proposed NTSC involves the examination of whether it reflects the negotiated transmission service principles set out in clause 6A.9.1 of the NER.

14.4 Reasons for draft decision

The AER is not satisfied Powerlink's proposed negotiating framework complies with the NER requirements. In particular, the proposed negotiating framework lacks transparency in regard to the requirement on Powerlink to demonstrate to the negotiated service applicant that the charges for providing the negotiated transmission service reflect the costs of providing the service. In addition, a negotiating framework that complies with the NER requirements should make provision for both a TNSP and a negotiated service applicant to obtain all such commercial information required by each party to engage in effective negotiation. The AER is not satisfied the proposed negotiating framework fully complies with this requirement. Reasons for the AER's draft decision are further outlined below. The AER's assessment of the proposed negotiating framework against the NER requirements is outlined in table 13.3.

The AER received one submission on the proposed negotiating framework.[915]

14.4.1 Negotiating framework

The AER refuses to approve Powerlink's proposed negotiating framework.

Clause 6A.9.5(c)(3)(i)-(ii) of the NER require a TNSP to:

i. provide the applicant of a negotiated transmission service with details of reasonable costs, and

ii. demonstrate how charges that apply to a negotiated service relate to those costs.

The AER considers clause 6.1.3 of Powerlink's negotiated framework seeks to address this requirement. However, as currently written, clause 6.1.3 of Powerlink's proposed negotiating framework is not sufficiently transparent. It is not explicit about the requirement on Powerlink to demonstrate how charges applying to a negotiated transmission service relate to costs. This lack of transparency was also noted in a submission by QR Network Pty Ltd (QR National).[916] Therefore, to reflect the NER requirement set out in clause 6A.9.5(c)(3)(i)-(ii), the AER considers clause 6.1.3 of Powerlink's proposed negotiating framework should be amended as indicated in section 14.5

Clause 6A.9.5(c)(2) and clause 6A.9.5(c)(4) of the NER require a TNSP and the applicant of a negotiated transmission service to provide all such commercial information as each party may reasonably require to engage in effective negotiations. The AER considers sections 4, 5 and

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915 QR Network Pty Ltd (QR National), *Submission on Powerlink negotiating framework*, August 2011; http://www.aer.gov.au/content/index.phtml/itemId/747312.

916 QR National, *Submission on Powerlink negotiating framework*, August 2011, p. 2.

6 of Powerlink's negotiated framework seek to address these requirements. However, while section 5, clauses 5.1 and 5.2, make provision for Powerlink to request additional commercial information from the service applicant or clarification of any commercial information provided, the proposed negotiating framework does not make an equivalent provision for the service applicant. Specifically, the proposed negotiating framework does not make provision for the service applicant to request from Powerlink additional commercial information or clarification of commercial information provided. The AER considers that the absence of such provisions may limit the ability of the service applicant to engage in effective negotiation for the supply of a negotiated transmission service.

In addition, clause 8.1.1 of the proposed negotiating framework requires a service applicant to 'formally accept' commercial information provided by Powerlink within 15 business days to avoid the suspension of timeframe. A submission by QR National noted the requirement on the negotiated service applicant to formally accept the commercial information provided may incentivise Powerlink to limit the amount of information that is provided to the service applicant.[917] This is because, the proposed negotiating framework does not make provision for the service applicant to request from Powerlink additional information or clarification of information provided. The absence of such provision has the potential to create a situation where the service applicant has not received all such commercial information required for effective negotiation and yet is required to formally accept such limited information within a specified time limit to avoid the suspension of negotiation by Powerlink.

The AER considers it is important for Powerlink and the applicant of a negotiated transmission service to obtain all such information reasonably required by each party to engage in effective negotiation. Given the requirement on the service applicant to 'formally accept' commercial information provided by Powerlink within 15 business days, the AER considers it is important for there to be a specific time limit for Powerlink to provide additional commercial information or clarification of commercial information. This will ensure that parties can effectively negotiate and the potential for suspension of negotiations is limited. Powerlink has a requirement for the service applicant to provide additional commercial information or clarification of commercial information within 10 business days. The AER considers that an equivalent provision requiring Powerlink to provide information in a timely manner would facilitate the objectives under clause 6A.9.5(c)(5) of the NER.

Therefore, the AER requires Powerlink to amend the proposed negotiating framework by including two additional clauses 6.1a and 6.1b as indicated in section 14.5.

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917 QRNN, *Submission on Powerlink negotiating framework*, August 2011, p. 4.

Table 14.1 AER's assessment of the negotiating framework proposed by Powerlink

NER requirement	AER assessment
Requirement for Powerlink and the applicant of a negotiated transmission service to negotiate in good faith—clause 6A.9.5(c)(1) of the NER	Clause 2 of Powerlink's proposed negotiating framework satisfies this requirement
Requirement for Powerlink to provide all such commercial information reasonably required to enable the applicant of a negotiated transmission service to engage in effective negotiation—clause 6A.9.5(c)(2) of the NER	Clauses 6 of Powerlink's proposed negotiating framework seeks to address this requirement. However, Powerlink may have an incentive to limit commercial information that it provides to the service applicant. The AER's consideration of this issue is further discussed above.
Requirement for Powerlink to identify and inform the negotiated transmission service applicant of reasonable costs of providing the negotiated service; and demonstrate that charges reflect costs—clause 6A.9.5(c)(3) of the NER	Clause 6.1.3 of Powerlink's proposed negotiating framework seeks to address this requirement. However, clause 6.1.3 is not sufficiently transparent to satisfy the NER requirements. The AER's consideration of this issue is further discussed above.
Requirement for a negotiated transmission service applicant to provide all such commercial information reasonably required to enable Powerlink to engage in effective negotiation—clause 6A.9.5(c)(4) of the NER	Clauses 4, 5 of Powerlink's proposed negotiating framework satisfy this requirement
Requirement to specify a reasonable period of time for commencing, progressing and finalising negotiations; and a requirement for each party to use its reasonable endeavours to adhere to those time periods during the negotiation—clause 6A.9.5(c)(5) of the NER	Clauses 3 and 8 of Powerlink's proposed negotiating framework satisfy this requirement
Requirement to specify a process for dispute to be dealt with in accordance with the relevant provisions for dispute resolution[918]—clause 6A.9.5(c)(6)) of the NER	Clause 9 of Powerlink's proposed negotiating framework satisfies this requirement
Requirement to specify arrangements for the payment of Powerlink's reasonable direct expenses incurred in processing the application to provide the negotiated transmission service–clause 6A.9.5(c)(7) of the NER	Clause 10 of Powerlink's proposed negotiating framework satisfies this requirement
Requirement for Powerlink to determine the potential impact of the provision of a negotiated transmission service on other network users—clause 6A.9.5(c)(8) of the NER	Clause 7.1 of Powerlink's proposed negotiating framework satisfies this requirement
Requirement for Powerlink to notify and consult with any affected network user and ensure the negotiated transmission service does not result in non-compliance with obligations in relation to other network users under the NER—clause 6A.9.5(c)(9) of the NER	Clause 7.2 of Powerlink's proposed negotiating framework satisfies this requirement

918 The relevant provisions for dispute resolution are set out in part K of chapter 6A of the NER.

14.4.2 Negotiated transmission services criteria

The AER determines that the proposed NTSC published in June 2011 is the NTSC that is to apply to Powerlink in the next regulatory control period.

The AER's proposed NTSC directly reflects the negotiated transmission service principles set out in clause 6A.9.1 of the NER. This is because, in specifying the proposed NTSC, the AER has adopted the negotiated distribution service principles as criteria.

The AER did not receive any submission on the proposed NTSC.

14.5 Revisions

The AER does not approve the negotiating framework proposed by Powerlink. The AER requires Powerlink to amend the proposed negotiating framework, for it to be approved in accordance with the NER. The AER would accept the following changes to the proposed negotiating framework if Powerlink submits a revised negotiating framework to the AER for approval.

Revision 14.1: Clause 6.1.3 of the proposed negotiating framework should be amended to read:

(i) The reasonable costs and/or the increase or decrease in costs (as appropriate) of providing the negotiated transmission service to the service applicant, and

(ii) 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).

Revision 14.2: Powerlink should include two additional clauses (6.1a) and 6.1b after 6.1.4 that read:

6.1a The service applicant may request Powerlink to provide any additional commercial information that is reasonably required by the service applicant to enable it to engage in effective negotiations with Powerlink in relation to the provision of a negotiated transmission service or to clarify any commercial information provided.

6.1b Powerlink must use its reasonable endeavours to provide the service applicant with commercial information requested by the service applicant in accordance with paragraph 6.1a within 10 business days of the date of the request under paragraph 6.1a, or such period as agreed by the parties

14.6 Negotiated transmission service criteria

14.6.1 National Electricity Objective

3. The terms and conditions of access for a negotiated transmission service, including the price that is to be charged for the provision of that service and any access charges, should promote the achievement of the national electricity objective.

14.6.2 Criteria for terms and conditions of access

Terms and Conditions of Access

4. The terms and conditions of access for a negotiated transmission service must be fair, reasonable, and consistent with the safe and reliable operation of the power system in accordance with the NER.

5. The terms and conditions of access for a negotiated transmission service (including, in particular, any exclusions and limitations of liability and indemnities) must not be unreasonably onerous taking into account the allocation of risk between the TNSP and the other party, the price for the negotiated transmission service and the costs to the TNSP of providing the negotiated transmission service.

6. The terms and conditions of access for a negotiated transmission service must take into account the need for the service to be provided in a manner that does not adversely affect the safe and reliable operation of the power system in accordance with the NER.

Price of Services

7. The price for a negotiated transmission service must reflect the costs that the TNSP has incurred or incurs in providing that service, and must be determined in accordance with the principles and policies set out in the Cost Allocation Methodology.

8. Subject to criteria 7 and 8, the price for a negotiated transmission service must be at least equal to the avoided cost of providing that service but no more than the cost of providing it on a stand alone basis.

9. If the negotiated transmission service is a shared transmission service that:

   iii. exceeds any network performance requirements which it is required to meet under any relevant electricity legislation; or

   iv. exceeds the network performance requirements set out in schedule 5.1a and 5.1 of the NER

   v. then the difference between the price for that service and the price for the shared transmission service which meets network performance requirements must reflect the TNSP's incremental cost of providing that service (as appropriate).

10. If the negotiated transmission service is the provision of a shared transmission service that does not meet or exceed the network performance requirements, the difference between the price for that service and the price for the shared transmission service which

meets, but does not exceed, the network performance requirements should reflect the amount of the TNSP's avoided cost of providing that service (as appropriate).

11. The price for a negotiated transmission service must be the same for all Transmission Network Users unless there is a material difference in the costs of providing the negotiated transmission service to different Transmission Network Users or classes of Transmission Network Users.

12. The price for a negotiated transmission service must be subject to adjustment over time to the extent that the assets used to provide that service are subsequently used to provide services to another person, in which case such adjustment must reflect the extent to which the costs of that asset is being recovered through charges to that other person..

13. The price for a negotiated transmission service must be such as to enable the TNSP to recover the efficient costs of complying with all regulatory obligations associated with the provision of the negotiated transmission service.

14.6.3 Criteria for access charges

Access Charges

14. Any access charges must be based on costs reasonably incurred by the TNSP in providing Transmission Network User access and (in the case of compensation referred to in clauses 5.4A(h) to (j) of the NER) on the revenue that is likely to be foregone and the costs that are likely to be incurred by a person referred to in clauses 5.4A(h) to (j) of the NER where an event referred to in those paragraphs occurs (as appropriate).

List of submissions received

Submission	Submission date
Australia Pacific LNG	11 August 2011
Total Environment Centre	12 August 2011.
Queensland Council of Social Services	12 August 2011.
Powerlines Action Group Eumundi Inc	12 August 2011.
Energy Users Association of Australia	13 August 2011
Energy Consumers Group operating in Queensland	16 August 2011
Wesfarmers Limited	22 August 2011
QR National	25 August 2011
Powerlink—response to submissions	30 August 2011
Total Environment Centre—response to Powerlink's reply to stakeholders	9 September 2011
Australian Energy Market Operator	12 September 2011
Powerlink—Response to AEMO's submission on regulatory proposal	29 September 2011
InterGen (Australia) Pty Ltd	28 October 2011