AUSTRALIAN ENERGY REGULATOR

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Draft Decision

SP AusNet

transmission determination

2008-09 to 2013-14

31 August 2007

Request for submissions

This document sets out the Australian Energy Regulator's (AER) draft decision on SP AusNet's electricity transmission determination for the period 1 April 2008 to 21 March 2014.

The AER will hold a pre-determination conference on this draft decision on Tuesday 11 September 2007 for the purpose of explaining its draft decision and receiving oral submissions from interested parties. Interested parties can register to attend the pre-determination conference by contacting Maria Djopa on 03 9290 1436 or at aerinquiry@aer.gov.au, by Friday 7 September 2007.

Issues regarding this draft decision and the consultants report can be addressed in written submissions to the AER by 14 November 2007.

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

Alternatively, submissions can be sent to:

Mr Chris Pattas
General Manager
Network Regulation South
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3000

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

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

All non-confidential submissions will be placed on the AER's website at http://www.aer.gov.au.

A copy of SP AusNet's revenue proposal, proposed negotiating framework, proposed pricing methodology, consultancy reports and submissions from interested parties are available on the AER's website.

Enquiries about the draft decision, or about lodging submissions, should be directed to the Network Regulation South branch of the AER on (03) 9290 1436.

Contents

Glossary

AARR	Aggregate annual revenue requirement
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACG	Allen Consulting Group
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AIS	Availability Incentive Scheme
AMS	SP AusNet's Asset Management Strategy
ASRR	Annual service revenue requirement
ASX	Australian Stock Exchange
AWE	Average Weekly Earnings
AWOTE	Average Weekly Ordinary Time Earnings
BATS	Ballarat Terminal Station
BETS	Bendigo Terminal Station
BLTS	Brooklyn Terminal Station
bp	basis points
bppa	basis points per annum
BTS	Brunswick Terminal Station
capex	capital expenditure
CAPM	Capital Asset Pricing Model
CB	Circuit Breaker
CBA	Commonwealth Bank of Australia
CDS	Credit Default Swap
CEPU	Communication Electrical & Pluming Union
CGS	Commonwealth Government Securities
CIGRE	International Council on Large Electric Systems
CPI	Consumer Price Index
CT	Current Transformer
CVT	Current Voltage Transformer
D/V	proportion of debt capital to total capital funding
DDTS	Dederang Terminal Station
DNSP	Distribution Network Service Provider
DRP	Draft statement of principles for the regulation of transmission revenues, 27 May 1999
DRP	Debt Risk Premium
E/V	proportion of equity capital to total capital funding
EBA	Enterprise Bargaining Agreement
EMT	Executive Management Team
ENA	Energy Networks Association
ESCV	Essential Services Commission of Victoria
EUAA	Energy Users Association of Australia
EUCV	Energy Users Coalition of Victoria
FDC	finance during construction
GDP	Gross Domestic Product
GIS	Gas Insulated Switchgear
GNTS	Glenrowan Terminal Station

GTS	Geelong Terminal Station
HOTS	Horsham Terminal Station
HR	Human Relations
HWPS	Hazelwood Power Station
HWTS	Hazelwood Terminal Station
IPO	Initial Public Offering
IT	Information Technology
KGTS	Kerang Terminal Station
KTS	Keilor Terminal Station
kV	kilo Volt
LME	London Metals Exchange
LYPS	Loy Yang Power Station
m	million
MAR	Maximum Allowed Revenue
MNSP	Market Network Service Provider
MRP	Market Risk Premium
MSC	Management Services Charges
MTBF	Mean Time Between Failure
MTN	Medium Term Notes
MTS	Malvern Terminal Station
MVA	mega Volt Ampere
MWh	megawatt hour
MWTS	Morwell Terminal Station
NEC	National Electricity Code
NEMMCO	National Electricity Market Management Company
NER	National Electricity Rules
NPV	Net Present Value
NTSC	Negotiated transmission services criteria
NW	North-West
O&M	Operating & Maintenance
OH&S/OHS	Occupational Health & Safety
opex	operating expenditure
ORC	Optimised replacement cost
pa	per annum
PB	PB Strategic Consulting
PPI	Producer Price Index
PTRM	Post-Tax Revenue Model
RAB	Regulatory Asset Base
RAV	Regulatory Asset Value
RBA	Reserve Bank of Australia
RCTS	Redcliffs Terminal Station
RMIT	Royal Melbourne Institute of Technology
ROI	Remote Operated Isolator
RTS	Richmond Terminal Station
RWTS	Ringwood Terminal Station
SCADA	Supervisory Control and Data Acquisition
SKM	Sinclair Knight Merz
SNR	System Non-Recurrent
SR	System-Recurrent
SRA	Smelter Reduction Amount

STPIS	Service Target Performance Incentive Scheme
stub 2003	refers to the period 1 January 2003 to 31 March 2003
SVTS	Springvale Terminal Station
TGTS	Terang Terminal Station
TIB	Treasury Indexed Bond
TNSP	Transmission Network Service Provider
Transformer	Power transformer
TTS	Thomastown Terminal Station
TUOS	Transmission use of system
UK	United Kingdom
US	United States of America
VENCorp	Victorian Energy Networks Corporation
VNSC	Victorian network switching centre
WACC	Weighted Average Cost of Capital
WMTS	West Melbourne Terminal Station
OPWG	Optical Fibre Ground Wire
JLTS	Jeeralang Terminal Station
SRP	Statement of Principles for the Regulaiton of Electricity Transmisssion Revenues

Summary

Overview

The Australian Energy Regulator (AER) is responsible for the economic regulation of monopoly transmission services in the National Electricity Market (NEM). These functions were conferred on the AER by the National Electricity Law (NEL) and the National Electricity Rules (NER) on 1 July 2005. This is the first draft decision released by the AER under the new chapter 6A of the NER, which commenced in November 2006.

The AER must make transmission determinations for Transmission Network Service Providers (TNSPs) in accordance with the NER in respect of prescribed and negotiated transmission services.

A transmission determination for a TNSP consists of:

(1) a revenue determination for the provider in respect of the provision by the provider of prescribed transmission services
(2) a determination relating to the provider's negotiating framework
(3) a determination that specifies the Negotiated Transmission Service Criteria that apply to the provider and
(4) a determination that specifies the pricing methodology that applies to the provider.

On 28 February 2007, SP AusNet submitted a revenue proposal, proposed negotiating framework and proposed pricing methodology to the AER in accordance with the new provisions of the NER. This is the AER's draft decision on the transmission determination for SP AusNet for the forthcoming regulatory control period 1 April 2008 to 31 March 2014. This extended, six-year regulatory control period has been proposed by SP AusNet to alleviate a strain on its internal resources arising from concurrent regulatory reviews of its electricity transmission and gas distribution networks, and has been approved by the AER.

SP AusNet's revenue proposal, and the forecasts of capital expenditure (capex) and operating expenditure (opex) for the next six years, are submitted in the context of SP AusNet's long-term business plan. While noting that Victorian consumers and the national electricity market have been well served by SP AusNet's electricity transmission infrastructure in the current regulatory control period, SP AusNet submits that the maturity of its network and the fact that a significant number of assets are approaching the end of their expected lives means that an increased level of expenditure on asset replacement and repair will be required over the forthcoming regulatory control period. SP AusNet's proposed forecast capex and opex programs largely represent a continuation of programs implemented in the current regulatory control period, and are part of an ongoing strategy that SP AusNet states will extend through the forthcoming period to the next.

The AER's draft decision approves revenues for SP AusNet that increase from $410.56m in 2008-09 to $513.25m in 2013-14. On average, this allowed revenue is

around 7.49% less than SP AusNet's proposed revenue of $419.53m in 2007-08, increasing to $570.36m in 2013-14.

The main areas of difference between SP AusNet's proposal and the AER's draft decision are:

- Opening regulatory asset base (RAB) – SP AusNet proposed an opening RAB of $2 222.93m as at 1 April 2008. The AER has approved a lower opening RAB of $2 203.45m, which results from the AER's revisions to the proposed amount of prudent past capex to be rolled into SP AusNet's RAB and removal of the benefits of an over-estimate of capex incurred in the nine months prior to commencement of the current regulatory period.

- Forecast capital expenditure (capex) – The AER's approved total forecast capex allowance for the forthcoming regulatory control period is $679.04m. This is a reduction of $176.23m from the $855.26m forecast proposed by SP AusNet, which is primarily due to SP AusNet's failure to provide a clear economic justification for elements of its forecast capex program. In particular, elements of SP AusNet's proposal appear to be premised on an unjustifiable approach to the timing of replacements, which the AER considers is neither prudent nor efficient.

- Forecast operating and maintenance expenditure (opex) – The AER's approved total forecast opex allowance for the forthcoming regulatory period is $929.50m. This reduction of $104.84m from SP AusNet's proposed forecast of $1 034.34m largely results from adjustments to asset works and routine maintenance ($16.37m) and corporate opex ($15.19m), and to SP AusNet's proposed allowances for easement land tax ($14.60m) and rebates payable under the VENCorp's Availability Incentive Scheme ($31.60m).

As submitted to the AER, SP AusNet's proposal would result in an average annual nominal price increase of 5.93% (2.82% real), equating to a per MWh price of $10.68 in 2013-14, compared to the current per MWh price of $7.54 in 2007-08. The transmission price impact of the maximum allowed revenue (MAR) for SP AusNet set out in this draft report would be a nominal per MWh "price" of $9.61 in 2013-14. This amounts to an average increase of 4.4% per year.

1 Introduction

The ACCC determined SP AusNet's current revenue cap for the five and one quarter year period from 1 January 2003 to 31 March 2008 in accordance with its responsibilities under the National Electricity Code (NEC). The AER assumed responsibility for regulating electricity transmission services provided by SP AusNet on 1 July 2005. Both SP AusNet's proposal and this draft decision by the AER have been made under the new chapter 6A of the NER, which took effect on 16 November 2006.

Chapter 6A requires the AER to publish several transmission guidelines in September and October 2007. SP AusNet was required under the NER to lodge its proposal on 28 February 2007, before the AER's final guidelines were developed.

In recognition that the AER's transmission guidelines would not be finalised before SP AusNet submitted its proposal, transitional provisions in chapter 11 of the NER provide that, for the purposes of this determination, anything that must be done in accordance with a guideline must instead be done in accordance with the corresponding proposed guideline.[1]

Part E of chapter 6A sets out the procedure that applies for the purposes of the AER making a transmission determination. The key stages of the process leading to the release of this draft decision are outlined below:

- SP AusNet submitted its revenue proposal, negotiating framework and pricing methodology to the AER on 28 February 2008.
- SP AusNet's proposal was assessed against the requirements of chapter 6A of the NER and the first proposed submission guidelines, and found to be non-compliant in a number of respects. On 30 April 2007, additional information was provided in response to a formal notice issued by the AER under cl. 6A.11 of the NER.
- SP AusNet's proposal was published by the AER on 1 May 2007, and interested parties were invited to make submissions. A public forum held in Melbourne on 10 May 2007, at which SP AusNet gave a presentation to interested parties on its proposal.
- Further consultation was undertaken in response to SP AusNet's late submission of reports published by NERA Economic Consulting, seeking to add to SP AusNet's initial proposal on calculation of the WACC, and submissions received on the AER's proposed Negotiated Transmission Services Criteria for SP AusNet.

The AER engaged PB Strategic Consulting (PB) to provide expert engineering advice on SP AusNet's capex, opex and service target performance incentive scheme values. The AER also engaged Nuttall Consulting to provide additional expert engineering advice on SP AusNet's proposal, in particular on the roll-in of non-contestable works to SP AusNet's Regulatory Asset Base (RAB). Econtech Pty Ltd was also commissioned to provide an independent assessment of SP AusNet's proposed wage growth escalators for opex and capex.

Advice was also sought from Dr John Handley (University of Melbourne), the Reserve Bank of Australia and the Australian Treasury regarding the issue of the use of Commonwealth Government Bonds to estimate the risk-free rate and the real risk free rate, which are relevant to the cost of capital and the estimate of inflation applied by the AER throughout this draft decision.

This draft decision should be read in conjunction with the consultants' reports.

[1] NER cl.11.6.18

The key components of this draft decision are:

- The AER's draft revenue determination for SP AusNet in respect of the provision by SP AusNet of prescribed transmission services, including:
  - an assessment of the prudence of capex undertaken by SP AusNet in the current regulatory control period, under transitional and savings provisions in chapter 11 of the NER
  - the opening value of SP AusNet's regulated asset base
  - an assessment of the total prudent and efficient forecast capex allowance for SP AusNet for the 2008-14 regulatory control period
  - the appropriate WACC for SP AusNet
  - an assessment of the total efficient forecast opex allowance for SP AusNet for the 2008-14 regulatory control period
  - the values to be included in the service target performance incentive scheme as applied to SP AusNet
  - SP AusNet's maximum allowed revenue for the 2008-14 regulatory control period
- The AER's draft determination in relation to SP AusNet's proposed negotiating framework
- The AER's draft determination of the negotiated transmission service criteria that will apply to SP AusNet
- The AER's draft determination in relation to SP AusNet's proposed pricing methodology.

The AER's consideration of each of these components is summarised below. Further detail is provided in the relevant chapters, and in the detailed appendices to this draft decision.

2 Past capital expenditure

SP AusNet proposes to include net capex of $478.5m, inclusive of finance during construction and work-in-progress, in its RAB at the commencement of the forthcoming regulatory control period. This amount exceeds the capex forecast approved by the ACCC in its 2002 Decision by $88.1m. SP AusNet notes that while the completed program is not identical to that approved in the 2002 decision, as priorities, problems and solutions have changed, the majority of the capex program forecast in 2002 has been rolled out.

The current transmission determination applying to SP AusNet provides that an ex post prudency assessment of capex is to be conducted at the conclusion of the

current regulatory control period. This is preserved in the transitional and savings provisions in chapter 11 of the NER. The tests to be applied in this ex post assessment are those set out in Appendix B of the Statement of Regulatory Principles (SRP) approved by the ACCC and adopted by the AER in 2005, which provide that only expenditure that is determined by the AER to be prudent and efficient will be rolled into SP AusNet's RAB at the commencement of the forthcoming regulatory control period.

The AER has reviewed SP AusNet's capex over the current regulatory control period, and has tested the prudence and efficiency of expenditure through detailed reviews of a targeted sample of projects. The AER has been assisted in this analysis by advice from PB.

AER's conclusion

On the basis of this assessment, the AER has some concerns in relation to SP AusNet's implementation of its asset management strategy and internal policies and procedures over the current regulatory control period. In particular, the AER found in several instances that SP AusNet had not adequately documented key stages in its investment decision making process.

Nonetheless, SP AusNet was able to provide the AER with sufficient information for the AER to reach an informed conclusion that, with the following exceptions, SP AusNet has incurred prudent and efficient expenditure which is eligible for inclusion in its asset base:

- The AER has rejected SP AusNet's proposed inclusion of a $0.43m contingency allowance in the capex forecast (in April 2007) for the remaining stages of the Redcliffs Terminal Station refurbishment, which is scheduled for completion in October 2007. Given the limited period over which the remaining costs of this project have been forecast, the AER does not consider that SP AusNet's proposal to include an allowance for unforeseen costs at this late stage is appropriate, or that this additional amount is likely to represent prudent and efficient expenditure as contemplated by the SRP.

- The AER has also reduced SP AusNet's proposed prudent past capex value by an amount of $1.34m, to adjust for incorrect cost allocations across categories of non-network capex identified in the course of PB's review.

Both the review conducted by PB and the AER's assessment of SP AusNet's proposal indicate that, in a number of respects, SP AusNet's implementation of its asset management strategy and internal policies and procedures in the current regulatory control period could, in retrospect, have been better. However, while there is significant room for improvement, and subject to the adjustments mentioned above, it cannot be said that SP AusNet's capex in the current period was beyond that which would have been incurred by a prudent and efficient operator in similar circumstances, and without the benefit of hindsight.

As shown in table 1 below, the AER has therefore determined that $476.8m of expenditure (inclusive of FDC and work-in-progress) represents prudent capex to be included in SP AusNet's RAB at the commencement of the forthcoming regulatory control period.

Table 1: AER's conclusion – total prudent past capex ($m, nominal)

	2003^	2003/04	2004/05	2005/06	2006/07*	2007/08*	Total
SP AusNet's Proposal							
Net capex	29.3	49.5	66.3	96.1	103.4	110.8	455.4
Work-in-progress						23.2	23.2
Total proposed capex	**29.3**	**49.5**	**66.3**	**96.1**	**103.4**	**134.0**	**478.5**
AER's adjustments							
Adjustment - RCTS	0.0	0.0	0.0	0.0	0.0	-0.4	-0.4
Adjustment - non-network	0.0	0.0	0.0	0.0	0.0	-1.3	-1.3
Total adjustments	0.0	0.0	0.0	0.0	0.0	-1.8	-1.8
AER's conclusions							
Net capex	29.3	49.5	66.3	96.1	103.4	109.0	453.6
Work-in-progress						23.2	23.2
AER's conclusion	**29.3**	**49.5**	**66.3**	**96.1**	**103.4**	**132.2**	**476.8**

3 Opening RAB

Under the requirements of chapter 6A, the RAB from the beginning of the current regulatory control period (1 January 2003) is "rolled forward" to establish the RAB at the commencement of the forthcoming regulatory control period (1 April 2008). The RAB is an essential part of the building block calculation as it provides a basis for calculating returns on and of capital for the forthcoming regulatory control period.

The NER specify the value of SP AusNet's RAB at 1 January 2003 as $1 835.60m, but allow this to be adjusted for the difference between actual capex and any forecast capex included in the value. In making such an adjustment, the AER is required to remove any associated benefit or penalty to SP AusNet. Transitional provisions in the NER also allow the AER to honour prior agreements made between SP AusNet and the AER in relation to the roll-forward method and other relevant incentive arrangements, for example, those stemming from the DRP and the ACCC's 2002 Final Determination.

SP AusNet proposed an opening RAB of $2 222.93m as at 1 April 2008, an increase of $387.33m from the 1 January 2003 value prescribed in the NER.

SP AusNet proposes a reduction of $47.34m to its 1 January 2003 RAB to reflect an over-estimate of capex of $55.46m for the nine months to 31 December 2002.

SP AusNet proposes to roll in $474.24m (nominal) of capex commissioned in the current regulatory control period, and an additional $118.00m of non-contestable asset works constructed under agreements for the provision of prescribed services that were not included in its capex allowance for the current period.

AER's conclusion

In proposing a reduction to reflect the overestimate of capex for the nine months to 31 December 2002, SP AusNet did not propose to pass back the benefit of the excess return on this over-estimate to network users, which amounts to $27.06m. The AER has removed this amount from SP AusNet's opening RAB for the forthcoming regulatory control period, in accordance with the NER requirements to remove the benefits of the associated adjustment.

Following a detailed ex post prudency assessment of SP AusNet's capex in the current regulatory control period, the AER has approved the roll in of an adjusted amount of $472.59m of prudent capex (inclusive of FDC and a half year return) from the current regulatory control period. The AER engaged Nuttall Consulting to review a sample of agreements for non-contestable assets and SP AusNet's calculations and found several errors, resulting in a revised recommended roll-in value for these assets of $115.85m.

In its proposal, SP AusNet has used a March quarter CPI measure, and has amended the inflation inputs and a WACC calculation in the AER's roll-forward model. The AER has used a December CPI and made minor amendments to SP AusNet's proposed calculations, to be consistent with the AER's original roll-forward model and the current NER requirements.

The AER has determined SP AusNet's opening RAB to be $2 203.45m for the forthcoming regulatory control period (as at 1 April 2008). The AER's RAB roll forward calculation is set out in table 2.

Table 2: SP AusNet's RAB as at 1 April 2008 ($m, nominal)

Year (1 April to 31 March)	1 Jan to 31 Mar 2003	2003-04	2004-05	2005-06	2006-07	2007-08
"Locked in" RAB	1,835.60					
Adjustment for capex estimated for 1 Apr to 31 Dec 2002	-47.34					
Opening RAB	1,788.26	1,812.96	1,830.98	1,867.20	1,935.03	2,014.75
Indexation	13.25	43.72	48.92	53.85	63.46	52.09
Actual prudent net capex	29.56	51.67	69.05	100.26	107.98	114.07
Inflation adjusted depreciation	-18.11	-77.37	-81.76	-86.28	-91.72	-97.62
Closing RAB	1,812.96	1,830.98	1,867.20	1,935.03	2,014.75	2,083.29
Roll in of non-contestable assets						115.85
Add compounded return on prudent overspend						8.17
Removal of benefit associated with estimated capex adjustment						-27.06
Work in progress						23.21
Opening RAB 1 April 2008						2,203.45

While the AER's amendments result in a revised RAB value at 1 April 2008 of $2 203.45m, which is 0.88% less than that proposed by SP AusNet, SP AusNet's

opening RAB for the forthcoming regulatory control period is still approximately 20% higher (in nominal terms) than the RAB value prescribed in the NER. This change is largely the result of the following factors:

- correcting the substantial ($47.34m) overestimate of capex for the nine months to 1 January 2003 included in the prescribed value and the removal of the benefit associated with this overestimate
- approval of $472.59m of prudent capex (inclusive of FDC and a half year return) that was commissioned over the current regulatory control period
- the inclusion of $115.85m of non-contestable assets commissioned over the current regulatory control period that were not included in the capex allowance for the period
- the inclusion of $23.21m of assets under construction (inclusive of FDC) for the current regulatory control period to allow for the transition to the proposed regulatory accounting arrangements.

4 Forecast capital expenditure

The NER require SP AusNet to include in its revenue proposal a forecast of the total capex that will be required in the forthcoming regulatory control period to meet the capex objectives, which are to:

- meet the expected demand for prescribed transmission services over that period
- comply with all applicable regulatory obligations associated with the provision of prescribed transmission services
- maintain the quality, reliability and security of supply of prescribed transmission services
- maintain the reliability, safety and security of the transmission system through the supply of prescribed transmission services.

Unlike the capex programs of other TNSPs, SP AusNet's forecast capex proposal does not include augmentation capex. While SP AusNet owns and operates the transmission network, planning and directing augmentation to the shared network is the responsibility of VENCorp. Capex associated with network augmentation will therefore be considered separately by the AER in its transmission determination for VENCorp, which will be released in November 2007.[2]

[2] Following the release of VENCorp's 2007 Electricity Annual Planning Report in June 2007, the AER has deferred the release of its draft decision on VENCorp's transmission determination in order to properly consider the implications of the report on VENCorp's revenue proposal.

SP AusNet's proposed forecast capex allowance of $856.16m[3] is approximately 79% higher than its total capex undertaken in the current regulatory control period. SP AusNet attributes this increase to a number of factors including:

- the continued roll-out of major station rebuilds, including at more complex and confined metropolitan sites,
- a substantial increase in the number of transformers to be replaced over the forthcoming regulatory control period, and
- further increases in the amount of compliance expenditure required to meet safety, environmental and security needs.

One of the key inputs into SP AusNet's forecast capex proposal is its Asset Management Strategy (AMS). The AMS sets out SP AusNet's asset replacement priorities over the forthcoming regulatory control 2008-14, with an overall time horizon of 2020. The key objectives of SP AusNet's AMS are to ensure that its overall expenditure and work plans minimise total life cycle costs while ensuring sustainable asset and network and risk profiles.

The AER has reviewed SP AusNet's proposed forecast capex to determine whether it reasonably reflects the capex criteria set out in the NER:

- the efficient costs of achieving the capex objectives (set out above)
- the costs that a prudent operator in SP AusNet's circumstances would require to achieve those objectives
- a reasonable expectation of the demand forecast and cost inputs required to achieve those objectives.

In making this assessment the AER has had regard to the capex factors prescribed in the NER for this purpose.

AER's conclusion

Having reviewed SP AusNet's forecast capex, the AER is not satisfied that the above requirements of the NER have been met. The AER has therefore included a revised estimate of the total of SP AusNet's required capex for the forthcoming regulatory control period of $679.04m in this draft decision. The AER is satisfied that this revised estimate, which is the result of a downwards adjustment of $176.23m ($2007-08), reasonably reflects the capex criteria, taking into account the capex factors.

Of the AER's adjustments to SP AusNet's forecast capex allowance, $104.9m of the reduction is specific to projects assessed as part of a detailed review of a representative sample of projects conducted for the AER by PB. These reductions are primarily a result of:

[3] Note that during the detailed review SP AusNet revised its proposed forecast capex amount to $855.26m.

- corrections for an unjustified approach to the proposed timing of some replacements
- lack of a clear economic justification for some elements of SP AusNet's proposed forecast capex and
- over-scoping of some projects.

While the detailed project assessments revealed little evidence of systemic inflation of cost estimates overall, PB identified several issues such as aggressive timing and the lack of a clear economic and risk-based justification for elements of SP AusNet's proposed forecast works that it considered may be prevalent across other areas of the proposed forecast capex program.

Based on PB's advice, the AER undertook a detailed analysis of the information provided by SP AusNet during the review, and considers that these issues are indeed prevalent in several areas of SP AusNet's forecast capex program, and in particular in its targeted replacement programs and station rebuild/refurbishment projects. Based on the information presented by SP AusNet in support of these aspects of its forecast capex proposal, it appears that, at a strategic level, SP AusNet's proposed replacement capex program is excessive in terms of addressing genuine asset failure risks expected over the forthcoming regulatory control period, with the result that elements of SP AusNet's capex forecast are neither prudent nor efficient. On the basis of these findings, the AER considers that SP AusNet's proposed forecast capex allowance is excessive, and is not satisfied that it reasonably reflects a prudent and efficient level of expenditure required to meet the capex objectives in the NER.

Based on a targeted detailed assessment of these aspects of SP AusNet's proposal, the AER has made further reductions to SP AusNet's proposed forecast capex allowance of $42.9m.

The AER has made a number of other adjustments to SP AusNet's proposed forecast capex allowance, most notably:

- removal of an unjustified generalised contingency allowance of $21.7m in SP AusNet's cost estimates for its station rebuild/refurbishment projects and
- an adjustment of $6.7m to SP AusNet's proposed real capex cost escalations, which the AER considers do not represent a realistic expectation of the cost inputs required over the forthcoming regulatory control period.

Table 3 sets out the AER's adjustments to SP AusNet's proposed forecast capex allowance for the forthcoming regulatory control period, resulting in a forecast capex allowance of $679.04m. The total of the AER's reductions is $176.23m, which represents around 21% of SP AusNet's total (revised) proposed forecast capex allowance of $855.26m. This compares to a total actual capex by SP AusNet in the current regulatory period of $478.5m, an increase of more than 40%.

Table 3: AER's conclusions – Total adjustments to SP AusNet's forecast capex allowance ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	**128.02**	**147.70**	**140.14**	**140.85**	**139.69**	**158.87**	**855.26**
PB's recommended adjustments	-10.63	-15.23	-6.37	-21.87	-36.31	-32.55	-122.96
AER's adjustments							
Refurbishment of HWPS	-0.28	-1.41	-1.08	-1.08	-1.08	-1.08	-6.03
Redevelopment of RTS	0.00	0.00	0.00	-8.24	-25.54	-21.04	-54.81
Transformer replacements	-3.50	-5.40	2.50	-3.60	-7.90	-4.50	-22.40
Replacement of SCADA systen	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
Response capability undefined	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
Replacement of CTs	-2.00	-3.60	-2.80	-1.37	-0.42	1.10	-9.09
Vehicle replacements	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
Inventory	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.24
Replacement of 500 kV CBs	-3.50	1.40	0.00	0.00	0.00	0.00	-2.10
Replacement of 66kV switch-ba	-1.27	-2.06	-0.14	-0.02	0.00	0.00	-3.49
Redevelopment of BLTS	0.00	0.00	-1.48	-9.22	-2.69	0.00	-13.40
Refurbishment of TTS	-3.48	-11.05	2.06	-2.48	0.00	0.00	-14.95
Redevelopment of RWTS	-0.24	-0.46	-0.16	-0.44	0.12	-0.42	-1.60
Refurbishment of GNTS	0.00	0.00	0.00	0.00	-3.21	-3.21	-6.42
Refurbishment of KTS	-2.42	-4.49	0.00	-0.86	-0.86	0.00	-8.62
Refurbishment of GTS	-3.02	-0.83	-4.04	0.00	0.00	0.00	-7.89
Refurbishment of HWTS	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-1.39
Labour and materials escalation	-0.31	-0.05	-0.44	-1.00	-1.99	-2.91	-6.70
AER's total adjustment	**-23.07**	**-31.02**	**-8.74**	**-31.46**	**-46.72**	**-35.20**	**-176.23**
AER's conclusion	**104.95**	**116.68**	**131.40**	**109.39**	**92.97**	**123.67**	**679.04**

Figure 1: Forecast capex allowance – SP AusNet's proposal and the AER's conclusion ($2007-08)

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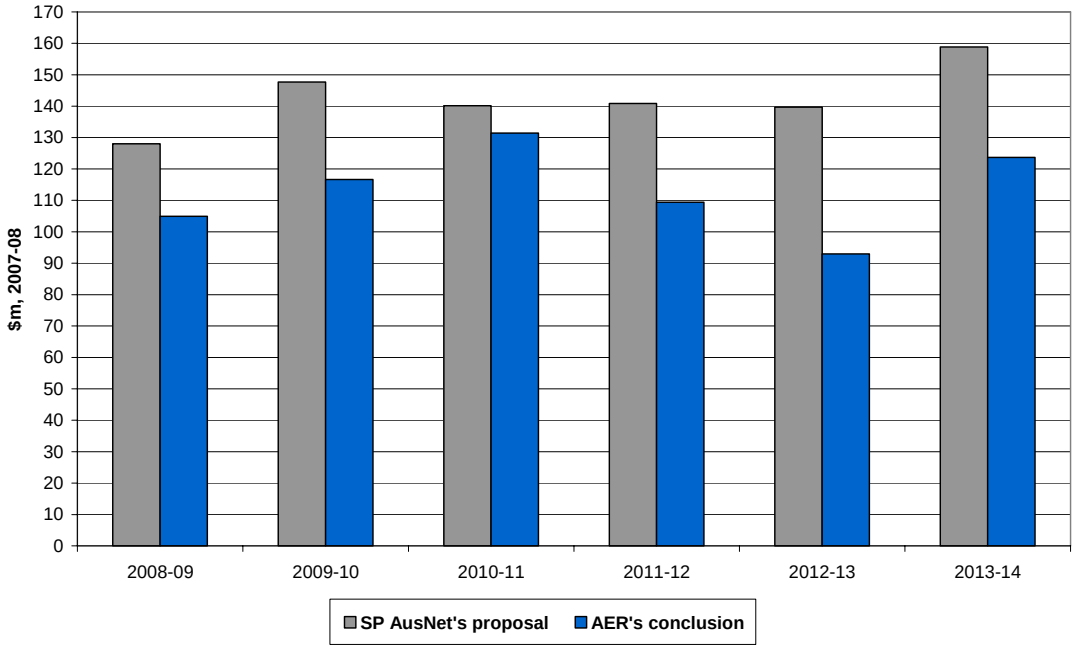


5 Cost of capital

The NER prescribe many of the values of the WACC parameters. Inserting these values into the prescribed WACC formula results in the following expression:

$$WACC = \left(r_f \times 1 \times 0.06\right) \times 0.4 + \left(r_f + DRP\right) \times 0.6$$

For the two parameters where the value is not prescribed, the nominal risk free rate and the debt risk premium, the NER prescribes the methodology to be used by the AER in determining the value of these parameters.

The key parameters underlying the estimate of the WACC in SP AusNet's revenue proposal are outlined in table 4 below.

Table 4: SP AusNet's Proposed WACC parameters[4]

WACC parameter	SP AusNet's proposal
Nominal risk free rate	**5.70% (indicative)**
Equity beta	**1.0**
Market risk premium	**6%**
Debt risk premium	**1.25% (125bp)**
Gearing (D/V)	**60%**
Nominal cost of equity	11.70% (indicative)
Nominal cost of debt	7.06% (indicative)
Nominal vanilla WACC	8.85% (indicative)

Source: SP AusNet[5]

Subsequent to the submission of its revenue proposal, SP AusNet submitted two reports prepared by NERA Economic Consulting.

The first NERA report affects the forecast inflation rate in SP AusNet's proposal. Adopting the conclusions of this report would result in forecast inflation being calculated as the difference, via the Fisher equation, between the yield on nominal Commonwealth Government Securities (CGS) and the yield on inflation-indexed CGS adjusted upwards by 20bp. This adjustment lowers the inflation forecast by approximately 20bp.

The second NERA report affects the nominal risk free rate in SP AusNet's proposal. Adopting the conclusions of this report would result in the nominal risk free rate being calculated as an estimate of the yields on nominal corporate bonds less matched credit default swap (CDS) rates. As present, NERA finds that this would lead to a nominal risk free rate approximately 66bp greater than if the nominal risk free rate is calculated as the yield on nominal CGS.

For the purposes of assessing SP AusNet's proposal under the NER, the AER accepts SP AusNet's proposal as incorporating the recommendations of the NERA reports, where applicable.

AER's conclusion

The AER has used SP AusNet's proposed (indicative) nominal vanilla WACC of 8.85% throughout this draft decision.

It is important to note that the WACC calculated in this draft decision is indicative only and will differ in the final decision, as the risk free rate and debt risk premium

[4] The AER notes that as SP AusNet has proposed the debt risk premium be calculated over historical dates, this figure is not affected by recent events in the US sub-prime mortgage market. SP AusNet's proposed nominal risk free rate will only be affected by the recent events in the US sub-prime mortgage market if these events have an impact on the CGS market during the period SP AusNet has proposed the nominal risk free rate be calculated (these dates were submitted confidentially).

[5] SP AusNet, *Electricity Transmission Revenue Proposal 2008-09 – 2013-14*, p.108.

are to be calculated using data not available until closer to the date of the final decision. Therefore, in order to calculate the WACC for the purposes of this draft decision, the AER has assumed the same risk free rate and debt risk premium assumed by SP AusNet in its revenue proposal.

The methodology that must be used to determine the nominal risk free rate is set prescribed by the NER. The NER do not allow different methodologies to be used. Accordingly, the AER considers the prescribed methodology, under cl.6A.6.2(c) and cl. 6A.6.2(d), prohibits the adjustment proposed by NERA to correct for an alleged bias in the yield of nominal CGS as a proxy for the CAPM risk free rate.

Consistent with previous decisions, the AER considers that the debt risk premium should be determined using data from Bloomberg and over the same dates as the nominal risk free rate.

The AER's accepted approach to forecasting inflation, and the approach specified in the First Proposed PTRM, has been to measure the difference between nominal CGS and inflation-indexed CGS using the Fisher equation. However, the AER considers that, based on recent comments by the RBA and Treasury, there is some basis for the argument that the AER's method of forecasting inflation does not currently result in the best estimate of inflation.

The AER considers that SP AusNet's proposed methodology to forecast inflation, being the difference between the yields on nominal and (20 bp upwards adjusted) indexed CGS, does not comply with the PTRM. Accordingly, under cl. 6A.14.3(a), the AER may but is not required to accept SP AusNet's proposed forecast inflation methodology.

The AER considers that the methodology that is likely to result in the best estimates of expected inflation is a general approach to forecasting inflation, selecting between the options of 2 %, 2.5 % and 3% (the lower and upper bounds, and mid-point, of the RBA's target range), and considering a range of inflation indicators in making that selection. After considering a range of inflation indicators, the AER considers that, at present, applying a general approach to forecasting inflation favours an inflation forecast of 3 %, as opposed to 2 % or 2.5 %.

6 Operating and maintenance expenditure

The NER require SP AusNet to include in its revenue proposal a forecast of the total opex that will be required in the forthcoming regulatory control period to:

- meet the expected demand for prescribed transmission services over that period
- comply with all applicable regulatory obligations associated with the provision of prescribed transmission services
- maintain the quality, reliability and security of supply of prescribed transmission services

- maintain the reliability, safety and security of the transmission system through the supply of prescribed transmission services.

While SP AusNet underspent on its controllable opex in each year of the current regulatory control period, it claims that its average annual controllable opex for the forthcoming regulatory control period is expected to increase by 20% in real terms over the average annual (actual) expenditure in the current period. SP AusNet has proposed a total forecast opex allowance (including easement tax) of $1 034m ($2007-08) for the forthcoming regulatory control period, citing the following factors as drivers of the proposed increase:

- asset failure risks – and the associated increase in maintenance activity – associated with the ageing asset base
- increased resource requirements associated with compliance with legislation, rules and regulations
- increasing labour costs created by skilled labour shortages and the current resources boom
- the inclusion of opex associated with the non-contestable assets constructed in the current regulatory control period that were previously excluded from the RAB
- the inclusion of deductibles in SP AusNet's self insurance claim.

The AER has reviewed SP AusNet's proposed forecast opex to determine whether it reasonably reflects:

- the efficient costs of achieving the abovementioned objectives
- the costs that a prudent operator in SP AusNet's circumstances would require to achieve those objectives
- a reasonable expectation of the demand forecast and cost inputs required to achieve those objectives.

In making this assessment the AER has taken into account the opex factors prescribed in cl. 6A.6.6(e) of the NER, which the AER must have regard to in reaching its draft decision.

AER's conclusion

The AER is not satisfied that SP AusNet's forecast of the opex required in the forthcoming regulatory control period of $1 034.34m ($2007-08) reasonably reflects the opex criteria, taking into account the opex factors. Under cl. 6A.6.6(d) of the NER, the AER is therefore unable to accept SP AusNet's forecast.

In accordance with cl. 6A.14.1(3)(ii), the AER has included in this draft decision an estimate of SP AusNet's total required opex of $929.50m ($2007-08), which the AER is satisfied reasonably reflects the opex criteria, taking into account the opex factors.

While the AER's estimate of opex is a forecast of the *total* opex that will be required in the forthcoming regulatory control period, in determining its estimate the AER has relied on the elements of SP AusNet's opex forecast identified in its proposal. The adjustments made by the AER are those necessary to ensure that the forecast opex included in SP AusNet's transmission determination — on the basis of those component parts — reasonably reflects the prudent and efficient costs required to meet the opex objectives, and a realistic expectation of those costs.

Controllable opex

- The AER has reduced SP AusNet's forecast of controllable opex by $36.24m ($2007/08), predominately due to reductions to asset works and routine maintenance ($16.37m), and corporate opex ($15.19m).
- A reduction ($4.92m) has also been made to opex associated with assets to be rolled into SP AusNet's RAB.
- The AER accepts SP AusNet's proposed labour escalator of 2.8% (real) for each regulatory year of the forthcoming regulatory control period, which is supported by the forecasts provided to the AER by its independent consultant Econtech.

Other opex

- The AER has reduced SP AusNet's proposed forecast of "other" opex costs by $68.60m ($2007/08).
- The AER has rejected SP AusNet's proposed allowance for equity raising costs associated with the initial capital base and its forward capex program (total reduction of $11.81m).
- The AER has also reduced SP AusNet's proposed annual allowance for rebates payable under the Availability Incentive Scheme between SP AusNet and VENCorp from $6.63m to $1.42m per annum, to reflect SP AusNet's past performance under the scheme (total reduction of $31.60m)
- SP AusNet's forecast allowance for easement land tax has been reduced from $530.85m to $516.25m, to adjust for forecast easement values in each year (consistent with NER requirements for easement tax change event pass-throughs), and to properly take into account the proportion of SP AusNet's easements that are in rural, as opposed to metropolitan, areas, among other changes.

Total opex

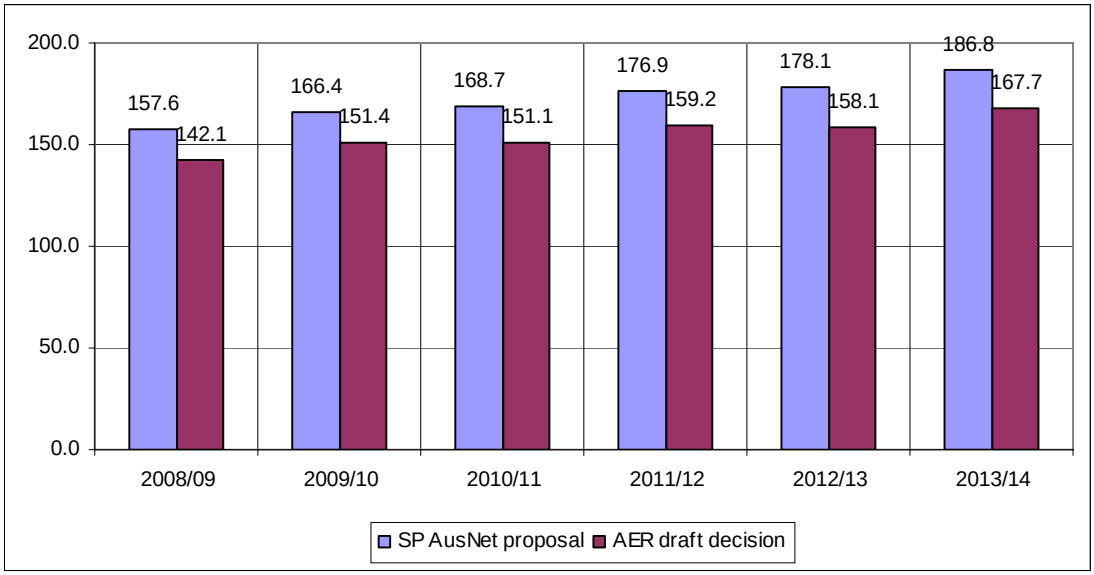
The AER's revised estimate of the total opex that SP AusNet will require to meet the opex objectives in the forthcoming regulatory control period represents a downwards adjustment of $104.84m ($2007-08) or approximately 10%.
The AER is satisfied that the total revised estimate of $929.50m ($2007-08), which has been determined on the basis of the components in table 5 below, reasonably reflects the opex criteria, taking into account the opex factors.

Table 5: AER draft decision - SP AusNet opex forecasts (2007-08 $m)

	SP AusNet's proposal[6]	AER's adjustment	AER's conclusion
Asset works	90.26	-4.69	85.56
Routine maintenance	206.63	-11.67	194.96
Corporate	117.71	-15.19	102.52
Rolled in assets opex	11.40	-4.92	6.48
Inventory		+0.24	0.24
Controllable opex	**426.00**	**-36.24**	**389.76**
Self-insurance	15.24	-6.86	8.38
Equity raising costs	11.81	-11.81	0.00
Debt raising costs	10.30	-3.72	6.58
Rebates	40.13	-31.60	8.52
Easement land tax	530.85	14.60	516.25
Other opex	**608.34**	**-68.60**	**539.74**
Total opex	**1 034.34**	**-104.84**	**929.50**

Source: SP AusNet, PB, AER analysis

Figure 2: AER draft decision - SP AusNet opex forecasts (2007-08 $m)



[6] As revised

7 Service target performance incentives

As required by the NER, SP AusNet has proposed targets, caps, collars and weightings to apply to each of its service performance parameters. These parameters, along with the amount of revenue at risk, are set out in the first proposed Service Target Performance Incentive Scheme (STPIS) published by the AER on 31 January 2007.

SP AusNet proposes to reduce targets for seven of its parameters from those in the current regulatory control period, primarily to account for the increase in capital works over the forthcoming regulatory control period. SP AusNet proposes to place revenue at risk under the loss of supply parameters for the first time, and proposes asymmetric caps and collars around its targets to reflect the challenge of improving its already high performance.

SP AusNet also proposes a suite of exclusions to the STPIS, which are drawn in part from exclusions under the current scheme, and are otherwise proposed in response to aspects of SP AusNet's forecast capex and opex programs for the forthcoming regulatory control period.

PB was engaged to assist the AER in its assessment of the values SP AusNet proposes to attach to the parameters specified in the STPIS, and the appropriateness of SP AusNet's proposed exclusions.

AER's conclusion

The AER considers that the weightings proposed by SP AusNet give effect to the requirements of the NER and the scheme, and therefore concludes that they are appropriate to apply over the forthcoming regulatory control period. However, the AER has rejected SP AusNet's proposed application of asymmetric caps and collars, and has made revisions which place the caps and collars symmetrically around the target (where possible).

Of the eight exclusions that SP AusNet proposes to apply to the scheme, the AER accepts two, has amended one, and rejects five. The AER rejects the proposed exclusion of line up-ratings, inter-connector upgrades and switchyard busbar up-ratings, as there is no work forecast in these areas for the forthcoming regulatory control period. Further, the AER does not consider that the proposed Brunswick to Richmond cable exclusion is consistent with the requirements of the STPIS or the NER.

The AER has made a number of adjustments to the service performance targets proposed by SP AusNet, to accurately reflect the impact of SP AusNet's forecast capex on expected service performance. Table 6 below sets out the AER's conclusions in relation to the values to apply to SP AusNet for the forthcoming regulatory control period.

Table 6: AER's conclusion – SP AusNet's service target performance incentive scheme values and weightings

Measures	Collar	Target	Cap	Weighting
Availability measures	%	%	%	%MAR
Total circuit	98.41	98.73	99.05	0.20
Peak critical	98.76	99.53	99.92	0.20
Peak non-critical	98.95	99.53	99.81	0.05
Intermediate critical	97.71	99.09	99.78	0.025
Intermediate non-critical	97.94	99.10	99.68	0.025
Loss of supply events		No.		%MAR
>0.05 min per annum	9	6	3	0.125
>0.3 min per annum	4	1	0	0.125
Average outage duration		Minutes		%MAR
Lines	667	382	98	0.125
Transformers	556	412	268	0.125

8 Draft Decision - Maximum allowed revenue

The AER's determination of SP AusNet's annual building block requirement is outlined in table 7.

Table 7: AER building block calculation ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Return on capital	195.01	200.90	207.48	215.44	221.11	224.97
Economic depreciation	44.26	51.35	57.36	62.45	68.02	63.27
Opex (includes easement land tax)	146.37	160.62	165.06	179.19	183.25	200.20
Glide-path	8.65	7.12	5.50	3.78	1.95	0.00
Tax liability	13.61	14.22	14.72	14.93	15.26	14.21
Building block requirement	407.89	434.22	450.13	475.79	489.59	502.65
SP AusNet's proposal	428.70	455.10	480.70	505.30	529.50	541.90
Difference	-20.81	-20.88	-30.57	-29.51	-39.91	-39.25

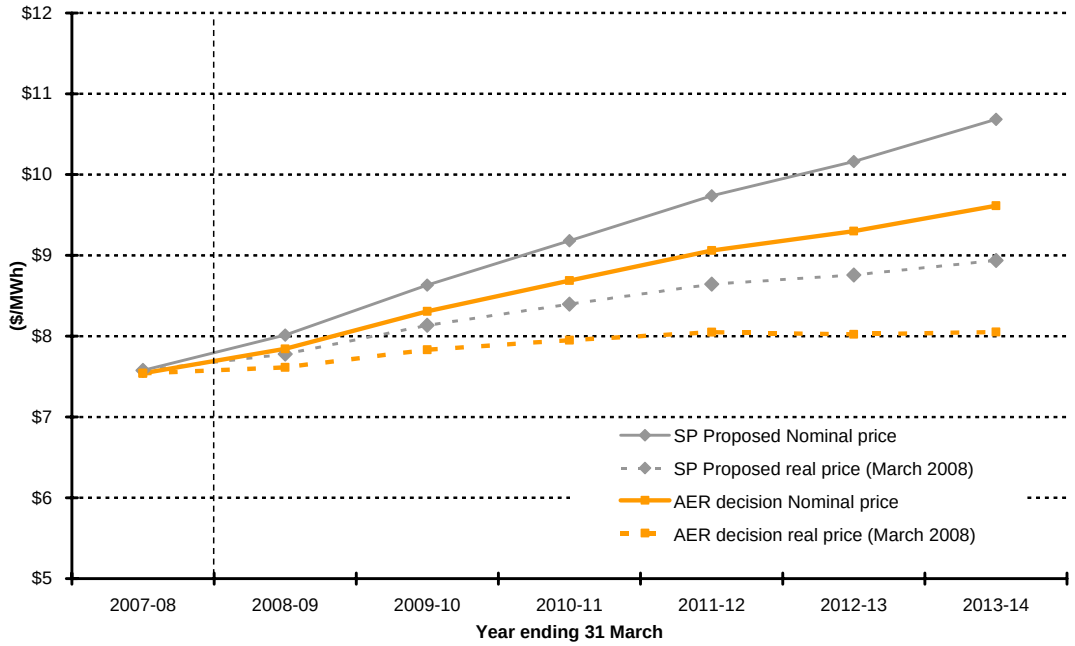
The AER has applied an X factor of -1.52% to derive a smooth revenue requirement or expected MAR for each year of the 2008-14 regulatory control period, compared to SP AusNet's proposed X factor of -3.22%. SP AusNet's expected total revenue cap is $2 762.26m (nominal). The divergence between the expected MAR and building block requirement in each year is illustrated in table 8.

Table 8: Building block calculation and expected MAR ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Building block requirement	407.89	434.22	450.13	475.79	489.59	502.65
Expected MAR	410.56	429.30	448.91	469.40	490.84	513.25
Difference	0.65%	-1.13%	-0.27%	-1.34%	0.26%	2.11%

In terms of a nominal per MWh "price", the expected MAR equates to $7.84 in 2008-09, increasing by an average of 4.4% per year to $9.61 in 2013-14. This compares to SP AusNet's proposal which resulted in an annual average nominal price increase of 5.93% equating to a per MWh price of $10.68 in 2013-14. In real terms, the expected MAR resulting from this determination increases at an average annual rate of 1.13% over the period, compared to 2.82% under SP AusNet's original revenue proposal.[7] The SP AusNet proposed and AER concluded real and nominal price paths are illustrated in figure 3.

Figure 3: Transmission price path from 2007-08 to 2013-14 ($/MWh)



Source: SP AusNet PTRM, submitted 28 February 2007.

9 Negotiating framework

SP AusNet is required to submit a proposed negotiating framework to the AER, setting out the procedure to be followed by SP AusNet and a service applicant during negotiations for a negotiated transmission service. The minimum requirements for a negotiating framework are set out at cl. 6A.9.5(c) of the NER.

The AER is required to determine in its draft decision whether SP AusNet's proposed negotiating framework is consistent with the requirements of the NER. Where the proposed negotiating framework meets the requirements of the NER it must be

[7] Note that SP AusNet's original proposal used a forecast inflation rate of 3.02%, while the AER's determination assumes a rate of 3.00%.

approved. Where there are sections of the proposed negotiating framework that do not satisfy the minimum requirements, the framework must not be approved, and the AER must specify in its draft decision the changes necessary to make the proposed framework compliant with the minimum requirements of the NER.[8]

AER's conclusion

The AER has found that SP AusNet's proposed negotiating framework for the forthcoming regulatory control period is, in a number of respects, not compliant with the requirements of cl. 6A.9.5(c).

In particular, the AER has found that areas of SP AusNet's proposed negotiating framework purport to limit the application of a requirement specified in the NER, where the NER requires a comprehensive application, or to alter the application of a requirement in a manner contrary to the intention of the NER.
The AER therefore requires SP AusNet to make changes to its proposed negotiating framework to correct these areas of non-compliance. Details of the changes required are discussed further in chapter 9 of this draft decision, and are set out in appendix D. The changes required by the AER are limited to those necessary to make SP AusNet's proposal compliant with the NER, and are, as required by the NER, determined on the basis of the current proposed negotiating framework, and amended from that basis only to the extent necessary to enable it to be approved.

10 Negotiated transmission service criteria (NTSC)

The AER must determine the NTSC which must be applied by SP AusNet in negotiating the terms and conditions of access, including price, for negotiated transmission services. A commercial arbitrator must apply the NTSC when resolving a dispute between SP AusNet and a service applicant.

The NTSC is the only component of the transmission determination that SP AusNet is not required to propose to the AER. Instead, the onus is on the AER to make a determination specifying the NTSC that will apply to SP AusNet. The NTSC determined by the AER are to be specific to SP AusNet, but must give effect to, and be consistent with, the negotiated transmission services principles set out in cl. 6A.9.1 of the NER.

The AER published proposed NTSC for SP AusNet on 22 June 2007. The proposed criteria gave full effect to the requirements prescribed in the NER, under the umbrella of a requirement that the negotiated terms and conditions of access, including the price to be charged for provision of the service and any access charges, promote the achievement of the national electricity market objective.

AER's conclusion

The NER clearly contemplate NTSC that will apply to a particular TNSP, and (subject to consistency with the negotiated transmission service principles) allow the AER the flexibility to include additional and potentially unique criteria where necessary. However, the AER has not identified any particular circumstances that would warrant

[8] Cl. 6A.12.1(d) of the National Electricity Rules.

the determination of additional criteria other than those based on the negotiated transmission service principles for the purposes of this determination.

The negotiated transmission criteria proposed to apply to SP AusNet for the 2008-14 regulatory control period therefore give full effect to the negotiated transmission service principles. However, they do not add to or alter their application to SP AusNet other than to include the abovementioned requirement that the terms and conditions of access agreed through negotiations should promote the market objective.

11 Pricing methodology

SP AusNet is required to submit a proposed pricing methodology to the AER, setting out the formula, methodology or approach that will be applied by SP AusNet in allocating its aggregate annual revenue requirement for prescribed transmission services between service categories and connection points, and in determining the structure of prices that SP AusNet will charge for each category of service provided. SP AusNet's proposed pricing methodology must comply with the pricing principles for prescribed transmission services set out in the NER and with the agreed interim requirements published for that purpose by the AER.

Section 2.1(a) of the agreed interim requirements sets out a two-step process for the AER in its assessment of SP AusNet's proposed pricing methodology:

1. determine whether SP AusNet's proposed pricing methodology is consistent with the pricing principles set out in rule 6A.23 of Part J and

2. *subject to* satisfying step (1), determine whether SP AusNet's proposed pricing methodology is consistent with Part C.

In its proposal SP AusNet argues that the requirements of rules 6.3, 6.4 and 6.5 of Part C are superseded by the requirements of rule 6A.23 of Part J, due to the addition or amendment of the definition of key terms in rule 6A.23. SP AusNet therefore claims that it is unable to comply with the requirements of Part C without simultaneously being inconsistent with the requirements of Part J.

While the AER agrees that the terminology contained in SP AusNet's proposed pricing methodology should, to the extent possible and practical, reflect the terminology contained in rule 6A.23 of Part J, the AER considers that if the provisions of Part C will supplement or elaborate on (without being inconsistent with) the pricing principles contained in rule 6A.23 of Part J, then the Part C provisions are relevant and must be applied.

AER's conclusion

The AER has reviewed SP AusNet's proposed pricing methodology and found that it does not comply with the NER and the AER's agreed interim requirements in a number of respects. This has the potential to result in the incorrect allocation of costs to some of SP AusNet's customers. The NER requires the AER to include in its draft decision details of the changes required or matters to be addressed before the AER will approve SP AusNet's proposed pricing methodology in its final decision. The amendments required by the AER are set out in appendix F to this draft decision.

The amendments required by the AER are limited to those necessary to achieve compliance with the requirements of the NER, and have been determined on the basis of SP AusNet's proposed pricing methodology.

1 Introduction

1.1 Background

The Australian Energy Regulator (AER) is responsible for the economic regulation of monopoly transmission services in the National Electricity Market (NEM). These functions were conferred on the AER by the National Electricity Law (NEL) and the National Electricity Rules (NER) on 1 July 2005.

The AER must make transmission determinations for Transmission Network Service Providers (TNSPs) in accordance with the NER in respect of prescribed and negotiated transmission services.

The ACCC determined SP AusNet's current revenue cap for the five year period from 2003 to 2008 in accordance with its responsibilities under the National Electricity Code. The Code has now been superseded by the NER.

On 28 February 2007, SP AusNet submitted a revenue proposal, proposed negotiating framework and proposed pricing methodology to the AER in accordance with the new provisions of the NER. This is the AER's draft decision on the transmission determination for SP AusNet for the period 1 April 2008 to 30 March 2014.

1.2 Regulatory requirements

National Electricity Law

The NEL sets out the functions and powers of the AER, including those relating to its role as economic regulator.

Under section 16 of the NEL, the AER must, in performing or exercising an AER economic regulatory function or power, do so in a manner that will or is likely to contribute to the achievement of the national electricity market objective.

> The national electricity market objective is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system.[9]

In performing or exercising powers in making a transmission determination, the AER must ensure that the regulated transmission system operator to whom the determination will apply, and any affected registered participant, are, in accordance with the NER:

- informed of material issues under consideration by the AER and
- given a reasonable opportunity to make submissions in respect of that determination before it is made.

[9] NEL s 7

In making a transmission determination the AER must, in accordance with the NER:

- provide a reasonable opportunity for the regulated transmission system operator to recover the efficient costs of complying with a regulatory obligation
- provide effective incentives to the regulated transmission system operator to promote economic efficiency in the provision by it of services that are the subject of the transmission determination, including—
    - the making of efficient investments in the transmission system owned, controlled or operated by it and used to provide services that are the subject of the transmission determination; and
    - the efficient provision by it of services that are the subject of the transmission determination
- make allowance for the value of assets forming part of the transmission system owned, controlled or operated by the regulated transmission system operator, and the value of proposed new assets to form part of that transmission system, that are, or are to be, used to provide services that are the subject of the transmission determination
- have regard to any valuation of assets forming part of the transmission system owned, controlled or operated by the regulated transmission system operator applied in any relevant determination or decision.

National Electricity Rules

The NER divides transmission services into three categories:

- prescribed transmission services, which are subject to revenue determinations by the AER, and directly regulated under this mechanism
- negotiated transmission services, the terms and conditions of which (including price of the services) are determined by commercial negotiation (and if necessary arbitration) in accordance with a negotiating framework proposed by a TNSP and approved by the AER, and Negotiated Transmission Services Criteria determined by the AER
- non-regulated transmission services, which are not subject to regulation.

The detailed provisions underlying the AER's economic regulatory functions for electricity transmission networks are set out in chapter 6A of the NER, which requires the AER to make a transmission determination for a TNSP that includes:

- a revenue determination for the service provider in respect of prescribed transmission services
- a determination relating to the provider's negotiating framework
- a determination specifying the negotiated transmission service criteria that apply to the provider and
- a determination specifying the pricing methodology for prescribed transmission services to apply to the service provider.

The nature of each of these determinations is outlined in broad terms below.

Revenue determination

The AER must use a building blocks approach to set a CPI-X revenue cap for a TNSP. A revenue determination for a Transmission Network Service Provider is to specify, for a regulatory control period of not less than five years, the following matters:

- the amount of the estimated total revenue cap for the regulatory control period or the method of calculating that amount
- the annual building block revenue requirement for each regulatory year of the regulatory control period
- the amount of the maximum allowed revenue for each regulatory year of the regulatory control period or the method of calculating that amount
- appropriate methodologies for the indexation of the regulatory asset base
- the values that are to be attributed to the performance incentive scheme parameters for the purposes of the application to the provider of any service target performance incentive scheme that applies in respect of the regulatory control period
- the values that are to be attributed to the efficiency benefit sharing scheme parameters for the purposes of the application to the provider of any efficiency benefit sharing scheme that applies in respect of the regulatory control period
- the commencement and length of the regulatory control period.

The AER's consideration of SP AusNet's revenue proposal is set out in chapters 2 to 8 of this draft decision and in detailed appendices A to C.

Negotiating framework

A TNSP must prepare a negotiating framework setting out the procedure to be followed during negotiations between that TNSP and any person who wishes to receive a negotiated transmission service from the TNSP, as to the terms and conditions of access for provision of the service.

The AER's determination on the negotiating framework must set out requirements that are to be complied with in respect of the preparation, replacement, proposal or operation of the TNSP's negotiating framework.

The AER's consideration of SP AusNet's proposed negotiating framework is set out in chapter 9 of this draft decision, and in detailed appendix D.

Negotiated transmission service criteria

The Negotiated Transmission Service Criteria (NTSC) forming part of a transmission determination for a TNSP are the criteria that are to be applied:

(1) by the TNSP in negotiating:

- the terms and conditions of access for negotiated transmission services, including the prices that are to be charged for the provision of those services by the provider for the relevant regulatory control period;
- any access charges which are negotiated by the provider during that regulatory control period; and

(2) by a commercial arbitrator in resolving any dispute, between the Transmission Network Service Provider and a person who wishes to receive a negotiated transmission service, in relation to:

- the terms and conditions of access for the negotiated transmission service, including the price that is to be charged for the provision of that service by the provider;
- any access charges that are to be paid to or by the provider.

The NTSC determined by the AER must give effect to and be consistent with the Negotiated Transmission Service Principles set out in the NER.

The AER's determination of the NTSC that will apply to SP AusNet is set out in chapter 10 of this draft decision, and in detailed appendix E.

Pricing methodology

When setting the prices that may be charged for the provision of prescribed transmission services, a TNSP must comply with the pricing methodology approved by the AER as part of the transmission determination that applies to that TNSP, and other applicable requirements in the NER.

The pricing methodology is the methodology, formula, process or approach that, when applied by a TNSP:

(1) allocates the aggregate annual revenue requirement for prescribed transmission services provided by that TNSP to:

- the categories of prescribed transmission services for that provider; and
- transmission network connection points of Transmission Network Users; and

(2) determines the structure of the prices that a TNSP may charge for each of the categories of prescribed transmission services for that provider.

The pricing methodology proposed by a TNSP and approved by the AER must give effect to and be consistent with the pricing principles for prescribed transmission services set out in the NER, and comply with the requirements of, and contain or be accompanied by such information as is required by, the pricing methodology guidelines made for that purpose by the AER.

The AER's consideration of SP AusNet's proposed pricing methodology is set out in chapter 11 of this draft decision, and in detailed appendix F.

1.3 Transitional arrangements – transmission guidelines

The Australian Energy Market Commission (AEMC) commenced a review of the rules for economic regulation of electricity transmission networks in the NEM in mid 2005. The new chapter 6A of the NER was released in November 2006. The NER require the AER to publish several transmission guidelines in September and October 2007.

As SP AusNet was required under the NER to lodge its proposal on 28 February 2007, before the AER's final guidelines were developed, transitional provisions were included in chapter 11 of the NER. For the purposes of making a 2008 determination for the regulatory control period to be covered by a 2008 determination, these provisions require anything that must be done in accordance with a guideline to be done in accordance with the corresponding proposed guideline.[10] In particular:

- the Post-Tax Revenue Model that applies to SP AusNet is the First Proposed PTRM released by the AER on 31 January 2007
- the Roll-Forward Model that applies to SP AusNet is the First Proposed Roll Forward Model released by the AER on 31 January 2007
- the Efficiency Benefit Sharing Scheme (EBSS) that applies to SP AusNet is the First Proposed EBSS released by the AER on 31 January 2007
- the Service Target Performance Incentive Scheme that applies to SP AusNet is the First Proposed Scheme released by the AER on 31 January 2007
- the Submission Guidelines that apply to SP AusNet are the First Proposed Submission Guidelines released by the AER on 31 January 2007
- the Cost Allocation Guidelines that apply to SP AusNet are the First Proposed cost allocation guidelines released by the AER on 31 January 2007[11]
- SP AusNet's proposed pricing methodology is to be assessed against the AER's agreed interim requirements, released 16 February 2007.

The proposed guidelines will apply to SP AusNet until the end of the 2008-2014 regulatory control period covered by the AER's 2008 transmission determination.

[10] NER cl 11.6.18

[11] For the purposes of making a 2008 determination for the regulatory control period to be covered by a 2008 determination, a relevant provider is taken to have complied with a requirement to comply with a Cost Allocation Methodology under the new Chapter 6A if the AER is satisfied that the relevant provider has complied with the relevant proposed guideline for cost allocation referred to in cl. 11.6.17(a)(6), but only until the AER has approved a Cost Allocation Methodology for that provider under cl. 6A.19.4.

1.4 Regulatory control period

As noted above, a revenue determination must specify the commencement and length of the regulatory control period to which it applies. The regulatory control period must not be less than five regulatory years. The AER must approve the commencement and length of the regulatory control period as proposed by the TNSP on its revenue proposal if the length proposed is five regulatory years, but is not precluded from approving a longer period if that is proposed by the TNSP.

SP AusNet has proposed a six-year regulatory control period commencing on 1 April 2008, and ending on 31 March 2014. This extended period (which is one year longer than the standard five-year period contemplated by the NER) is proposed as a way to smooth the future workload of SP AusNet.

The proposed six-year regulatory control period will have the effect of separating the regulatory reviews of SP AusNet's gas distribution and electricity transmission networks so that in future, these will not coincide. SP AusNet is currently engaged in coincident price/revenue reviews for its electricity transmission business and gas distribution business. SP AusNet has found that undertaking both reviews concurrently is causing considerable strain on its internal resources and forcing it to engage external resources which, in turn, raises its costs.

While the AER understands the resource constraints associated with parallel reviews, it is also cognisant that forecasting risk increases as the length of the period subject to the forecast extends. Under the ex ante assessment process set out in chapter 6A of the NER, the possibility of efficiency gains for TNSPs needs to be considered when extending the regulatory period because TNSPs are given an allowance for capital and operating expenditure which cannot be assessed ex post.

In assessing SP AusNet's revenue proposal, the AER has been mindful of these issues, and has been careful to ensure that the appropriate level of scrutiny is applied to forecast capital and operating and maintenance expenditure for the later years of the proposed regulatory control period. On balance, the AER considers that the impact of an extra year in the regulatory control period being requested by SP AusNet will have a minimal impact on the efficiency gains it receives.

The AER has therefore accepted the proposed regulatory control period as a once-off measure to address the issues of regulatory burden identified by SP AusNet. In approving the proposed regulatory control period of 1 April 2008 to 30 March 2014, the AER's expectation is that future regulatory control periods proposed by SP AusNet will adhere to the standard, five-year period.

1.5 Review process

Part E of chapter 6A sets out the procedure that applies for the purposes of the AER making a transmission determination.

To date, this process has involved:

- *Submission of revenue proposal, negotiating framework and pricing methodology*– SP AusNet submitted its revenue proposal, proposed negotiating framework and pricing methodology, and supporting information to the AER on 28 February 2008, 13 months prior to the end of its current regulatory control period.
- *Preliminary examination and determination of non-compliance* – SP AusNet's proposal was assessed against the requirements of chapter 6A of the NER and the first proposed submission guidelines, and found to be non-compliant in a number of respects. On 30 April 2007, additional information was provided in response to a formal notice issued by the AER under cl. 6A.11.1 of the NER.
- *Consultation* – SP AusNet's proposal was published by the AER on 1 May 2007, and interested parties were invited to make submissions. A public forum on SP AusNet's proposal was held on 10 May 2007, at which SP AusNet gave a presentation to interested parties on its proposal. Three submissions on SP AusNet's proposal were received, from Transend, the Energy Users Coalition of Victoria and the Energy Users Association Australia.
- On 15 June 2007, the AER released two letters submitted by SP AusNet in relation to reports published by NERA Economic Consulting, seeking to add to SP AusNet's initial proposal on calculation of the WACC, and called for submissions by 3 August 2007. One submission was received, from Energex.
- On 22 June 2007, the AER published its proposed Negotiated Transmission Services Criteria for SP AusNet, calling for submissions by 3 August 2007. Two submissions were received, from VENCorp and the Southern Generators.[12]

The AER's draft decision has been made in accordance with the relevant requirements of rule 6A.14. The AER released this draft decision on 31 August 2007.

In making this draft decision the AER has considered all written submissions made in response to SP AusNet's proposal and subsequent consultations. The AER notes that SP AusNet's audited regulatory accounts were not available in time for the AER to incorporate the end of financial year data into SP AusNet's proposal for the purposes of this draft decision. However, SP AusNet's audited results for the 2006-07 financial year will be taken into account in the AER's final decision when it is released in January 2008.

The AER engaged technical consultants to provide independent, objective advice on SP AusNet's revenue proposal:

- PB Strategic Consulting (PB) was engaged to provide expert engineering advice on SP AusNet's capex, opex and service performance values. PB has worked extensively with Australian regulatory bodies, providing strategic management services in the utility, infrastructure and energy sectors, focusing on areas of industry and regulatory reform, energy economics, strategic planning, project finance, valuations, and advice on mergers and acquisitions.

[12] AGL, Flinders Power, International Power Australia, Loy Yang Power Marketing Management Company and TRUenergy.

- Nuttall Consulting was engaged to provide additional expert engineering advice on SP AusNet's proposal, including on non-contestable works commissioned by VENCorp from SP AusNet. Nuttall Consulting is a consultancy specialising in regulation and business strategy in the energy and utility sector, and offers over 10 years of consultancy experience in this field, having worked with governments, industry regulators and competition authorities, industry participants and investors, in numerous countries.
- Econtech Pty Ltd was engaged to provide an independent economic assessment of SP AusNet's proposed wage growth escalators for capex and opex. Econtech is a leading independent economic consultancy specialising in economic modelling, forecasting and policy analysis. Econtech has an international reputation for modelling with clients including the governments of Australia, New Zealand, Singapore, Hong Kong, Vietnam and Malaysia.

Advice was also sought from Dr John Handley, the Reserve Bank of Australia and the Australian Treasury regarding the issue of the use of Commonwealth Government Bonds to estimate the risk-free rate and the real risk free rate, which are relevant to the cost of capital and the estimate of inflation used throughout this draft decision. This draft decision should be read in conjunction with the consultants' reports.

1.6 Structure of draft decision

The AER's consideration of SP AusNet's revenue proposal, proposed negotiating framework and criteria and proposed pricing methodology are set out as follows:

- chapter 2 assesses the prudence of past capex
- chapter 3 determines the opening value of the regulated asset base
- chapter 4 assesses the efficient forecast capex allowance
- chapter 5 determines the benchmark WACC
- chapter 6 assesses the efficient forecast opex allowance
- chapter 7 assesses the values to be included in the service target performance incentive scheme
- chapter 8 determines the maximum allowed revenue
- chapter 9 sets out the AER's determination in relation to SP AusNet's negotiating framework
- chapter 10 specifies the negotiated transmission service criteria that will apply to SP AusNet
- chapter 11 specifies the pricing methodology that will apply to SP AusNet
- Appendix A sets out the AER's detailed review of past capex
- Appendix B sets out the AER's detailed review of forecast capex
- Appendix C provides details of the Service Target Performance Incentive Scheme that will apply to SP AusNet

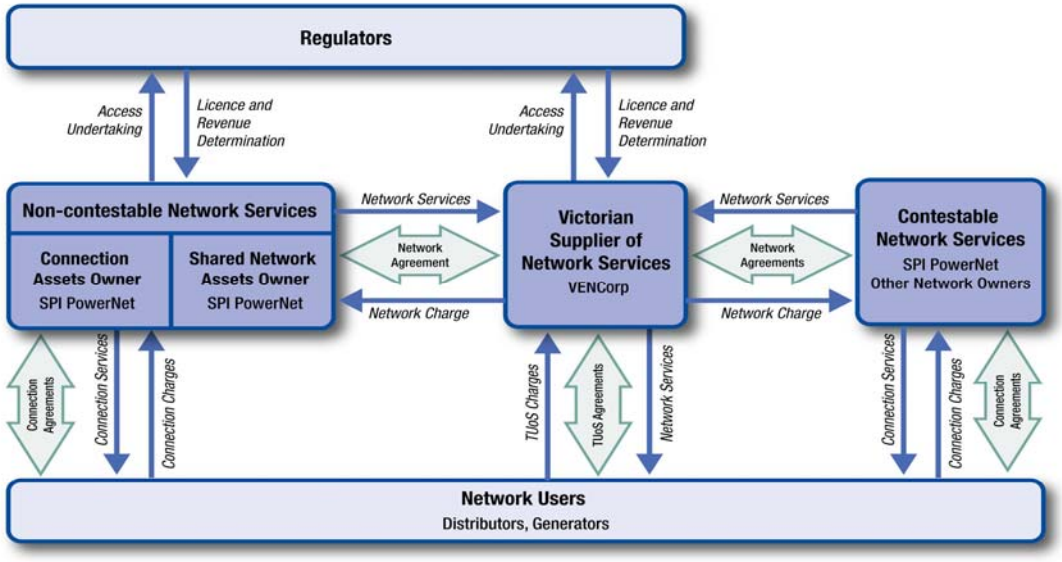
- Appendix D provides details of the changes required and matters to be addressed before the AER will approve SP AusNet's proposed negotiating framework
- Appendix E specifies the negotiated transmission services criteria that will apply to SP AusNet
- Appendix F provides details of the changes required and matters to be addressed before the AER will approve SP AusNet's proposed pricing methodology.

1.7 Overview of the SP AusNet and VENCorp transmission network

The transmission arrangements in Victoria, which separate the network asset owner (predominately SP AusNet) from the investment decision-maker (VENCorp), are unique in the NEM. SP AusNet owns and operates the transmission network and provides bulk transmission services to VENCorp under a network agreement. VENCorp owns no transmission assets itself. It provides shared network services to users and is responsible for planning and directing the augmentation of the shared network (which excludes the connection facilities utilised by generators and distribution bodies).

Figure 1.1 below illustrates the separation of transmission asset ownership from transmission investment decision-making in Victoria.

Figure 1.1 - Commercial arrangements for the provision of electricity transmission services



Source: SP AusNet revenue proposal, 28 February 2007

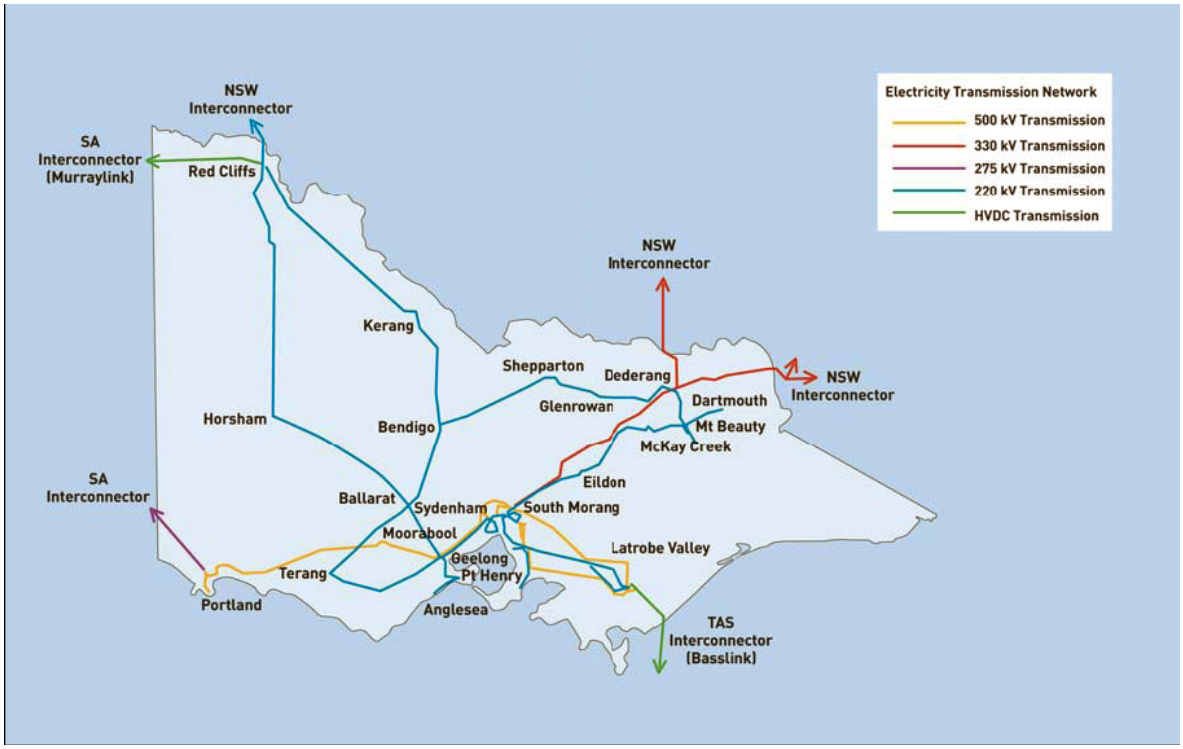
1.7.1 SP AusNet

SP AusNet owns, operates and maintains over 6,500 kilometres of high voltage transmission lines, spanning approximately 227,600 square kilometres throughout Victoria. The network serves over 1.8 million households and 280,000 businesses, transporting in excess of 45 million MWh of energy each year.

As can be seen in Figure 1.2, the network is built around a 500kV backbone running from the major generating source in the Latrobe Valley, through Melbourne and across the southern part of the state to Heywood, near the South Australian border. This backbone is designed to support the major load centres (Melbourne and the Portland aluminium smelter) and is surrounded by:

- a 220 kV ring around the Melbourne metropolitan area supplying 220 kV/66 kV terminal stations
- an inner and outer ring of 220 kV/66 kV terminal stations in country Victoria supplying the regional centres (the "State Grid")
- interconnections with NSW, South Australia and Tasmania.

Figure 1.2: SP AusNet's transmission network



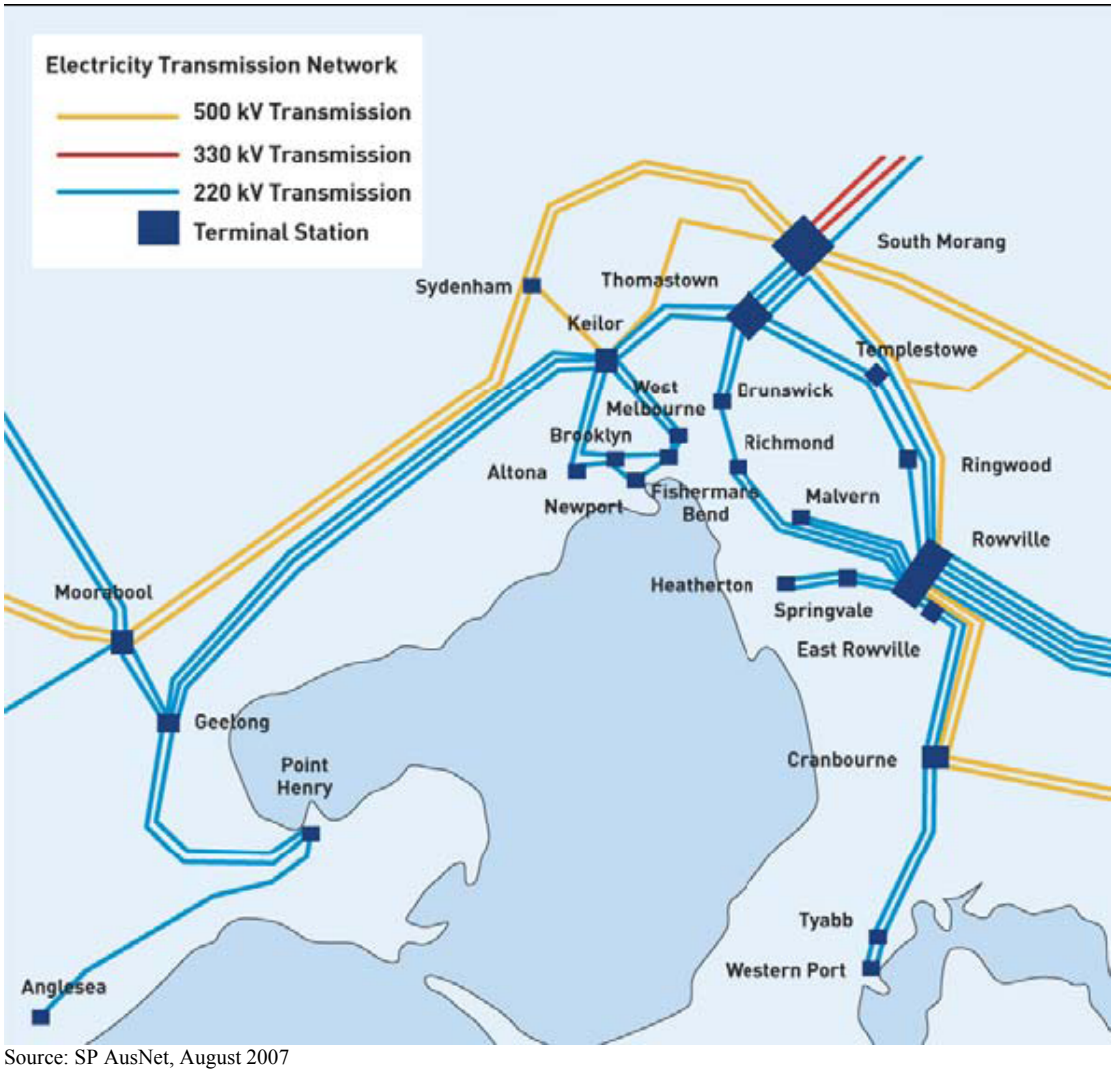
Source: VENCorp revenue proposal, 1May 2007

Melbourne's metropolitan area (Figure 1.3) is served by 500 kV and 220 kV networks which receive power from major generators in the Latrobe Valley, Victorian hydro-electric power stations, a gas-fired power station at Newport and the above-mentioned interconnections with NSW, SA and Tasmania:

- the Latrobe Valley to Melbourne link comprises four 500 kV lines supplying power from Loy Yang and Hazelwood power stations to Keilor, South Morang, Rowville and Cranbourne Terminal Stations, and six 220 kV lines transferring power from the Yallourn and Hazelwood generation units into the eastern metropolitan area at Rowville Terminal Station;
- supply from NSW and the Snowy Mountains generators is through two 330 kV lines from Dederang Terminal Station in the north east to South Morang Terminal Station on the northern perimeter of Melbourne;

- the Southern Hydro generators at Kiewa, Eildon and Dartmouth are connected to Thomastown Terminal Station via a 220 kV system;
- Springvale, Heatherton, East Rowville, Tyabb and Malvern Terminal Stations derive their supply from radial single tower, double-circuit 220 kV lines to minimise the amount of land required for transmission in the metropolitan area;
- 220 kV links between Newport Power Station and Fishermen's Bend Terminal Stations, and Brunswick and Richmond Terminal Stations, increase supply routes for Melbourne's inner suburbs and the central business district.

Figure 1.3: SP AusNet's transmission network – Metropolitan Melbourne



Source: SP AusNet, August 2007

1.7.2 VENCorp

The Victorian Energy Networks Corporation (VENCorp) is a statutory corporation wholly owned by the Victorian government. VENCorp is the monopoly provider of shared transmission network services in Victoria, acquiring bulk network services from SP AusNet and other service providers under network agreements. VENCorp also plans and directs the augmentation of the shared network. VENCorp does not own transmission assets itself, and by operation of the jurisdictional derogation for

Victoria in chapter 9, part A of the NER, operates on a full cost recovery but no operating surplus basis.

VENCorp is subject to its own transmission determination, which will be made separately to that determined by the AER for SP AusNet. By agreement with the AER, VENCorp submitted its proposal to the AER at the same time as SP AusNet (on 1 March 2007), rather than in November 2007 in accordance with the abbreviated process set out in the Victorian jurisdictional derogation. New information provided following the release of VENCorp's 2007 Electricity Annual Planning Report in June 2007 has necessitated an extension of the AER's review of VENCorp's revenue proposal to allow for proper consideration of the new information. The AER's draft decision on VENCorp has therefore been deferred.

The AER notes that its decision to take into account this new information, and to defer the release of its draft decision, is possible only under the negotiated review process agreed by VENCorp and the AER, which exists outside the constraints of the process that applies to other TNSPs under chapter 6A, and also that which applies to VENCorp under the derogation.

In making its draft decision on SP AusNet's transmission determination, the AER is bound by the provisions of the NER and can not deviate from the procedure set out in chapter 6A.

2 Past capital expenditure

2.1 Introduction

This chapter sets out the AER's ex post prudency assessment of SP AusNet's capital expenditure (capex) undertaken during the current regulatory control period 1 January 2003 to 31 March 2008. The transitional provisions in chapter 11 of the NER (cl. 11.6.9) allow the AER to have regard to an existing transmission determination when rolling forward the regulatory asset base (RAB) to the beginning of the forthcoming regulatory control period. The current transmission determination applying to SP AusNet provides that an ex post assessment of capex be undertaken at the end of the current regulatory control period.[13]

Following the process set out in Appendix B of the *Statement of principles for the regulation of electricity transmission revenues* (SRP),[14] the AER should only allow prudent capex to be included in SP AusNet's opening RAB at the commencement of the forthcoming regulatory control period.

2.2 Regulatory requirements

NER requirements

Cl. 11.6.9 of the NER provides that:

> In making a revenue determination for the first regulatory control period, the value of the regulatory asset base at the beginning of the first regulatory year of that period calculated in accordance with cl. S6A.2.1(f), may be adjusted having regard to an existing revenue determination and any other arrangements agreed between the AER and the Transmission Network Service Provider.

In practical terms, cl.11.6.9 allows the AER to take into account the terms under which the ACCC made SP AusNet's (then SPI PowerNet) current transmission determination in 2002.

Statement of regulatory principles (SRP)

The process for reviewing capex undertaken by SP AusNet in the current period is set out in the SRP, which was released by the ACCC on 8 December 2004 and adopted by the AER in 2005. Appendix B of the SRP sets out the ex post prudency test to be applied for transmission determinations (including SP AusNet's current determination) made under the ACCC's 1999 *Draft statement of principles for the regulation of transmission revenues* (DRP).[15]

[13] ACCC, Victorian Transmission Network Revenue Caps 2003–2008, 11 December 2002, p.4.

[14] Adopted by the AER in 2005.

[15] AER, *Statement of principles for the regulation of electricity transmission revenues*, Appendix B: Transitional capital expenditure arrangements, 2004, p.23

A key element of SP AusNet's current transmission determination — as determined under the DRP — is the requirement for the AER to undertake an ex post prudency assessment of capex undertaken in the current regulatory control period, prior to including it in the RAB.[16]

The DRP states that capex may only be rolled into the RAB provided that "the amount does not exceed the amount that would be invested by a prudent TNSP acting efficiently in accordance with good industry practice and to achieve the lowest sustainable cost of delivering services".[17]

General principles for the assessment of prudency

The DRP states that an assessment of whether a TNSP developed a project in accordance with good industry practice necessarily requires the exercise of judgment, taking into account the specific engineering and economic facts, and circumstances of the investment that were apparent at the time the investment was made.

In undertaking the ex post prudency assessment of projects, and having regard to the information available to the TNSP at the time it made the decisions to invest, the AER's task is to assess whether a prudent TNSP would have made the same decisions. If the AER determines that a prudent TNSP would have made different decisions to those actually made, then the task is to quantify the difference in investment under each set of decisions. This difference represents the cost of inefficiency and is excluded from the RAB.

The application of the prudency test to investments

The prudency test involves a systematic examination of a TNSP's decisions in selecting and delivering investments. The purpose of the examination is to establish whether the TNSP made decisions at each stage of the investment process that were consistent with good industry practice. The examination consists of three sequential stages and is applicable to projects regardless of whether or not they have undergone the regulatory test: [18]

1. Assess whether there is a justifiable need for the investment. This stage examines whether the TNSP correctly assessed the need for investment against its statutory and rules obligations. The assessment focuses on the need for investment, without specifically focussing on what the correct investment to meet that need is. An affirmation of the need for an investment does not imply acceptance of the specific project that was developed.
2. Assuming the need for an investment is recognised, assess whether the TNSP proposed the most efficient investment to meet that need. The assessment reviews whether the TNSP objectively and competently analysed the investment to a standard that is consistent with good industry practice.

[16] ACCC, Victorian Transmission Network Revenue Caps 2003–2008, 11 December 2002, p.4.

[17] ACCC, Draft statement of principles for the regulation of transmission revenues, p.63.

[18] ACCC, *Statement of principles for the regulation of electricity transmission revenues*, Appendix B: Transitional capital expenditure arrangements, 2004, pp.23-24.

3. Assess whether the project that was found to be the most efficient was developed, and if not, whether the difference reflects decisions that are consistent with good industry practice. This assessment examines the factors that caused changes in the project design and/or delivery and assesses how the TNSP responded to those factors relative to what could be expected of a prudent operator.

The AER will apply the prudency test to non-augmentation and 'support the business' investment by reviewing the processes conducted by the TNSP in assessing the need for investment, selecting the appropriate project and then delivering that project.

2.3 SP AusNet's proposal

SP AusNet proposes to roll net capex totalling $478.5m from the current period (including work-in-progress) into its RAB, as set out in Table 2.1.

Table 2.1: SP AusNet's proposed capex from the current regulatory control period ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
Actual Capex	30.0	50.4	68.3	97.7	104.2	111.5	462.1
less Actual Disposals	-0.7	-0.9	-2.1	-1.6	-0.8	-0.8	-6.8
add Work-in-progress						23.2	23.2
Total	29.3	49.5	66.3	96.1	103.4	134.0	478.5

Source: SP AusNet Roll-forward model 2003-2008.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP), including FDC
Capex excludes half-WACC adjustment

In its proposal, SP AusNet reports that it will substantially deliver its planned capex program for the current regulatory control period, commenting that:[19]

> The completed program has not been identical to that approved in the 2002 Decision as priorities, problems and solutions have changed. Nonetheless, the majority of the program forecast in 2002 has been rolled out.

Table 2.2 shows a comparison between forecast and actual capex in the current regulatory control period 1 January 2003 to 31 March 2008, indicating a forecast overspend of $88.1m in aggregate.[20] The actual capex amount shown in Table 2.2 differs from that in Table 2.1 (and from the actual capex figures reported throughout

[19] SP AusNet, *Electricity Transmission Revenue Proposal 2000-09 – 2013-14*, p.32.

[20] In its revenue proposal (p.32), SP AusNet provides capex data for the six-year period 1 April 2002 to 31 March 2008, indicating an overspend of $40.5m. However for the purposes of this chapter, and as reflected in Table 2 above, the AER considers that the relevant ex post period is 1 January 2003 to 31 March 2008 (ie. excluding the nine month period prior to the commencement of the current regulatory control period). Treatment of the nine month period prior to the commencement of the current regulatory control period is discussed separately in Chapter 3 of this Draft Decision.

this chapter), as it includes a half-WACC adjustment and excludes WIP for the purposes of comparison with the forecast capex from the ACCC's 2002 Decision.[21]

Table 2.2: SP AusNet's forecast and actual capex for the current period ($m nominal)

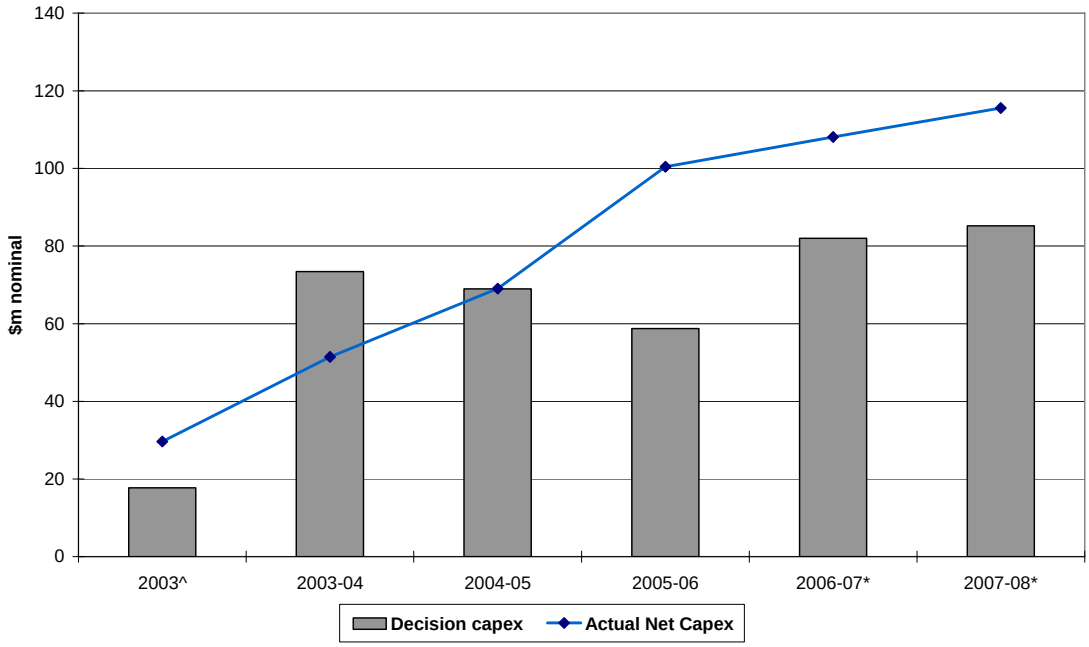
	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
Decision capex	17.7	73.4	69.0	58.7	82.0	85.2	386.1
Actual capex	30.4	52.4	71.2	102.1	108.9	116.3	481.3
Actual disposals	-0.7	-1.0	-2.2	-1.7	-0.8	-0.8	-7.1
Total actual net capex	29.7	51.4	69.1	100.5	108.1	115.6	474.2
Difference	11.9	-22.0	0.0	41.7	26.1	30.3	88.1

Source: ACCC, Victorian Transmission Network Revenue Caps 2003–2008, and SP AusNet, Roll-forward model 2003-2008.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (excluding WIP), including FDC
Capex includes half-WACC adjustment

As illustrated in Figure 2.1, actual capex rose throughout the current period with spending in later years significantly higher than in earlier years.

[21] Forecast capex from the 2002 Decision included an amount for 'Interest-during-construction', which is equivalent to the 'half-WACC adjustment'.

Figure 2.1: SP AusNet's forecast and actual capex for the current period



Source: SP AusNet Roll-forward model. [22]
Notes:
^ Stub period 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Actual capex includes a half-WACC adjustment.

In its proposal, SP AusNet identifies four factors contributing to the difference in the timing profile of capex undertaken in the current period compared to that forecast in the 2002 Decision: [23]

1) to allow lessons learnt from managing some of the initial station rebuilds to be used in later projects, as rebuilds had not been undertaken on the system before 2000
2) to allow a steady increase in resourcing and avoid large jumps in tendered work
3) to allow rescheduling to incorporate new higher priority work programs not forecast at the last reset and
4) to allow rescheduling to integrate the capex program with the updated augmentation plans of VENCorp and the Distributors.

Table 3 below provides a list of the major capex projects undertaken by SP AusNet in the current regulatory control period.[24]

[22] SP AusNet, Roll-forward model. Actual capex includes half-WACC adjustment.

[23] SP AusNet, *Electricity Transmission Revenue Proposal 2008-09–2013-14*, pp.32-33

[24] Table 2.3 shows projects with actual capex greater than $10m.

Table 2.3: Summary of major projects (>$10m) undertaken by SP AusNet during the current regulatory control period ($m, nominal)

Project / Program	Forecast in 2002	Forecast capex	Business case	Status	Actual capex
Ballarat TS Refurbishment	Yes	15.4	15.5	Complete	14.6
Bendigo TS Refurbishment	Yes	15.6	14.8	Complete	14.5
Brunswick TS Refurbishment	Yes	18.6	21.5	Complete	22.1
Eildon Power Station Switchyard Rebuild	Yes	8.6	11.1	Complete	10.7
Geelong TS Refurbishment	No	0	N/A	Ongoing	11.3
Horsham TS Refurbishment	Yes	9.7	9.9	Complete	10.3
Instrument Transformer Replacement Program	No	0	12.7	Ongoing	10.2
Kerang TS Refurbishment	Yes	9.3	9.9	Complete	10.1
Malvern TS Redevelopment	Yes	27.1	36.5	Ongoing	38.6
Mount Beauty TS Refurbishment	Yes	10.4	12.3	Complete	12.1
Optical Fibre Ground Wire Installation Program	Yes	N/A	33	Complete	29.9
Redcliffs TS Refurbishment	Yes	10.6	11.1	Complete	15
Shepparton TS Refurbishment	Yes	12.9	10.7	Complete	10.5
Station Security Upgrade	No	0	17.1	Ongoing	15.4
Terang TS Refurbishment	Yes	15.3	16.2	Complete	17.6
Tower Safe Access Program	No	0	18	Ongoing	16.8
Water and Oil Management Program	Yes	N/A	17.7	Ongoing	17.6

Source: SP AusNet, Revenue Proposal, p.33; and SP AusNet, Response to Cl. 6A.11.1 Information Request, p.6.
*N/A – figure not available / not supplied

As indicated in Table 2.3, forecast capex from the ACCC's 2002 Decision for a particular project often differs markedly from SP AusNet's business case project cost estimates (which are usually undertaken closer to project commencement).

SP AusNet's station rebuild and refurbishment program constitutes 45% of planned capex for the current regulatory control period. As Table 2.3 indicates, the majority of projects associated with this program have been, or are scheduled to be, completed within the current regulatory control period. The exception is the Dederang terminal station refurbishment (not shown in Table 2.3), which was deferred on the advice of detailed engineering studies. Other planned capex completed in the current regulatory control period includes installation of optical fibre ground wire, a water and oil management program, and an instrument transformer replacement program.[25]

SP AusNet's proposal also outlines a number of additional projects undertaken in the current regulatory control period to address unforeseen events. These include:

- a Tower Safe Access Program initiated for compliance reasons in response to identified design weaknesses in some older towers
- a CT replacement program to address the deterioration of primary insulation
- the replacement of the Richmond Terminal Station 22kV switchyard, following investigations by geotechnical consultants and

[25] SP AusNet, *Electricity Transmission Revenue Proposal 2008-09–2013-14*, pp.34-35.

- a program to upgrade the security of transmission assets following the events of September 11, 2001.

SP AusNet states in support of its past capex proposal that it:

- has a best-practice Asset Management Strategy in place which ensures that planned investment achieves the objective of providing network services in accordance with customers' needs at the lowest possible total cost
- has robust and effective systems for the detailed assessment and approval of each project
- has robust systems in place for the tracking and control of project implementation costs so that, upon completion of a project, the scope for process improvements are identified for future projects, and the improvements are implemented and
- can provide detailed cost data to reconcile any differences between expenditures and outcomes approved in a business case and actual project outcomes.[26]

2.4 Submissions

The EUCV submits that despite the ex ante incentive framework established under the new chapter 6A of the NER, it still expects the AER to undertake an ex post review of SP AusNet's current period capex to ensure that it is both prudent and efficient.[27]

The EUAA submits that the reasons for SP AusNet's capex overspend in the current period need to be examined closely by the AER, in what will be the last ex post review applicable to SP AusNet. The EUAA comments that:

> Allowing SP AusNet to simply roll into its asset base any cost increases would undermine and negate the whole concept of incentive regulation… As claw back is considered to diminish the incentives for the TNSP to be innovative and efficient, so too would simply rolling in overspending of a large nature.[28]

The EUAA also states that it is concerned by the reasons for and impact of the roll-in of $118m worth of previously excluded assets into SP AusNet's RAB.[29]

2.5 Consultant's review

The AER engaged PB to review the efficiency and prudency of SP AusNet's past network and non-network capex. Specifically, PB was required to:

- assess whether SP AusNet had justified the need for its investments

[26] SP AusNet, *Electricity Transmission Revenue Proposal 2008-09–2013-14*, pp.36-37.

[27] EUCV, *Response to AER review of Victorian electricity transmission,* June 2007, p.20.

[28] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, pp.9-10.

[29] ibid., p.iii.

- assuming the need for an investment is recognised, assess whether SP AusNet proposed the most efficient investment to meet that need and
- assess whether the project that was judged to be the most efficient was developed, and if not, whether the difference reflects decisions that were consistent with good industry practice.

PB made the following high level findings in relation to the efficiency and prudence of SP AusNet's past capex:

- in all projects examined, a justifiable need was identified and the range of alternatives presented was reasonably comprehensive
- in almost all projects examined, the project timing was reasonable
- SP AusNet's project documentation did not in all cases have sufficient regard to SP AusNet's overarching policies and plans
- in some cases the extent of project documentation relating to equipment condition, economic analysis and project variations was not considered appropriate for the particular project and
- while there were some variations between original costs and scope, the variations were on the whole not inconsistent with prudent asset management and good industry practice.[30]

Overall PB concludes that while its detailed review did identify issues relating to the quality of documentation, on the balance of the available information it is likely that SP AusNet's past capex was prudent and efficient.

PB recommends a minor reduction of $1.34m (nominal) from SP AusNet's proposed past capex of $478.5m (nominal), to correct errors identified during its review of non-network capex. This results in a recommended prudent past capex amount (excluding half-WACC) of $477.2m (nominal) at the end of the current regulatory control period.

Table 2.5 compares SP AusNet's proposed past capex with PB's recommended prudent past capex (excluding half-WACC) for each year of the current regulatory control period.

[30] PB Strategic Consulting, SP AusNet revenue reset: An independent review, August 2007, p.229.

Table 2.5: PB's recommended past prudent capex ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
SP AusNet's proposal	29.3	49.5	66.3	96.1	103.4	134.0	478.5
PB's recommended adjustment	0.0	0.0	0.0	0.0	0.0	-1.3	-1.3
PB's recommended prudent capex	29.3	49.5	66.3	96.1	103.4	132.6	477.2

Source: PB analysis
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Net capex as-commissioned (including WIP), including FDC
Capex excludes half-WACC adjustment

2.6 Issues and the AER's considerations

2.6.1 Detailed review of selected past capex projects

This section provides a summary of PB's recommendations and the AER's consideration of the detailed project reviews undertaken by PB on a sample of SP AusNet's network and non-network past capex. The details of PB's project reviews and the AER's analysis are summarised below, and set out in further detail in Appendix A to this draft decision.

PB conducted detailed past reviews of nine network projects and two non-network projects. The selection of projects was done in consultation with the AER and was designed to cover a broad range of projects across different asset classes, locations and timings. When selecting the projects for detailed review, PB and the AER were informed by project specific information provided by SP AusNet. In finalising the projects for detailed review, both PB and the AER had regard to the following factors:

- *Materiality:* the cost associated with the project and the proportion of the total allowance it comprises. Both small and large value projects have been selected to ensure SP AusNet treats small projects with the same diligence as large projects.
- *Project/Asset category:* a comprehensive selection of projects across each of the classifications adopted (by project type or asset class) ensures detailed project reviews capture the key processes and systems employed by the business.
- *Project location and affected parties:* the project location (i.e. rural or metropolitan), and the participants affected (i.e. generators, customers, DNSPs and other TNSPs) can each provide insight into specific business practices and processes.
- *Timing of the expenditure:* ensures changes in processes and systems can be identified across the entire historical and forecast expenditure periods. The drivers for any changes identified need to be understood to ensure prudent decision making processes have been adopted. Projects of a similar type were

generally not selected across both the forecast and past regulatory control periods, as for some project types, investigation in one time frame should support and be co-ordinated with proposals in the other.

- *Variations in project costs and scope from original estimates:* this provides further insight into the governance and business practices for past projects and how cost estimating processes incorporate feedback from specific experience.

In total, the projects sampled represent around 31% of SP AusNet's total capex from the current regulatory control period (around 25% of total network capex and 61% of total non-network capex). Table 2.6 lists the sample of past projects reviewed by PB.

Table 2.6: Detailed ex post project review – sample list of projects selected for review

Category	Sample Project Description	Project capex ($m, nominal)	% of total net capex
Network	***Station replacement/refirbushment***		
	MTS Redevelopment	38.57	8.1%
	BTS Redevelopment Project	22.08	4.6%
	Refurbishment of BETS	14.45	3.0%
	Refurbishment of RCTS	14.97	3.1%
	Compliance, security and other		
	Installation of OPGW in the Metro Area	2.92	0.6%
	Tower Signage	3.69	0.8%
	220 & 66kV CT Replacements, Stage 2	3.88	0.8%
	Replacement of 66kV Shunt Reactors at HOTS, KGTS & RCTS	3.14	0.7%
	Replacement of 16mm Pin Insulators, Stage 2	2.07	0.4%
Non-network	Business IT	37.87	7.9%
	Inventory	4.04	0.8%
Total		147.68	30.9%

Source: PB analysis; SP AusNet, Cost information templates.
Notes:
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment

In conducting its review, PB considered whether or not the investment process undertaken by SP AusNet was consistent with good industry practice and led to an efficient and prudent outcome. Specifically, PB had regard to:

- the need for the investment
- SP AusNet's analysis of alternatives and
- whether or not the project was delivered in accordance with forecast costs.[31]

[31] PB Strategic Consulting, op. cit., p.61.

2.6.1.1 Station replacement/refurbishment

The focus of SP AusNet's station rebuild/refurbishment program over the current period was predominately regional stations.

Consultant's review

PB reviewed the following four station rebuilds/refurbishments:

- Malvern terminal station (MTS) – $38.6m (nominal)
- Brunswick terminal station (BTS) – $22.1m (nominal)
- Redcliffs terminal station (RCTS) – $15.0m (nominal)
- Bendigo terminal station (BETS) – $14.4m (nominal).[32]

While identifying several issues, PB found that SP AusNet has been prudent in its asset management decisions relating to the station rebuild/refurbishments, and that the outcomes have been both prudent and efficient. PB observes that:

- SP AusNet demonstrated a need for the MTS redevelopment and presented a detailed analysis of the alternatives. While the project implementation varied from the projected scope, PB concluded that the total spend was prudent.[33]
- For a major project such as the BTS redevelopment, PB found that the standard of project documentation was relatively poor and demonstrated little or no regard to SP AusNet's strategies.[34]
- SP AusNet identified a need for the RCTS project and undertook an adequate assessment of the alternatives. However, PB considers that SP AusNet's implementation of this project lacked rigour in original scoping, costing and project management.[35]
- While there was a lack of documentation detailing the condition of assets at BETS, PB concluded that there was a justified need for its redevelopment. PB noted, however, that there was scope to defer the refurbishment by up to two years.[36]

[32] SP AusNet, Cost information templates.

[33] PB Strategic Consulting, op. cit., p.A20.

[34] PB Strategic Consulting, op. cit., p.A30.

[35] PB Strategic Consulting, op. cit., p.A50.

[36] PB Strategic Consulting, op. cit., p.A89.

AER's considerations

The AER found in general that, across the four station replacement/refurbishment projects reviewed by PB, SP AusNet had acted as a prudent asset manager and made efficient investment decisions that were generally supported by a clear need; demonstrated a consideration of the alternatives; and usually took into account SP AusNet's strategic policies and aims.

In relation to the MTS redevelopment, the AER agrees with PB's finding that there was a justifiable need for the project and that SP AusNet undertook a detailed analysis of the alternatives, and ultimately implemented a prudent works program. Given the justifiable scope changes, the AER concludes that the cost of $38.57m (nominal) is prudent.

The project documentation on BTS was not as complete as that provided for the MTS project. As a result, PB found that SP AusNet had not undertaken an appropriate cost benefit analysis (at the outset) given the scale of this project, and had not adequately documented variations to the scope of works. Despite these weaknesses, the AER agrees with PB in finding that the scope changes were required and that the overall cost of $22.08m (nominal) is prudent.

The AER has reviewed the RCTS project documentation provided by SP AusNet in support of its proposal and shares PB's concerns about aspects of the project's implementation. However, the AER was not able to identify, and thereby quantify, any imprudent amount of expenditure in the RCTS project that was directly attributable to weaknesses in project management, as distinct from resultant changes in scope which, as PB observes, were ultimately prudent. PB commented that if SP AusNet had more rigorously scoped the original project, the "original project scope would have reflected the as implemented project".[37] The AER accepts PB's recommendation that the project costs, to date, have nonetheless been prudent.

However, the AER considers that the WIP component of the RCTS project is not prudent, and will not include this amount in the opening RAB value. The AER considers that the inclusion of a contingency in relation to the remaining six months[38] of the project's implementation to October 2007 is unwarranted given the limited period over which the WIP component has been forecast. An efficient operator who is acting in accordance with good industry practice should be able to predict with a reasonable degree of accuracy the amount of expenditure still to be incurred. The AER has therefore reduced the proposed roll-in value of the RCTS project by the amount of this contingency, being $0.43m (nominal).

SP AusNet did not provide supporting evidence on the condition of the assets at BETS to fully justify the need for the refurbishment. However, after conducting its detailed review, PB was of the opinion that given the age of the assets at BETS, refurbishment in the current regulatory control period was not unreasonable. The AER

[37] PB Strategic Consulting, op. cit., p.A50.

[38] From when the revised authority to proceed was submitted.

agrees with PB's conclusion. The AER considers that SP AusNet adequately assessed the alternatives and implemented the least cost option of the alternatives considered.

Table 2.7: AER's conclusion – prudent past capex for station rebuild/refurbishment projects reviewed ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal								
MTS Redevelopment	0.0	0.0	0.1	0.0	10.8	23.3	4.4	38.6
BTS Redevelopment	0.0	0.0	0.0	11.2	10.5	0.4	0.0	22.1
Refurbishment of RCTS	0.0	0.0	0.0	0.0	8.6	6.3	0.0	15.0
Refurbishment of BETS	0.0	0.0	0.0	0.7	2.6	11.2	0.0	14.5
Total proposed capex	0.0	0.0	0.1	11.9	32.5	41.2	4.4	90.1
PB's adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB's recommendation	0.0	0.0	0.1	11.9	32.5	41.2	4.4	90.1
AER's adjustment - RCTS	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	-0.4
AER conclusion	0.0	0.0	0.1	11.9	32.5	40.8	4.4	89.6

Source: PB analysis
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment

2.6.1.2 Compliance, security and other past capex

This category of capex captures network capex other than station rebuilds / refurbishments, such as specific asset replacement programs and compliance programs including tower signage projects.

Consultant's review

PB reviewed in detail the following five projects in this category:

- Installation of OPGW in metro area – $2.9m (nominal)
- Tower signage – $3.7m (nominal)
- 220 & 66 kV CT replacements (stage 2) – $3.9m (nominal)
- Replacement of 66 kV shunt reactors at HOTS, KGTS and RCTS – $3.1m (nominal) and
- Replacement of 16mm pin insulators (stage 2) – $2.1m (nominal).

In each compliance, security and other capex project reviewed, PB found SP AusNet's expenditure to be prudent. Across the five projects reviewed, PB concludes that SP AusNet had identified a need for the project based either in compliance obligations or asset condition. Further, PB concludes that SP AusNet had analysed the alternatives, and usually implemented the least cost alternative.

AER's considerations

The AER agrees with PB's analysis and conclusions, and considers that SP AusNet identified a need for these projects and implemented them in an efficient manner. On this basis the AER has made no adjustments to SP AusNet's proposed values, as shown in Table 2.8.

Table 2.8: AER's conclusion – prudent past capex for compliance, security and other capex projects reviewed ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal								
Install OPGW metro	0.0	2.3	0.7	-0.1	0.0	0.0	0.0	2.9
Tower signage	0.0	3.5	0.2	0.0	0.0	0.0	0.0	3.7
CT replacements	0.0	0.0	0.0	0.0	0.0	2.6	1.3	3.9
Shunt reactors	0.0	0.0	3.1	0.0	0.0	0.0	0.0	3.1
16mm pin insulators	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1
Total proposed capex	0.0	5.8	4.0	-0.1	0.0	4.7	1.3	15.7
PB's adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB recommendation	0.0	5.8	4.0	-0.1	0.0	4.7	1.3	15.7
AER's adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AER conclusion	0.0	5.8	4.0	-0.1	0.0	4.7	1.3	15.7

Source: SP AusNet Roll-forward model 2003-2008, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment

2.6.1.3 Non-network past capex

SP AusNet's non-network capex is comprised of two main categories:

- IT – $37.9m (nominal) and
- Support the business (inventory) – $4.0m (nominal).

Consultant's review

Having reviewed SP AusNet's expenditure on inventory and business IT over the current regulatory control period, PB recommends adjustments to the roll in value of the IT expenditure. PB concludes that SP AusNet could have made greater use of its purchasing power and bought more computers in bulk, but does not recommend any adjustment for this reason. PB also found minor allocation errors in SP AusNet's information and made adjustments correspondingly.

In reviewing inventory, PB observed that SP AusNet is not being consistent with its capitalisation policy, and recommends an adjustment to SP AusNet's ex ante allowance.[39]

AER's considerations

The AER agrees with PB's adjustments due to errors in SP AusNet's allocation of costs in relation to IT and vehicles. Further, the AER notes PB's finding that SP AusNet could have further exploited its economies of scale when purchasing computers, however does not believe it appropriate to make any adjustment for this as SP AusNet has justified the need for all the purchases and the overspend, while not optimal, is not inconsistent with expenditure that might be incurred by a prudent and efficient TNSP in comparable circumstances.

In relation to inventory, the AER agrees with PB's recommended reclassification of certain items of inventory from capex to opex (for the ex ante allowance). The AER considers that, in the forthcoming regulatory control period, SP AusNet should alter its accounting practices and allocate its inventory in accordance with its capitalisation policy.

Table 2.9: AER's conclusion – prudent past capex for non-network projects reviewed ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
SP AusNet's Proposal							
IT	3.96	6.18	5.13	9.25	5.69	7.67	37.87
Inventory	0.03	1.58	0.40	1.65	0.38	0.00	4.04
Total proposed capex	3.99	7.76	5.53	10.90	6.07	7.67	41.92
PB's adjustment							
IT	0.00	0.00	0.83	0.04	0.00	-2.52	-1.66
Inventory	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PB's recommendation	3.99	7.76	6.36	10.94	6.07	5.15	40.26
AER's adjustment	0.00	0.00	0.83	0.04	0.00	-2.52	-1.66
AER's conclusion	3.99	7.76	6.36	10.94	6.07	5.15	40.26

Source: SP AusNet Roll-forward model 2003-2008, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment

[39] This adjustment is discussed in chapter 4.

2.6.2 SP AusNet's overall past capex program

Network capex

Consultant's review

Following its detailed project reviews, comparative benchmarking and unit cost analysis, PB identified three key areas of concern:

- Inconsistency in the degree of documented alignment of projects with SP AusNet's asset management strategy, overarching policies and plans
- In some cases, inadequate documentation supporting the need for the project including a lack of equipment condition assessment, alternatives analysis, cost-benefit analysis and documentation of project variations
- Inadequate analysis supporting the timing of certain projects, in particular the BETS redevelopment project.[40]

Despite these weaknesses PB was still able to conduct a robust, independent ex post assessment of the prudency and efficiency of SP AusNet's past capex program over the current regulatory control period, and to conclude that it was, "in general, timely, reasonable and efficient".[41]

AER's considerations

The AER is concerned about the issues PB has raised in relation to SP AusNet's past capex program, and believes that there is significant scope for SP AusNet to improve how it documents its project scoping and implementation. The AER accepts PB's conclusion that most of the issues identified "related essentially to the quality of the documentation, as opposed to the underlying issues or analysis being presented".[42] In concluding that SP AusNet's past capex is prudent and efficient the AER notes that despite the shortcomings in project documentation, the AER was nonetheless able to establish the prudency and efficiency of SP AusNet's past capex.

Non-network capex

Consultant's review

From its detailed review of non-network capex, PB recommends a number of adjustments to prudent capex amounts for two other non-network past capex projects not subject to a detailed review:

- Vehicles – PB's detailed ex ante review of SP AusNet's vehicle replacement program revealed a calculation error which understated past capex on vehicles by $1.18m (nominal), and

[40] PB Strategic Consulting, op. cit., p.83.

[41] PB Strategic Consulting, op. cit., p.84.

[42] PB Strategic Consulting, op. cit., p.229.

- Other non-network – PB's detailed ex post review of IT expenditure revealed a misallocation of IT costs of $0.87m (nominal), to the 'other' category.

AER's considerations

The AER agrees with PB's recommended adjustments due to categorisation errors, and has made corresponding adjustments to past capex for 'Vehicles' and 'Other', as shown in Table 2.10.

Table 2.10: AER's conclusion – prudent past capex adjustments for non-network projects not subject to a detailed review ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
SP AusNet's Proposal							
Vehicles	0.32	1.39	0.95	1.48	1.08	0.07	5.29
Other	0.00	0.45	1.57	2.22	0.00	0.00	4.23
Total proposed capex	0.32	1.84	2.52	3.69	1.08	0.07	9.52
PB's adjustment							
Vehicles	0.00	0.00	0.00	0.00	0.00	1.18	1.18
Other	0.00	0.00	-0.83	-0.04	0.00	0.00	-0.87
PB's recommendation	0.32	1.84	1.69	3.66	1.08	1.25	9.84
AER's adjustment	0.00	0.00	-0.83	-0.04	0.00	1.18	0.32
AER's conclusion	0.32	1.84	1.69	3.66	1.08	1.25	9.84

Source: SP AusNet Roll-forward model 2003-2008, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment

2.6.3 Non-contestable works

SP AusNet proposes to roll $118m worth of assets constructed under contracts between SP AusNet and VENCorp into its asset base. These assets sit outside of the ACCC's 2002 revenue determination. After a review of a sample of these non-contestable contracts, the AER has made a number of adjustments, and recommends a final roll-in value of $115.8m for these assets.

The roll-in process for assets of this category is governed by cl.11.6.21(c) of the NER. The review process for these assets and the recommended roll-in value is discussed in further detail in chapter 3 of this draft decision.

2.7 AER's conclusion

The AER has reviewed SP AusNet's capex over the current regulatory control period. There were several instances where both the AER and PB concluded that SP AusNet's implementation of its asset management strategy and internal policies

and procedures warrants improvement. In several instances SP AusNet had not adequately documented key stages in its investment decision making and project implementation processes. In particular, there were several instances where SP AusNet did not have adequate documentation surrounding changes in project scope and cost. Further, there were also instances where SP AusNet's project documentation could not, of itself, justify the project implementation timing.

However, despite the obvious room for improvement in these areas, neither the AER nor PB were able to reasonably draw a conclusion that SP AusNet had incurred expenditure that was imprudent, or that its capex in the current regulatory control period represented an inefficient level of investment on its assets. It is important to note that this finding was not influenced by the lack of documentation, as with further investigation both the AER and PB were able to conduct rigorous assessments and reach informed decisions despite the weaknesses in project documentation. That said, while concluding that the majority of SP AusNet's past capex was prudent and efficient, the AER believes that there is considerable scope for SP AusNet to further develop and improve its approach to asset and project management.

The AER has made two adjustments to SP AusNet's proposed roll-in value of $478.5m, which are:

- A reduction of $0.43m to remove a contingency from the RCTS project and
- A reduction of $1.34m to adjust for incorrect cost allocations across the various non-network capex categories.

Given these two adjustments the AER considers the prudent amount of capex to include in SP AusNet's opening RAB is $476.8m (nominal).

Table 2.11: AER's conclusion – total prudent past capex ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Total
SP AusNet's Proposal							
Net capex	29.3	49.5	66.3	96.1	103.4	110.8	455.4
Work-in-progress						23.2	23.2
Total proposed capex	**29.3**	**49.5**	**66.3**	**96.1**	**103.4**	**134.0**	**478.5**
AER's adjustments							
Adjustment - RCTS	0.0	0.0	0.0	0.0	0.0	-0.4	-0.4
Adjustment - non-network	0.0	0.0	0.0	0.0	0.0	-1.3	-1.3
Total adjustments	0.0	0.0	0.0	0.0	0.0	-1.8	-1.8
AER's conclusions							
Net capex	29.3	49.5	66.3	96.1	103.4	109.0	453.6
Work-in-progress						23.2	23.2
AER's conclusion	**29.3**	**49.5**	**66.3**	**96.1**	**103.4**	**132.2**	**476.8**

Source: SP AusNet Roll-forward model 2003-2008, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts
Capex as-commissioned (including WIP)
Capex excludes half-WACC adjustment
Numbers may not add due to rounding

3 Opening asset base

3.1 Introduction

This chapter sets out the methodology used by the Australian Energy Regulator (AER), in accordance with the requirements of chapter 6A and the regulatory principles outlined in the Australian Competition and Consumer Commission's (ACCC) December 2002 decision,[43] to calculate the value of SP AusNet's regulatory asset base (RAB) at the commencement of the forthcoming regulatory control period on 1 April 2008.

The RAB is an essential part of the building block calculation as it provides a basis for calculating returns on and of capital for the forthcoming regulatory control period. Under the requirements of chapter 6A, the RAB is rolled forward from the beginning of each regulatory control period, by taking account of actual capital expenditure (capex) and depreciation in that period and other adjustments, to establish the RAB as at the commencement of the forthcoming regulatory control period.

3.2 Regulatory requirements

NER requirements

The relevant provisions of the National Electricity Rules (NER) relating to the roll forward of SP AusNet's RAB over the 2003-08 regulatory control period are contained in schedule 6A.2, cl. 11.6.9 and cl. 11.6.21.[44]

Cl. S6A.2.1(c)(1) locks in RAB values for transmission systems owned by certain Transmission Network Service Providers (TNSPs), including SP AusNet, at a particular point in time. These locked in values are equal to the opening RAB value determined during the last regulatory reset for each TNSP. These values are to be rolled forward to establish opening RAB values for regulatory control periods that begin after the commencement of chapter 6A. For SP AusNet, this value is $1 835.60m as at 1 January 2003 as determined by the ACCC.

Cl. S6A.2.1(c)(2) provides for the locked in value to be adjusted for the difference between:

> (i) any estimated capital expenditure that is included in those values for any part of a previous regulatory control period; and

[43] ACCC, Victorian Transmission Network Revenue Caps 2003-2008, 11 December 2002.

[44] Cl. 6A.6.1 requires the AER to develop and publish a roll forward model which will apply the principles contained in the new Chapter 6A. In accordance with the transitional provisions contained in cl. 11.6.17 and 11.6.18, on 31 January 2007 the AER published its "First Proposed Asset Base Roll forward model" which will be used to calculate SP AusNet's RAB at the end of the 2008-14 regulatory control period. Stakeholders should note that the roll forward model used for this draft decision has not been published, but was prepared in accordance with cl. 11.6.9 and the incentive framework that applied under the ACCC's 2002 decision.

(ii) the actual capital expenditure for that part of the previous regulatory control period.

This cl. also requires the AER to remove any associated benefit or penalty to the TNSP when making this adjustment.

Cl. S6A.2.1(f) outlines how the opening RAB established in accordance with cl. S6A.2.1(c) is to be rolled forward to calculate the value of the RAB at the beginning of the first year of the forthcoming regulatory control period. This requires that the previous value of the RAB must be adjusted for the following (as set out S6A.2.1(f)(1-8)):

- adding all actual capex incurred over the period
- adjusted for the difference between any estimated capex included in the opening RAB and the actual capex that was incurred for a particular part of a previous control period, while removing any benefits or penalties of such an adjustment
- reduced by the amount of actual depreciation over the period, calculated in accordance with the methods and rates used in the determination for that period
- reduced by the amount of disposals for the period.

Adjustments relating to capex outlined in this cl. must only relate to the provision of prescribed transmission services. Furthermore, this cl. allows the RAB to be increased by any capex used in the provision of prescribed services and not previously included in the RAB.

The transitional provision in cl. 11.6.9 provides that the value of the opening RAB for the first regulatory control period under chapter 6A may also be adjusted having regard to an existing revenue determination and any other arrangements agreed between the AER and the TNSP. This provision allows the AER to take into account incentive arrangements agreed under the old chapter 6 that give rise to different roll forward methodologies than that outlined in cl. S6A.2.1(f). These arrangements and agreements under cl. 11.6.9 are discussed in section 3.2.2 below.

Furthermore, cl. 11.6.21(c) requires that the previous value of SP AusNet's RAB be increased by the amount of capex incurred over the previous regulatory control period under agreements made by SP AusNet for the provision of prescribed services, adjusted for depreciation and inflation as provided in those agreements.

Draft statement of regulatory principles

The ACCC's 2002 decision was made substantially in accordance[45] with its *Draft statement of principles for the regulation of transmission revenues* (DRP). Under the DRP framework, the roll forward of SP AusNet's RAB from 1 January 2003 to 1 April 2008 was to reflect a specific capex incentive framework that differs from that which underlies cl. S6A.2.1(f). The DRP incentive framework relates to the treatment

[45] ibid., p. 4.

of returns on and of capital associated with differences between actual and forecast capex over the regulatory control period when setting the closing RAB for that period.

Chapter 5 of the DRP, which discusses changes to the RAB over time, provides guidance on the treatment of returns on capital in situations of a capex "underspend", that is, where actual prudent capex is lower than the forecast allowance for the period. In these situations a TNSP is compensated, through regulated revenues, for returns on capex it did not incur. The DRP states that "the TNSP gets to keep the return on the difference between forecast and actual expenditure".[46]

Guidance on how the excess return of capital (depreciation) associated with a capex underspend should be treated is provided by statement S5.3 of the DRP:

> At the start of the regulatory period only actual capital expenditure in the previous regulatory period will be included (retained in the case of previously forecast expenditures) in the asset base. At the commencement of the regulatory period this means that … any excess depreciation associated with forecast capital expenditures that did not eventuate [in the previous regulatory period] will be applied as a reduction in the value of the remaining items within the regulatory asset base at the start of the next regulatory period.[47]

Thus, in the case of an underspend, the DRP requires forecast depreciation to be used in determining the value of the closing asset base. This means that excess depreciation associated with lower than forecast capex is treated as a bring-forward of depreciation, and recognised by the establishment of a lower opening RAB at the start of the forthcoming regulatory control period.

In the case of capex "overspends", the approach taken by the ACCC in its 2005 *NSW and ACT transmission network revenue cap* decision was to provide the TNSP with both returns on and of capital for capex that exceeded the forecast amount, provided that the amount of capex was found to be prudent after an ex post assessment. That is, the undepreciated value of the additional prudent capex was added to the closing RAB. Similarly, the return on that additional prudent capex (which was not included in the revenue allowance for that period) was added to the closing RAB. As with capex underspends, the incentive framework excluded the impact of capex overspending on depreciation by requiring that the value of forecast depreciation, that is, the depreciation associated with the forecast capex allowance, be rolled into the closing RAB.

The ACCC developed a "DRP compliant" roll forward model based on this incentive framework, which was subsequently adopted by the AER.[48]

In response to requests from SP AusNet made during 2006, the AER confirmed its intention to apply the DRP incentive framework in calculating the opening RAB for the 2008-14 regulatory control period, given that the DRP formed the basis of the current decision. The AER stated that the DRP framework allowed a TNSP to retain any excess return on capital associated with capex underspends in the current

[46] DRP, p. 56.

[47] ibid., p. 64.

[48] This "DRP compliant" roll forward model was not published.

regulatory control period when it could be proven that the underspend was due to management induced efficiencies.

3.3 SP AusNet's proposal

In its revenue application, SP AusNet submitted a completed version of the DRP-compliant roll forward model with data relevant to the 2003-08 regulatory control period, as well as for the nine months to 31 December 2002.

Adjustment to 1 January 2003 RAB

In accordance with cl. S6A.2.1, SP AusNet proposes to adjust its 1 January 2003 RAB downwards by $47.34m to account for actual capex of $8.12m compared to an estimated $55.46m for the nine months to 31 December 2002 included in the 1 January 2003 value.[49] This results in an adjusted value of $1 788.26m.

SP AusNet proposes, however, not to remove the benefit of the returns on and of capital associated with the difference between this actual and estimated amount. In doing so SP AusNet claims that the AER stated that "it will not claw back any benefit from a capex underspend for the period 2002/03 to 2007/08, subject to outcomes of a prudency review of that capex".[50] SP AusNet refers to this statement as an agreement for the purposes of cl. 11.6.9.

Roll forward of RAB from 1 January 2003 to 31 March 2008

SP AusNet proposes to roll forward the 1 January 2003 RAB of $1 788.26m to 31 March 2008, using actual values of inflation, capex and disposals over the 2003-08 regulatory control period, as well as the allowance for economic depreciation provided for in the current revenue decision, adjusted for actual inflation. It also proposes to include the value of certain assets used to provide non-contestable services and work in progress in the opening RAB for the 2008-14 period.[51]

SP AusNet has made a minor amendment to the AER's model, applying actual annual inflation rates derived from the March quarter Consumer Price Index (CPI). The AER's model applies lagged inflation rates, for example, the inflation calculated in the model for 2003 is based on the inflation rate for 2002. SP AusNet has used forecast inflation rates for the years to March 2007 and 2008 of 3.00% and 2.60% respectively. SP AusNet has also used the forecast inflation rates and nominal weighted average cost of capital (WACC) used in the ACCC's 2002 decision, as required by the model.

SP AusNet proposes to roll in capex, net of disposals and including costs of finance during construction (FDC), of $474.24m in nominal terms over the 2003-08 regulatory control period.[52] Consistent with the timing assumptions of the AER's

[49] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, p. 98.

[50] ibid., pp. 98-99.

[51] ibid., pp. 98-101.

[52] SP AusNet roll forward model, submitted 28 February 2007.

model, this value incorporates a half year return on the annual capex amounts that is capitalised and recovered over the life of the assets.

SP AusNet has amended the AER's model regarding the treatment of returns on capital associated with differences between forecast and actual prudent capex over the period. This amendment combines the excess returns associated with the difference between estimated and actual capex for the nine months from 1 April 2002 to 31 December 2002, with returns on the prudent overspend claimed for the 2003-08 regulatory control period. This results in a net return on the difference between actual prudent and forecast capex of -$19.43m. SP AusNet states that it has not subtracted this amount from the closing RAB because, being a negative amount, it effectively represents a return on a prudent underspend which would not be clawed back under the DRP framework.[53]

SP AusNet proposes to roll in $118.00m of assets associated with the provision of non-contestable services that were commissioned after the current revenue decision, in accordance with cl. 11.6.21.[54] SP AusNet also proposes to capitalise $23.21m of work in progress, including the cost of FDC, as at 1 April 2008 to comply with the AER's requirement to recognise capex on an as incurred basis.[55]

This proposed roll forward calculation is summarised in table 3.1 below. The values for 2006-07 and 2007-08 are estimates.

Table 3.1: SP AusNet's proposed roll forward calculation ($m, nominal)

Year to 31 March	1 Jan to 31 Mar 2003	2003-04	2004-05	2005-06	2006-07	2007-08
"Locked in" RAB	1,835.60					
Adjustment for capex estimated for 1 Apr to 31 Dec 2003	-47.34					
Opening RAB	1,788.26	1,823.37	1,834.24	1,866.13	1,937.33	2,011.73
Indexation	23.69	36.83	44.63	57.38	58.59	52.03
Actual prudent net capex	29.67	51.43	69.05	100.45	108.09	115.55
Inflation adjusted depreciation	-18.24	-77.40	-81.78	-86.64	-92.28	-97.59
Closing RAB	1,823.37	1,834.24	1,866.13	1,937.33	2,011.73	2,081.72
Roll in of non-contestable assets						118.00
Work in progress						23.21
Opening RAB 1 April 2008						2,222.93

Source: SP AusNet revenue proposal, p. 101, and roll forward model, submitted 28 February 2007.

3.4 Submissions

The Energy Users Association of Australia (EUAA) was concerned with the impact of SP AusNet's proposal to roll in $118.00m of assets associated with the provision of

[53] SP AusNet, p. 98.

[54] ibid., p. 100.

[55] ibid., p. 101.

non-contestable services, and the capitalisation of $23.21m of work in progress into the RAB as at 1 April 2008.[56]

The Energy Users Coalition of Victoria (EUCV) stated that the AER should confirm that the depreciation and actual inflation proposed by SP AusNet in its roll forward calculation result in the correct RAB value.[57]

3.5 Consultant's review

Nuttall Consulting was engaged to review SP AusNet's calculation of the $118.00m of non-contestable assets that it proposes to roll into its RAB under cl. 11.6.21 of the NER. To facilitate this review, a sample of contracts was obtained, on a confidential basis, from SP AusNet relating to the construction and maintenance of these assets. Five contracts were selected, representing 51% of the total value of assets proposed to be rolled into SP AusNet's RAB.

Nuttall Consulting found that the methodology applied by SP AusNet to calculate the roll in values was in accordance with the NER, that is, the method used to inflate and depreciate the contracted value of assets was in accordance with the terms of their respective agreements. However, some discrepancies were discovered between key terms of each of the five agreements and SP AusNet's calculations. When questioned about these discrepancies, SP AusNet provided a revised total roll in value of $115.91m.

Two further contracts were requested (representing 10% of the total value proposed) from SP AusNet to ascertain the accuracy of the remaining calculations, which were reviewed by Nuttall Consulting along with the revised information provided by SP AusNet. While several further discrepancies were found, their correction resulted in a marginal reduction to SP AusNet's revised value.

Nuttall Consulting reviewed the service provision and scope of works associated with the seven contracts, finding no evidence that they were involved in the provision of non-prescribed services. Nuttall Consulting also reviewed the allocation of the depreciated asset values into the classes used in the AER's PTRM and recommended one change to SP AusNet's proposed allocation.

Table 3.2 compares the values of non-contestable assets proposed by SP AusNet by asset class against Nuttall Consulting's recommendations.

[56] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p. 5.

[57] EUCV, *Response to AER review of Victorian electricity transmission,* June 2007, p. 20.

Table 3.2: Non-contestable assets to be included in RAB ($m, 1 April 2008)

Asset Class	SP AusNet proposal	Nuttall Consulting recommendation
Secondary	20.73	17.72
Switchgear	67.79	59.13
Transformer	14.10	15.13
Reactive	11.68	12.51
Towers and Lines	0.22	5.91
Establishment	2.27	4.09
Communications	1.20	1.36
Total	118.00	115.85

Source: Nuttall Consulting, Final Report to the AER, 20 August 2007, pp. 19-20.

3.6 Issues and the AER's considerations

3.6.1 Use of lagged CPI

In 2006, SP AusNet sought clarification on whether a March CPI would be appropriate to roll forward its RAB as this CPI measure aligns with its regulatory year. In response, the AER stated that there appeared to be no problems with this approach, although noted that it would consider this issue in developing its guidelines under the new chapter 6A.

Subsequently the AER provided SP AusNet a DRP compliant version of the roll forward model, which included a lagged inflation calculation. Recent amendments to the NER[58] also require consistency between the method used to escalate the MAR and the RAB in the roll forward calculation. On this basis, the AER has applied the same inflation method used to escalate SP AusNet's MAR over the 2003-08 regulatory control period, that is, a December quarter CPI, and has also used the lagged inflation calculation that featured in the AER's original roll forward model. These changes have resulted in a negligible impact on the calculated RAB values.

3.6.2 Adjustment to 1 January 2003 RAB

This section outlines the AER's consideration of SP AusNet's proposal to retain the benefit of the $47.34m difference between the actual and estimated capex for the nine months to 31 December 2002.

The adjustments required by cl. S6A.2.1(c)(2) relate to the need to estimate capex for the final year in each period when performing the roll forward calculation, which otherwise involves increasing the RAB by actual capex. This estimate is necessary as a regulatory determination for the forthcoming regulatory control period will be made prior to the completion of the current period, and thus actual data for the final year will not be known. The requirement to remove benefits or penalties in correcting for

[58] NER cl. 6A.6.1(e)(3)

this estimate removes inappropriate incentives related to the estimation process.[59] That is, in the absence of this requirement, a TNSP may be inclined to significantly overestimate the value of capex for the final year and retain the benefits of a higher RAB value and resulting returns on and of capital for the forthcoming regulatory control period.

The effect of the transitional provision in cl. 11.6.9 is to provide the AER with discretion to honour previous commitments made to TNSPs with regard to establishing the RAB as at the beginning of the first regulatory control period when making a revenue determination under the new chapter 6A. These commitments may have been made in the last revenue determination or separately agreed between the TNSP and the AER. The object of this cl. is to preserve legacy arrangements that pre-date the new rules, not to empower the AER and TNSPs to agree to modify the new rules going forward. These legacy arrangements would prevail over the relevant provisions of the NER.

In its undertakings to SP AusNet in 2006, the AER committed itself to the following propositions:

- If, in the current regulatory control period, SP AusNet spends more than its forecast capex, the actual capex will be rolled into the closing RAB provided it is found to have been prudent. The closing RAB will also include the return on and return of the actual prudent capex.
- If, in the current regulatory control period, SP AusNet spends less than its forecast capex, only the actual prudent capex will be rolled into its closing RAB. The return on the underspend will be retained by SP AusNet only if it can establish that the underspend is due to management induced efficiencies. Depreciation that was calculated on the basis of the forecast capex will be deducted from the closing RAB.

SP AusNet's proposal

In applying these propositions, SP AusNet proposes to remove the value of the $47.34m underspend from the RAB as at 1 January 2003, since only actual prudent capex is rolled in. However, SP AusNet has proposed to retain the benefit of the return on capital associated with this underspend.

AER's considerations

The AER's undertakings to SP AusNet refer only to the regulatory control period subject to the ACCC's 2002 decision (1 January 2003 to 31 March 2008), which was made under the principles of the DRP.

In its 2002 decision, the ACCC had already considered the capex cost savings during the immediately preceding period. This exercise, when it was undertaken in 2002, was based to the extent necessary and permitted on an estimate of capex to be incurred in

[59] Australian Energy Market Commission, *Review of the electricity transmission revenue and pricing rules,* Rule Proposal Report, February 2006, p. 58.

the final part of the relevant regulatory control period. A similar exercise has been undertaken in this draft decision in relation to SP AusNet's forecast capex for 2007-08 to be included in the opening RAB for the forthcoming regulatory control period, under cl. S6A.2.1(f)(2).

It is an inevitable consequence of the timing of a revenue determination that the final part of the regulatory control period must be treated in this way at the time of the reset. However, this consequence is simply accepted in the DRP and no further review by the AER is required to identify management induced efficiency gains. The AER therefore considers that SP AusNet should not be allowed to retain the benefit resulting from the $47.34m underspend in the last nine months of the previous period and has revised SP AusNet's RAB as at 1 April 2008 to reflect this decision. The value of this benefit represents $27.06m of returns on capital earned over the 2003-08 period as illustrated in table 3.3 below. This value will be deducted from SP AusNet's opening RAB for the forthcoming regulatory control period.

Table 3.3 Return on capital associated with difference between estimated and actual capex from April to December 2003 ($m, nominal)

	Mar-Dec 2002	Jan-Mar 2003	2003-04	2004-05	2005-06	2006-07	2007-08	Total
Value of capex overestimate	47.34							
Associated return on this value		0.97	4.43	4.52	5.05	5.63	6.46	27.06

Note: Total may not add up due to rounding.

These considerations are also relevant for the estimated value of capex for 2007-08 and work in progress as at 1 April 2008 that SP AusNet proposes to roll into its opening RAB. The AER will consider the differences between these estimates and the actual amounts, as well as any associated benefits or penalties, at the time of the forthcoming regulatory reset.

3.6.3 Asset base roll forward methodology

Under the asset base roll forward model developed under the DRP,[60] the closing RAB for each year of the regulatory control period is calculated by:

1. Adjusting the opening RAB for the difference between actual and forecast inflation.
2. Adjusting the forecast capex (allowed in the 2002 decision) for the difference between actual and forecast inflation.
3. Adjusting the forecast economic depreciation (allowed in the 2002 decision) for the difference between actual and forecast inflation.[61]

[60] DRP, p. 36.

[61] Economic (or nominal) depreciation is calculated by determining the straight-line depreciation for the RAB less the inflation adjustment on the opening RAB.

Over the 2003-08 regulatory control period, SP AusNet's actual capex was higher than forecast in all years except 2004-05. As noted in chapter 2, aside from a $1.77m deduction, the AER has approved this capex as prudent. Therefore, at the end of the current regulatory control period, an adjustment to reflect the higher than forecast capex will be made to the closing RAB by adding the prudent additional expenditure. That is, the undepreciated value of the additional prudent capex will be rolled into the RAB at the end of the current regulatory control period.

In the case of a prudent overspend, the incentive framework under the DRP requires that the return on the additional prudent capex is also to be added to the value of the closing RAB. The AER calculates that, at 31 March 2008, the accumulated return on capital associated with the value of prudent expenditure above the forecast amount is $8.17m. This calculation is illustrated in table 3.4. The AER has added this amount to SP AusNet's closing RAB.

Table 3.4 Accumulated return on capital associated with differences between forecast and actual capex ($m, nominal)

	2003-04	2004-05	2005-06	2006-07	2007-08	Total
Returns on 2003-04 capex	1.09	1.12	1.25	1.39	1.60	6.45
Returns on 2004-05 capex		-1.86	-2.08	-2.32	-2.67	-8.93
Returns on 2005-06 capex			0.01	0.01	0.01	0.02
Returns on 2006-07 capex				3.77	4.34	8.11
Returns on 2007-08 capex					2.52	2.52
Total	1.09	-0.75	-0.83	2.85	5.79	8.17

Note: Totals may not add up due to rounding

3.6.4 Inclusion of previously contestable assets

The AER has considered SP AusNet's claim for the inclusion of assets, valued $118.00m as at 31 March 2008, as well as the recommendations of Nuttall Consulting regarding this claim discussed above. The AER endorses these recommendations and has rolled in assets valued at $115.85m into SP AusNet's RAB.

3.6.5 Revisions to 2006-07 data

SP AusNet provided the AER with actual data for 2006-07 that will replace the estimates used in its revenue application. The AER has not been able to assess the impact of this new data in making this draft decision, but will do so in making its final decision.

3.6.6 Calculation of finance during construction

The AER considered SP AusNet's costs of FDC associated with several of the projects subject to ex post review. SP AusNet calculated FDC for regulatory purposes on a monthly basis on individual transactions relating to each project, as well as assumed monthly transactions for the 2007-08 regulatory year. FDC was based on the annual nominal WACC approved by the ACCC in its 2002 decision.

The AER notes an inaccuracy in SP AusNet's conversion of the annual WACC into a monthly WACC although this is immaterial. The AER also notes that the forecasts for monthly cash-flows in the 2007-08 year, as well as for work in progress, appear to be conservative, however, without further detailed review it is not possible to determine whether they are unreasonable, nor whether any inaccuracies would be material. The AER notes that PB Strategic Consulting found the implementation timing of most of the projects it reviewed to be reasonable[62], and did not recommend any variations to the FDC costs claimed by SP AusNet.

On this basis, the AER approves SP AusNet's FDC costs of $19.91m (nominal for the 2003-08 period) as part of its actual prudent capex, to be rolled into the RAB.

3.6.7 Asset base roll forward of the 2008-14 period

The AER will determine SP AusNet's opening RAB at the beginning of the regulatory control period commencing on 1 April 2014 in accordance with cl. S6A.2.1(f). In accordance with these requirements and the transitional provisions in cl. 11.6.18, the AER has also developed a first proposed asset base roll forward model to apply to SP AusNet for the forthcoming regulatory control period. That is, this first proposed model will be used by the AER to calculate SP AusNet's RAB at the commencement of the 2014-19 regulatory control period.

3.7 AER's conclusion

Consistent with the requirements of the NER, including transitional provisions that allow the AER to honour previous incentive arrangements, the AER has determined SP AusNet's opening RAB to be $2 203.45m for the forthcoming regulatory control period (as at 1 April 2008). This amount is 0.88% less than SP AusNet's proposed opening RAB of $2 222.93m. The AER's RAB roll forward calculation is set out in table 3.5.

[62] PB Strategic Consulting, *SP AusNet Revenue Reset- An independent review*, 16 August 2007, p. 83.

Table 3.5: SP AusNet RAB as at 1 April 2008 ($m, nominal)

Year to 31 March	1 Jan to 31 Mar 2003	2003-04	2004-05	2005-06	2006-07	2007-08
"Locked in" RAB	1,835.60					
Adjustment for capex estimated for 1 Apr to 31 Dec 2002	-47.34					
Opening RAB	1,788.26	1,812.96	1,830.98	1,867.20	1,935.03	2,014.75
Indexation	13.25	43.72	48.92	53.85	63.46	52.09
Actual prudent net capex	29.56	51.67	69.05	100.26	107.98	114.07
Inflation adjusted depreciation	-18.11	-77.37	-81.76	-86.28	-91.72	-97.62
Closing RAB	1,812.96	1,830.98	1,867.20	1,935.03	2,014.75	2,083.29
Roll in of non-contestable assets						115.85
Add compounded return on prudent overspend						8.17
Removal of benefit associated with estimated capex adjustment						-27.06
Work in progress						23.21
Opening RAB 1 April 2008						2,203.45

SP AusNet's opening RAB for the forthcoming regulatory control period is approximately 20% higher (in nominal terms) than the RAB value prescribed in the NER. This change is largely the result of the following factors:

- approval of $472.59m of prudent net capex (inclusive of FDC and a half year return) that was commissioned over the regulatory control period
- the inclusion of $115.85m of non-contestable assets commissioned over the period that were not included in the capex allowance for the period
- correcting the substantial overestimate of capex for the nine months to 31 December 2002 included in the prescribed value and the removal of the benefit associated with this overestimate
- the inclusion of $23.21m of assets under construction (inclusive of FDC) for the current regulatory control period to allow for the transition to the proposed regulatory accounting arrangements.

In response to the EUAA's comments, the AER estimates that the average annual impact of rolling in non-contestable assets and work in progress is around $0.25 per MWh for the forthcoming regulatory control period.

4 Forecast capital expenditure

4.1 Introduction

The AER is required to assess SP AusNet's proposed forecast capital expenditure (capex) allowance for the forthcoming regulatory control period (2008-14) against the requirements of the National Electricity Rules (NER).

The annual (as-incurred) capex allowance approved by the AER in its transmission determination will be rolled into SP AusNet's regulatory asset base (RAB) at the end of each year of the forthcoming regulatory control period. SP AusNet will recover the forecast capex costs through the associated returns on and depreciation of capital, which form two of the building blocks in its maximum allowed revenue (MAR). Under the ex ante incentive framework, at the commencement of the forthcoming regulatory control period (i.e. at 1 April 2014), SP AusNet's RAB will be adjusted for differences between actual and forecast capex so that only the capex actually undertaken during the period of this transmission determination (2008-09 – 2013-14) is capitalised.

Unlike the capex programs of other electricity transmission network service providers (TNSPs), SP AusNet's forecast capex proposal does not include augmentation capex.[63]

4.2 Regulatory requirements

Capex objectives

Under cl. 6A.6.7(a) of the NER a TNSP must, in its revenue proposal, provide a forecast of the total capex that will be required in the relevant regulatory control period in order to meet four prescribed objectives (the capex objectives), which are to:

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

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

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

(4) maintain the reliability, safety and security of the transmission system through the supply of prescribed transmission services.

[63] While SP AusNet owns and operates the transmission network, VENCorp is responsible for planning and directing the augmentation of the shared network (which excludes the connection facilities utilised by generators and distribution bodies). This separation of the transmission network asset owner (SP AusNet) from the investment decision-maker (VENCorp) is unique within the national electricity market. Augmentation capital expenditure for the Victorian electricity transmission system will be considered separately by the AER in its assessment of VENCorp's revenue proposal for the 2008-09 – 2013-14 regulatory control period.

Capex Criteria and Capex Factors

Under cl. 6A.6.7(c) the AER must accept the forecast capex included in a TNSP's revenue proposal if the AER is satisfied that it meets the capital expenditure criteria (capex criteria). Specifically, the AER must be satisfied that the proposed total forecast capex reasonably reflects:

(1) the efficient costs of achieving the capital expenditure objectives;

(2) the costs that a prudent operator in the circumstances of the relevant Transmission Network Service Provider would require to achieve the capital expenditure objectives; and

(3) a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives.

To make the required assessment against the capex criteria, the AER must have regard to the following factors (capex factors), listed in cl. 6A.6.7(e):

(1) the information included in or accompanying the Revenue Proposal;

(2) submissions received in the course of consulting on the Revenue Proposal;

(3) such analysis as is undertaken by or for the AER and is published prior to or as part of the draft decision of the AER on the Revenue Proposal under rule 6A.12 or the final decision of the AER on the Revenue Proposal under rule 6A.13 (as the case may be);

(4) benchmark capital expenditure that would be incurred by an efficient Transmission Network Service Provider over the regulatory control period;

(5) the actual and expected capital expenditure of the Transmission Network Service Provider during any preceding regulatory control periods;

(6) the relative prices of operating and capital inputs;

(7) the substitution possibilities between operating and capital expenditure;

(8) whether the total labour costs included in the capital and operating expenditure forecasts for the regulatory control period are consistent with the incentives provided by the applicable service target performance incentive scheme in respect of the regulatory control period;

(9) the extent to which the forecast of required capital expenditure of the Transmission Network Service Provider is referable to arrangements with a person other than the provider that, in the opinion of the AER, do not reflect arm's length terms; and

(10) whether the forecast of required capital expenditure includes amounts relating to a project that should more appropriately be included as a contingent project under cl. 6A.8.1(b).

Under cl. 6A.6.7(d), if the AER is not satisfied that the TNSP's proposed total forecast capex reasonably reflects the capex criteria, taking into account the capex factors, the AER must not accept the proposed total forecast capex.

If the AER does not accept the proposed total forecast capex, cl. 6A.14.1(2)(ii) requires the AER to include in its draft decision:

> …an estimate of the total of the Transmission Network Service Provider's required capital expenditure for the regulatory control period that the AER is satisfied reasonably reflects the capital expenditure criteria, taking into account the capital expenditure factors.

4.3 SP AusNet's proposal

SP AusNet proposes a forecast capex allowance totalling $856.16m (as-incurred, $2007-08) over the period 1 April 2008 to 31 March 2014.[64] The majority of SP AusNet's proposed forecast capex allowance (45%) relates to major rebuild / refurbishment work at ten terminal stations across its network. Around 30% relates to targeted asset replacements and the remaining 25% is made up of compliance and non-network expenditure (see table 4.2 below). Table 4.1 provides the annual breakdown of SP AusNet's proposed forecast capex allowance.

Table 4.1: SP AusNet's proposed forecast capex allowance ($m, 2007-08)

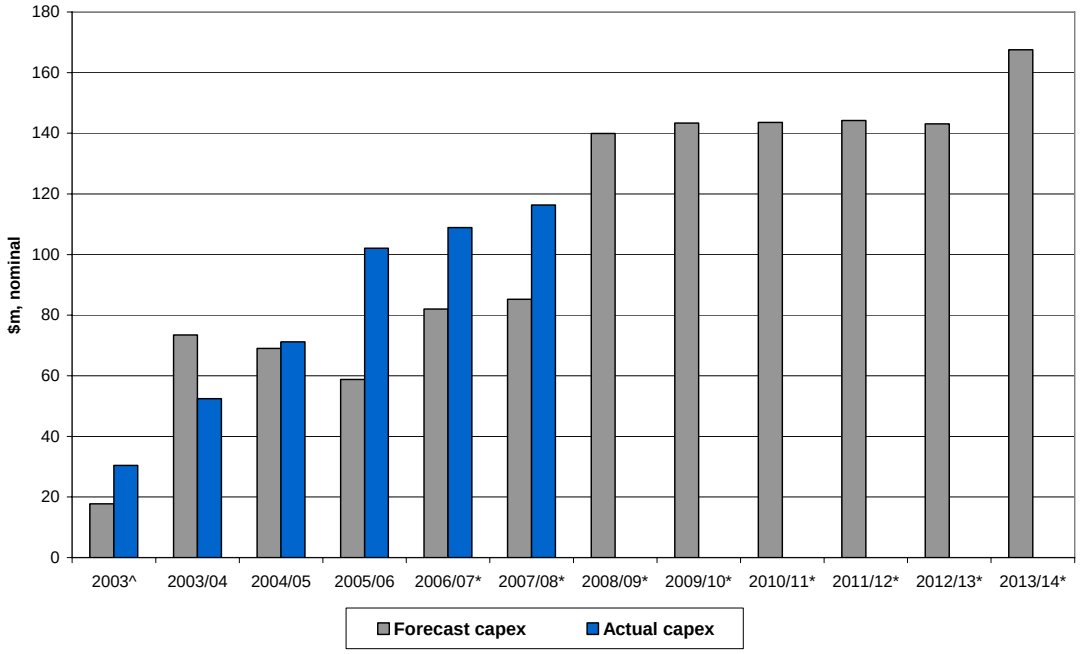
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Proposed capex	135.90	139.18	139.42	140.03	138.97	162.67	856.16

Source: SP AusNet, PTRM (28 February 2007)
Notes: Capex as-incurred, as presented in SP AusNet's published Proposal.

SP AusNet's proposed forecast capex allowance ($m, nominal) for the forthcoming regulatory control period represents a significant increase, in average annual terms, compared to the capex undertaken during the current regulatory control period (around 80%). Figure 4.1 illustrates the capex spent and proposed for the current and forthcoming regulatory control periods.

[64] SP AusNet, Post-tax revenue model, 28 February 2007.

Figure 4.1: SP AusNet's actual and forecast capex 2003-04 – 2013-14 ($m, nominal)



Source: SP AusNet[65]
Notes: Capex as-commissioned
^ denotes stub period 1 January 2003 to 31 March 2003
* denotes forecast

SP AusNet states that the increase in the level of capex over the forthcoming regulatory control period is not unexpected, given the age of its network.[66] SP AusNet states that there are also some specific factors driving the increase in the volume of capex between the current and the forthcoming regulatory control periods, including:

- the continued roll out of the major station rebuild projects, including at more complex and confined metropolitan sites
- a substantial increase in the number of transformers being replaced over the forthcoming regulatory control period
- further increases in the amount of compliance expenditure required to meet safety, environmental and security needs.[67]

SP AusNet also notes that external factors such as higher commodity prices (leading to higher plant, material and equipment costs) and rising labour costs (due to skilled labour shortages) are expected to contribute to higher capex in the forthcoming regulatory control period. To account for these real cost increases, SP AusNet proposes a once-off real step-change to its $2006-07 capex costs of 4.7% at the start of the forthcoming regulatory control period. SP AusNet proposes to maintain capex

[65] SP AusNet, *Electricity Transmission Revenue Proposal 2008/09-2013/2014*, p.55. SP AusNet's forecast capex figures for the forthcoming regulatory control period (2008-09 – 2013-14) are expressed in $2007-08 in its proposal. These figures have been inflated by the reference forecast inflation rate of 3.00% for illustrative purposes in figure 4.1, which is presented in nominal terms.

[66] ibid., p.53.

[67] ibid., p.54.

costs at this level in real terms for the duration of the forthcoming regulatory control period.[68]

SP AusNet commissioned Sinclair Knight Merz (SKM) to examine input costs in the electricity transmission sector and to provide an independent check of its internal cost estimates.[69] SP AusNet submits that its proposed 4.7% step-change in real capex costs is a more conservative estimate when compared with SKM's observed real cost increases from the current period.

Table 4.2 provides a breakdown of SP AusNet's proposed forecast capex allowance by category of expenditure.

Table 4.2: SP AusNet's forecast capex proposal – by category ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total	% Total
Station replacements	39.5	54.5	69.4	51.2	66.6	96.5	377.7	45.0%
Other asset replacements	47.7	34.1	39.6	55.4	31.8	42.3	250.9	29.9%
Operational compliance	9.0	2.3	21.0	13.4	0.0	0.0	45.7	5.4%
Other compliance	21.2	19.0	18.6	21.6	14.3	8.7	103.4	12.3%
Non-system	11.3	11.8	8.3	9.1	10.6	10.0	61.1	7.3%
Total	128.7	121.7	156.9	150.7	123.3	157.5	838.8	100%

Source: SP AusNet[70]
Notes: Capex as-commissioned

As table 4.2 indicates, terminal station replacements constitute the largest component of SP AusNet's proposed forecast capex allowance (45%). This represents the same proportion of SP AusNet's total capex allowance devoted to station replacement and refurbishment projects during the current regulatory control period. SP AusNet states in its proposal that:

> The majority of terminal stations in the proposed program are metropolitan stations, in contrast to the current period, where the focus was on regional stations. With the risks on the regional network having been largely addressed in the current regulatory period, the focus of the station rebuild program over [the] next two regulatory periods will be on metropolitan stations.[71]

SP AusNet proposes major work at ten terminal stations (TS) during the forthcoming regulatory control period. These are listed in table 4.3 below.

[68] ibid., p.56.

[69] SKM, *Escalation Factors affecting Capital Expenditure Forecasts*.

[70] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, pp. 60, 69, 74, 75.

[71] ibid., p.63.

Table 4.3: SP AusNet's proposed station replacement and refurbishment projects ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Brooklyn TS				16.3	35.6		51.9
Glenrowan TS					3.2	18.1	21.3
Geelong TS	21.3		18.4				39.7
Hazelwood TS			0.2	19.2			19.4
Hazelwood Power Station	5.0	12.0	8.8	3.5	5.8	1.6	36.7
Keilor TS	8.7	20.8		12.3			41.8
Malvern TS	4.4						4.4
Richmond TS					20.6	69.0	89.6
Ringwood TS		16.9	3.2	0.1	1.4	7.8	29.4
Thomastown TS		4.8	39.0				43.8
West Melbourne TS							0.0
Total	39.4	54.5	69.6	51.4	66.6	96.5	378.0

Source: SP AusNet[72]
Notes: Capex as-commissioned. Note that total does not precisely match with relevant total in table 4.2 due to rounding.

SP AusNet claims that metropolitan stations generally supply much higher loads than regional stations and require more extensive refurbishment, in more confined areas.[73]

Other asset replacements (including replacement of switchbays, transformers, secondary and communications systems) constitute a further 30% of SP AusNet's proposed forecast capex allowance. SP AusNet states that:

> These programs cover more specific asset replacements and compliance requirements in locations that do not justify a major station rebuilding and refurbishment program.[74]

The remaining 25% of SP AusNet's proposed forecast capex allowance relates to expenditure required to meet compliance obligations (eg. occupational health & safety (OH&S), security, environmental) and non-system expenditure (eg. IT, motor vehicles).

SP AusNet's Asset Management Strategy (AMS) provides the strategic framework underpinning its forecast capex proposal.[75] SP AusNet states that a key purpose of its AMS is to:

> …identify necessary equipment replacement actions in advance of any such potential failure. This is achieved through a careful assessment of the potential risk of failure for each plant item, and repairing or replacing deteriorating equipment before a failure occurs.[76]

[72] SP AusNet, *Response to Cl. 6A.11.1 Information Request*, p.14. SP AusNet notes that work at Malvern Terminal Station is expected to be completed by the end of the current regulatory control period, with the last remaining capex expected to be commissioned in 2008-09.

[73] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, p.63.

[74] ibid., p.68.

[75] SP AusNet, Asset Management Strategy: Victorian Electricity Transmission Network, 23 February 2007.

[76] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, p.25.

SP AusNet states that while asset age is a key indicator of the need for replacement, the key determinant is the condition of the asset, which may depend on other factors such as its location or specific operating requirements. Each individual asset subject to a condition assessment by SP AusNet is assigned a 'probability of failure', which is then used to determine whether or not the asset is approaching an unacceptable failure risk to the business. SP AusNet states that the framework for asset replacement established by its AMS ensures that its overall expenditure and work plans minimise total life cycle costs using detailed cost-benefit analyses.[77]

Overall, SP AusNet states in support of its proposed forecast capex allowance:

> Representing an optimal balance of the costs of asset replacement and maintenance on one hand, and the risk and costs of deteriorating reliability and asset performance on the other hand, the capital expenditure program is aimed at ensuring the ongoing maintenance of network reliability and service in accordance with customers' needs whilst minimising the total life cycle cost of service.[78]

4.4 Submissions

Transend

Transend submits that the AER should consider the weight of evidence in support of rising input costs from other electricity network businesses and the utility sector more generally when assessing SP AusNet's proposed real cost increases.[79]

Transend also raises concerns with the practice of benchmarking TNSPs against each other given the unique characteristics and circumstances of each TNSP.

Energy Users' Coalition of Victoria

The Energy Users' Coalition of Victoria (EUCV) submits that the amount of capex forecast by SP AusNet is significant given:

- only a marginal projected increase in consumption
- the relatively small size of the Victorian network
- the value of the starting RAB.[80]

Further, the EUCV states that the AER should have regard to the change in the average age of the asset base when assessing the reasonableness of both SP AusNet's past and forecast capex proposals.[81]

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[77] ibid., pp.26-27. SP AusNet's asset management practices are discussed further in section 4.6.2.

[78] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, p.13.

[79] Transend, Comments on VENCorp and SP AusNet Revenue Proposals, 13 June 2007, p.2.

[80] EUCV, *Response to AER review of Victorian electricity transmission,* June 2007, p.34, 39.

[81] ibid., p.43.

In relation to SP AusNet's claimed input cost increases, the EUCV submits that the AER should have regard to how a competitive firm would respond in the face of similar cost increases. The EUCV questions SP AusNet's claims of significant real labour cost increases for the forthcoming regulatory control period, and contends that SP AusNet's use of a limited number of examples to illustrate a significant increase in person-hour rates above the Consumer Price Index (CPI) in recent years may be misleading. The EUCV suggests that data from an independent source be used to assess SP AusNet's claims.

The EUCV submits that SP AusNet's claims of real materials price increases must be balanced against the reduced cost of imported inputs due to the observed appreciation in the Australian currency over the current regulatory control period. In addition, the EUCV submits that SP AusNet should have regard to the fact that transformers made in China have the same high quality as those from the traditional markets of the USA, UK and Europe, at a significantly lower cost. The EUCV therefore concludes in relation to real cost increases that:

> Except for transformers, permitting increases [in costs] of about CPI would on average more than compensate for all materials used by SPA when considering the impact of the rising $A and the data provided.[82]

The EUCV also submits that it is important to consider the trade-off between capex and operating expenditure (opex) in assessing SP AusNet's proposal, especially given:

- SP AusNet's claims of increasing real capex costs
- the incentive provided by the building block model for TNSPs to replace assets rather than continue incurring opex.[83]

The EUCV notes that SP AusNet proposes using Gas Insulated Switchgear (GIS) in some of its replacement capex programs due to space constraints at its terminal stations. Given that GIS can be up to three times as expensive as alternative switchgear with the same functionality, the EUCV queries whether there is a driving rationale for using GIS in all these circumstances.[84]

Energy Users Association of Australia

The Energy Users Association of Australia (EUAA) comments on the importance of SP AusNet's proposed timing of capex for the forthcoming regulatory control period, as:

[82] ibid., pp.36-38.

[83] ibid., p.40.

[84] ibid., p.41.

> …the delaying of a large dollar value of projects that are scheduled for the middle of the regulatory period until the end of the period represents a significant opportunity for SP AusNet to gain (and game) addition[al] returns on its regulated revenue stream.[85]

Further, the EUAA considers that SP AusNet's forecast capex proposal does not reflect the fact that, as a newly merged entity, it could achieve some significant synergies in its expenditure, particularly in relation to compliance costs.[86]

In relation to SP AusNet's proposal on increasing materials costs, the EUAA submits that the AER needs to:

- determine how relevant, material and realistic these proposed cost increases are
- consider how companies in a more competitive industry behave in response to such cost pressures.[87]

4.5 Consultant's review

The AER engaged PB Strategic Consulting (PB) to undertake a review of SP AusNet's proposed forecast capex allowance to ensure that it is in accordance with the requirements of cl. 6A.6.7 of the NER. PB was required to critically analyse and comment on the level of SP AusNet's proposed forecast capex allowance, taking into account the following factors:

- The existing network capacity.
- Asset utilisation.
- Asset lives.
- Asset conditions.
- Demand growth.
- Trade-offs between capex and opex.
- Information on historical and forecast capex trends.
- Any other internal or external factors that may be relevant.

In line with the AER's previous approach to reviewing the capex proposals of TNSPs, a key component of PB's review of SP AusNet's proposed forecast capex allowance was a detailed review of a representative sample of its proposed forecast capex projects. The objective of the detailed sample project review is to gain an understanding of SP AusNet's key planning and forecasting processes as they relate to the entire proposed forecast capex allowance.

[85] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p.7.

[86] ibid., p.7.

[87] ibid., p.11.

In undertaking this sample project review, PB was required to evaluate whether or not:

- SP AusNet has adequately assessed the need for the project in accordance with its regulatory and statutory obligations
- there is a need for the project
- SP AusNet has considered the complete range of investment alternatives, their feasibility, costs and timing
- the proposed costs are reasonable
- the timing of the project is reasonable
- the project aligns with SP AusNet's strategic plans, governance arrangements, and capex policies and procedures
- the information provided by SP AusNet is accurate
- the value and timing at which the project should be included in the forecast capex allowance is appropriate.

In the event that PB disagrees with any element of a forecast capex project proposed by SP AusNet, PB was required to outline the reasons why the proposal is not in accordance with the NER and provide the AER with a recommended alternative that satisfies the requirements of the NER. Specifically, if PB considered that the forecast capex allowance should be altered, PB was required to provide the AER with a quantified forecast capex allowance and justification for the variance from SP AusNet's proposal.

As part of its review, PB reviewed the documentation provided by SP AusNet with its forecast capex proposal, sought more detailed information on the representative sample of specific projects, and undertook a series of meetings with SP AusNet's staff. From its review of SP AusNet's forecast capex proposal, PB concludes as follows:

- SP AusNet has well structured and well documented policies and procedures to support its core transmission role, and it attempts to address its regulatory needs as an integrated aspect of its operations.
- SP AusNet's asset management strategy is contemporary and in particular its use of detailed quantitative risk modelling is close to best practice.
- SP AusNet's application of the detailed risk models is currently highly focussed on the probability of failure aspect, and as the models evolve improvements could be made to the treatment of the consequences of failure.
- SP AusNet's economic evaluation practices are reasonable, however the assessment methodology is not well documented, and seems open to errors and individual opinion on how to undertake assessments.
- The timing of some of SP AusNet's proposed replacement capex appears to be aggressive on the basis of the condition of the assets alone, providing some opportunities to prioritise tasks and prudently defer some expenditure beyond the end of the forthcoming regulatory control period.

- SP AusNet can make better use of the assets it releases as part of its progressive redevelopment to minimise the consequences of failure elsewhere on the network.
- The use of modern equivalents and co-ordinated augmentation / replacement projects are apparent in SP AusNet's proposal.
- SP AusNet's cost estimation processes are sound and have improved considerably over the current period.
- According to a high-level analysis of indicative replacement capex based on asset age, SP AusNet's proposed forecast capex allowance appears to be on the high side given that it purports to undertake condition-based rather than age-based asset replacement.
- Although the detailed review highlights some potential issues with the remainder of SP AusNet's proposed capex allowance, PB has not attempted to make any further high level adjustments to the allowance given the specific nature of the issues identified in each of the sample projects.[88]

PB's review of SP AusNet's forecast capex proposal can be found at section 5 of its report.[89]

PB's recommended adjustments to SP AusNet's proposed forecast capex allowance are set out in table 4.4. PB's recommended forecast capex allowance represents a reduction of around 14% compared to SP AusNet's proposal.

Table 4.4: PB's recommended forecast capex allowance ($m, 2007-08)

	Total ($m)
SP AusNet's Proposal*	855.26
PB's recommended adjustments	
Adjustment to network capex as a result of the detailed project review	-100.70
Adjustment to non-system capex as a result of detailed project review	-3.42
Adjustment to ex-ante inventory based on ex-post detailed review	-0.24
Adjustment to contingency allowance	-18.60
PB's total recommended adjustments	-122.96
PB's recommended capex allowance	**732.30**

* SP AusNet's proposed forecast capex allowance excludes revisions made by SP AusNet during the detailed review

PB's recommendations with respect to the sample projects covered by the detailed review are set out in detail in appendix B.1, and summarised at section 4.6.3 of this draft decision.

Table 4.5 compares SP AusNet's proposed forecast capex allowance to PB's recommended forecast capex allowance for each year of the forthcoming regulatory control period.

[88] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp. 121-122, 226-228, 230-233.

[89] ibid., pp.86-133.

Table 4.5: PB's recommended forecast capex allowance ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal*	128.02	147.70	140.14	140.85	139.69	158.87	855.26
PB's recommended adjustments	-10.63	-15.23	-6.37	-21.87	-36.31	-32.55	-122.96
PB's recommendation	**117.39**	**132.47**	**133.77**	**118.98**	**103.38**	**126.32**	**732.30**

* SP AusNet's proposed forecast capex allowance excludes revisions made by SP AusNet during the detailed review

4.6 Issues and the AER's considerations

This section sets out the AER's considerations of the issues encountered during its review of SP AusNet's proposed forecast capex allowance.

It is noted that although SP AusNet has prepared its forecast capex proposal on a detailed project-by-project basis, and the AER has for the most part assessed expenditure in this way, the AER's conclusions relate to a total forecast capex allowance. Therefore the AER's project-specific conclusions should not be taken to bind SP AusNet to a particular set of project-specific capex budgets – SP AusNet has the ultimate discretion in how it spends its capex allowance. The objective of the AER's assessment of specific proposed projects in this section is to test the efficiency and prudence of SP AusNet's policies, procedures, replacement strategies and cost estimates, as they relate to the entire forecast capex proposal.

This section is structured as follows:

- SP AusNet's governance framework.
- SP AusNet's asset management practices.
- Detailed sample project review of selected forecast capex projects.
- Extension of findings on detailed sample project reviews to remainder of forecast capex allowance.
- Adjustments as a result of detailed sample project review of past capex projects.
- SP AusNet's cost accumulation process.

4.6.1 SP AusNet's governance framework

This section examines SP AusNet's capital governance framework to determine whether it is likely to result in prudent and efficient investment decisions in accordance with cl. 6A.6.7 of the NER. The degree to which this framework has been implemented in the current regulatory control period is assessed in chapter 2 and appendix A to this draft decision.

SP AusNet's proposal

SP AusNet has developed detailed policies and procedures that govern its investment decision-making process. SP AusNet states that the key stages in its project assessment process include:

1) Economic and engineering analysis: SP AusNet undertakes a detailed engineering assessment for all proposed projects, while a full economic / engineering analysis is only undertaken for large projects such as station rebuilds. SP AusNet states that its full economic analyses contain the economic costs and benefits associated with all technically feasible options available to fulfil its objectives, including the 'do nothing option'. Both internally and externally generated reports are used to inform its engineering and economic analyses.
2) Authority to proceed (AtoP) process: As all budgeted and unbudgeted capex must be approved by the appropriate delegate via a formal AtoP document in order for it to proceed through to the finance department, the AtoP process is central to SP AusNet's internal decision-making processes.[90] A typical AtoP document includes the summarised results of the engineering / economic analysis undertaken, a risk analysis, a statement outlining the extent to which the proposed project coordinates with the over-arching asset management strategy, the proposed scope of works, and an internal budgeting estimate. An 'AtoP variation' document must be approved in cases where a project has an actual cost or scope which is different from that approved in the original AtoP.
3) Order approval request (OAR): Once the project has been approved by the appropriate delegate through the AtoP process, an OAR covering analysis of tendering and evaluation criteria must be approved by the Expenditure Approval Committee (EAC) before a tender can be awarded. The approval level for an OAR through the EAC is equivalent to the process for approval of an AtoP document.
4) Post implementation review (PIR): All major projects are subject to a PIR as part of the feedback loop in the project execution and tracking process. The purpose of the PIR is to provide explanations of cost over-runs (if any), provide feedback on lessons learnt and recommend improvements to processes to apply going forward.[91]

Consultant's review

PB undertook a review of SP AusNet's capital governance documentation, and makes the following observations:

- SP AusNet's processes and practices reflect that it is highly conscious of the regulatory framework within which it operates. It attempts to address its

[90] Depending on its value, an AtoP for a proposed (budgeted) capex project must be approved by either the SP AusNet Board, the Project Approval Committee (PAC), or the General Manager.

[91] SP AusNet, *Capex - Approval process*, 30 April 2007.

regulatory needs as an integrated aspect of its core electricity transmission operations.

- SP AusNet is typical of a well-governed, integrated corporation, and has established a number of committees that support its asset management, investment approval and decision-making processes.
- SP AusNet's governance and approvals processes are likely to be effective at capturing capex efficiencies.
- SP AusNet's project execution and tracking process is sound, however this has not necessarily precluded some projects running over budget in the current regulatory control period.[92]

AER's considerations

The AER agrees with PB that SP AusNet has developed adequate policies and procedures that are typical of a well-governed, integrated corporation. At a procedural level, SP AusNet's investment decision making process is robust, and includes provision for an adequate assessment of its investment needs, approvals processes, appropriate delegations and project execution tracking.

Based on the detailed ex post capex review, however, the AER considers that there is significant room for SP AusNet to improve its implementation of these policies and procedures over the forthcoming regulatory control period. This appears to be particularly the case in the areas of project execution and tracking. As it is evident that SP AusNet has improved its cost and scope estimation techniques as it has progressed through the current regulatory control period, the AER expects that the AtoP variation process should not be as prevalent for projects undertaken over the forthcoming regulatory control period.

During the review SP AusNet provided the NPV analyses for each of its large station rebuild / refurbishment projects proposed over the forthcoming regulatory control period. Having reviewed this documentation the AER makes the following high-level observations:

- SP AusNet has not presented an NPV analysis for all elements of its proposed forecast capex allowance.
- SP AusNet adopts a least-cost approach to economic analysis – it has not attempted to quantify all economic costs and benefits associated with its investment decisions (see section 4.6.2 for further discussion).
- SP AusNet advises that there are some technical issues which are unable to be captured in its NPV analyses.
- In most cases SP AusNet considers the opex-capex trade-off in its investment decision-making.
- SP AusNet's selection of options for detailed review is often somewhat subjective and internally inconsistent across similar projects, which makes an

[92] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.226-227.

assessment of the efficiency and prudence of a particular investment decision difficult.

- In some cases SP AusNet has presented separate NPV analyses for different elements of a particular station project (eg. by switchyard), however this has not been undertaken on a consistent basis for similar projects.

Given these observations, the AER considers that, at a high-level, the economic justification for some elements of SP AusNet's proposed forecast capex allowance would be enhanced with a more thorough and consistent approach to economic analysis.

4.6.2 SP AusNet's asset management practices

This section discusses SP AusNet's overarching Asset Management Strategy (AMS), which underpins its forecast capex proposal. In particular, this section discusses SP AusNet's use of quantitative asset failure risk models to determine priorities for expenditure over the forthcoming regulatory control period.

SP AusNet's proposal

Asset management is a key component of SP AusNet's capital governance framework. SP AusNet has developed a detailed Asset Management Strategy (AMS), with the following aims:

- Create sustainable asset and network risk-profiles to underpin future performance.
- Meet reliability and availability performance targets.
- Improve health, safety, environmental and infrastructure security performance.
- Comply with codes and regulation.
- Minimise life cycle costs.[93]

The AMS is designed to provide technical direction to SP AusNet in its asset management practices over the period 2007-2020, and covers all of its Victorian electricity transmission assets. It sets out SP AusNet's objectives with respect to its management of asset failure risks,[94] using the outputs of its quantitative asset failure risk models as a guide to prioritising expenditure.

SP AusNet has recently developed quantitative risk models for a broad range of its assets, including circuit breakers (CBs), current transformers (CTs), power transformers, transmission lines, and protection relays. The risk model outputs contain, for each asset subject to SP AusNet's condition assessment, a risk ranking (specifically, the probability of failure) relative to all other assets in the fleet. By way

[93] SP AusNet, Asset Management Strategy – Victorian Electricity Transmission Network, February 2007, p.7.

[94] The risks assessed by SP AusNet as part of its AMS relate to reliability, availability, OH&S, environmental, infrastructure security and code compliance.

of example, the risk model outputs for Transformers, CBs and CTs are interpreted as follows:

- Transformer risk model: SP AusNet has assigned a risk ranking between 0 and 69 to each of the 217 transformers subject to a condition assessment, with a higher ranking indicating a higher relative risk of failure.
- CB risk model: SP AusNet has assigned a risk ranking between 'Very high' (Mean time between failure < 8.81 years) and 'Low' (MTBF 29.82–38.76 years) to each of the 1 018 CBs subject to a condition assessment.
- CT risk model: SP AusNet has assigned a life expectancy to each of the 1 120 CTs subject to a condition assessment.

For each of the five asset classes covered by the quantitative asset failure risk models, SP AusNet's AMS describes current priorities for replacement over the forthcoming regulatory control period. In the AMS, the outcomes of specific asset failure risk mitigation goals over the forthcoming regulatory control period are presented in terms of a 'recommended' risk level for each asset class as at 2013.[95] The recommended or target risk level outlined in the AMS is associated with replacement of a specific amount of assets (each with its own relative condition ranking), and hence underpins a large component of SP AusNet's forecast capex proposal.

Consultant's review

PB undertook a review of SP AusNet's documentation relating to its asset management practices, and makes the following observations:

- SP AusNet has a contemporary AMS that is informed by the outputs of high quality 'best practice' quantitative risk models.
- SP AusNet's current application of the quantitative risk models is highly focussed on the probability of failure aspect of the risk equation.
- SP AusNet's widespread use of 'engineering judgement' when considering the need and basis for efficient investment is less transparent than would be the case if the detailed quantitative risk models were further developed to quantify the consequences aspect of the risk equation.
- The outcomes of SP AusNet's economic evaluations are largely based on a least-cost approach rather than a cost-benefit approach to NPV modelling.[96]

PB notes that further improvements are expected to SP AusNet's treatment of the consequences of asset failure as the quantitative risk models are developed.

[95] SP AusNet, Asset Management Strategy – Victorian Electricity Transmission Network, February 2007, pp.22-27.

[96] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.28, 227. In its report (section 2.2), PB discusses SP AusNet's asset management practices at length, including its application of the quantitative risk models.

AER's considerations

The AER agrees with PB that SP AusNet's asset management practices are contemporary and of a high quality. The AER considers that the stated high-level objectives of SP AusNet's AMS are appropriate, reasonable, and in accordance with the NER. In particular, direct reference in the AMS objectives to reliability and availability performance targets (as established under the AER's Service Target Performance Incentive Scheme and VENCorp's Availability Incentive Scheme) is appropriate given the service standards incentive framework within which SP AusNet operates. In addition, the AER considers that the twin objectives of meeting reliability performance targets while at the same minimising life cycle costs provide a framework for SP AusNet to appropriately balance service reliability with customer willingness-to-pay.

It is clear that the quantitative asset failure risk model outputs are a critical input underpinning SP AusNet's proposed forecast capex allowance.[97] The application of the risk model outputs allows SP AusNet to retain a great degree of control over its asset base, and represents the first step in SP AusNet's analysis of an asset replacement decision. The AER understands that SP AusNet uses the risk model outputs to set priorities for a detailed review of a particular asset or fleet of assets, with a view to possibly including the assets in its replacement capex program.[98]

During the detailed review it became clear that SP AusNet's application of the quantitative risk models is still at an early stage in terms of their potential application in the future. From the documentation provided, it is evident that SP AusNet has relied heavily on the probability of failure aspect of risk to justify its proposed replacement capex, while the consequences of failure are not yet able to be fully quantified in the risk models. The AER considers that while the relative condition of assets within a fleet – as informed by the quantitative asset failure risk models – provides a robust indicator of prudent replacement priorities, it should not be considered in isolation from the consequences of failure in determining whether replacement capex is efficient.

While recognising the inherent difficulties associated with quantifying the consequences of asset failure (eg. OH&S costs, value of customer reliability), the AER considers that it is an important area lacking analysis in SP AusNet's forecast capex proposal. It is expected that as the development of the detailed quantitative risk models progresses, SP AusNet will move towards full cost/benefit analysis of its investment decisions. The AER considers that a full economic cost/benefit analysis would provide a more robust economic justification for many elements of SP AusNet's forecast capex proposal, and would directly link its expenditure with customer willingness-to-pay.

At a strategic level, SP AusNet has determined a 'threshold' level of asset failure risk, above which it undertakes a detailed assessment. The thresholds established by

[97] For 32 of SP AusNet's 55 proposed forecast capex projects (representing over 65% of the total proposed forecast capex allowance), the key 'reason for project' specified in the cost information templates is to mitigate the asset failure risk, as informed by the detailed risk models.

[98] SP AusNet, *Asset Replacement Planning,* 25 April 2006, pp.4-5.

SP AusNet with respect to the five asset types subject to quantitative risk modelling are set out in table 4.6.

Table 4.6: SP AusNet's threshold risk levels for detailed review

Model	No. of elements	Measure	Trigger for analysis
Circuit Breakers (CBs)	1,018	Probability of failure	'Very high' and 'High' failure risk
Current Transformers (CTs)	1,120	Remaining life and probability of failure	Remaining life <=10 years
Line Insultators	13,265	Condition >5.1 - short life >4.1 - typical life <=4.1 - long life	Condition >5.1
Protection relays	2,308	Performance and functionality	High failure risk or <20% functionality of modern equivalent or replacement of associated primary equipment and <30% functionality
Power Transformers	217 tanks	Condition score and probability of failure	Condition score of >=40

Source: SP AusNet[99]

The AER understands that once a particular asset passes SP AusNet's 'threshold' risk level (ie. it has a relatively high risk of failure), it has to undergo a series of detailed assessments before it is included for replacement in the proposed forecast capex allowance. These assessments are undertaken by SP AusNet's technical staff, and usually relate to the consequences of failure and other economic considerations specific to a particular location or replacement decision (eg. economies of scale achievable by packaging work into a station-wide project). Nevertheless, the information provided by SP AusNet throughout the course of the detailed review clearly indicates that the underlying condition of assets – as quantified in the asset failure risk models – is a key driver of SP AusNet's proposed replacement capex program.

The efficiency and prudence of SP AusNet's investment decision making has been tested by the AER through a detailed review of a representative sample of forecast capex projects proposed for the forthcoming regulatory control period. This review has given rise to some reservations about the implementation of the overarching strategies contained within the AMS. In particular, a key theme emerging from the detailed sample project review is that SP AusNet's replacement strategy appears aggressive in terms of the appropriate and prudent timing of asset replacement, given

[99] SP AusNet, Overview of use of risk analysis in capital planning, 5 June 2007, pp.9-10.

the current condition assessments quantified in the risk models. In addition, the detailed sample project review provides examples of SP AusNet's lack of consideration of the consequences of failure, which tends to detract from the economic justification for a number of its proposed forecast capex projects.

These issues are discussed in more specific detail in section 4.6.3 below.

The AER considers that the issues identified during the detailed sample project review may be indicative of the issues likely to be encountered across other elements of SP AusNet's forecast capex proposal. The AER's consideration of the extent to which findings from the detailed sample project review can be extrapolated across the remainder of the forecast capex allowance is discussed further in section 4.6.4 below.

4.6.3 Detailed sample project review of selected forecast capex projects

This section provides a summary of the AER's consideration of issues identified during the detailed project reviews undertaken by PB on a representative sample of SP AusNet's network and non-network forecast capex projects. The full details of PB's recommendations and the AER's analysis and conclusions with respect to the detailed sample project reviews are contained in appendix B.1 of this draft decision.

PB reviewed six network projects and one non-network project proposed by SP AusNet for inclusion in its forecast capex allowance. The selection of projects was undertaken in consultation with the AER and was intended to cover as wide a range of SP AusNet's proposed forecast capex allowance as possible. The following factors were considered in selecting the sample projects for review:

- *Materiality*: both small and large projects were selected to ensure that SP AusNet treats multiple small projects with the same degree of diligence as large projects.
- *Project/asset category*: a selection of projects across different categories and asset classes were selected to ensure that the review captured key processes and systems employed by SP AusNet.
- *Project location and affected parties*: projects were selected according to location (ie. rural, metropolitan) and customers directly affected by the replacement (ie. generators, DNSPs, other TNSPs) to provide an insight into SP AusNet's specific business practices and processes, and its coordination with customers.
- *Timing of the expenditure*: projects were selected according to the forecast timing of the replacement in the forthcoming regulatory control period (ie. early, middle, end of period).
- *Randomness*: a degree of randomness was employed to select some projects.

The list of forecast capex projects reviewed as part of the targeted sample is provided in table 4.7.

Table 4.7: Detailed sample project review – list of forecast capex projects selected

Project category	Expenditure driver	Sample project description	Project capex ($m, 07/08)	% of total capex
Station replacements	Asset failure risk	Refurbishment of HWPS Switchyard	36.6	4.3%
	Asset failure risk	Redevelopment of RTS	89.7	10.5%
Other asset replacements	Asset failure risk	Transformer replacement	28.8	3.4%
	Compliance	Replacement of station and control centre SCADA	43.9	5.1%
	Operational performance	Response capability for undefined works	5.5	0.6%
Compliance	Compliance	Replacements of post-type CTs	24.5	2.9%
Non-network	Support the business	Vehicles	8.4	1.0%
Total			**237.4**	**27.8%**

A summary of PB's recommendations and the AER's conclusions with respect to the seven sample projects reviewed is provided below, for each of the project categories set out in table 4.7 above.

The full details of PB's recommendations and the AER's analysis and conclusions with respect to the detailed sample project reviews are contained in appendix B.1 of this draft decision.

Station Replacements

As part of its review, PB examined SP AusNet's proposed refurbishment of the Hazelwood Power Station Switchyard (HWPS), and the redevelopment of the Richmond Terminal Station (RTS).

In relation to the proposed HWPS refurbishment, PB considers that SP AusNet has demonstrated a clear need to replace 24 bulk-oil 220kV circuit breakers (CBs) at this station. The AER agrees with this assessment, given that the 24 CBs have been assessed as being in relatively poor condition in SP AusNet's CB risk model. The AER accepts PB's recommendations that the technical scope and cost of the bulk-oil CB replacements appears efficient and prudent taking into account the incremental costs of replacing the old CBs with units of modern equivalence. Further, the AER accepts PB's technical advice that a number of items identified by SP AusNet for replacement at HWPS are not required to meet the primary identified need to mitigate the risk of CB failure. On this basis, the AER considers that SP AusNet has not demonstrated that the inclusion of these items reasonably reflects prudent and

efficient capex required to meet the capex objectives in cl. 6A.6.7 of the NER. To reflect this assessment, the AER has made a downward adjustment to the SP AusNet's capex allowance for the HWPS refurbishment of $4.0m relative to SP AusNet's (updated) proposed capex allowance for HWPS of $35.7m.

Regarding the proposed RTS Redevelopment, the AER accepts PB's recommendations to remove the costs for replacement of three transformers and the redevelopment of the 66kV switchyard from the proposed forecast capex allowance. The AER considers that SP AusNet has not demonstrated that these elements reasonably reflect prudent and efficient expenditure required to meet the capex objectives (cl. 6A.6.7(a) of the NER) over the forthcoming regulatory control period. Further, the AER accepts PB's technical advice that the incremental cost of SP AusNet's proposed reconfiguration of the 220kV switchyard into a twelve CB arrangement at RTS does not justify the marginal improvement in reliability. Overall, the AER accepts PB's recommendations with respect to the RTS redevelopment, and has made a downward adjustment to SP AusNet's proposed forecast capex allowance of $51.7m to reflect this assessment.

Other Asset Replacements

In relation to the proposed 'Transformer replacement' program, PB considers that SP AusNet has, in some instances, failed to take into account the use of strategic spares, units to be released from elsewhere on its network, and other economic means of mitigating the reliability consequences of transformer failure. PB recommends:

- removing the entire proposed capex allowance for transformer replacements at Bendigo and Yallourn
- a coordinated replacement / augmentation with VENCorp at Dederang, in which SP AusNet and VENCorp each receive 50% of the cost
- inclusion of an allowance for replacement of one 220/66kV metropolitan transformer, rather than the proposed allowance for two replacements.

The AER accepts PB's recommendations with respect to SP AusNet's proposed transformer replacements at Bendigo and in the Melbourne metropolitan area. In relation to the Yallourn unit, the AER considers that a clear need for replacement with a unit reflective of its expected load has been demonstrated by SP AusNet. Finally, the AER considers that SP AusNet has not demonstrated a pressing need for replacement of the unit at Dederang (based on its condition), and therefore no allowance for replacement has been included. Overall, the AER considers that SP AusNet has not demonstrated that its proposed transformer replacements at Bendigo, Dederang and one transformer in the Melbourne metropolitan area reasonably reflect prudent and efficient capex required to meet the capex objectives in cl. 6A.6.7(a) of the NER. The AER has made a downward adjustment to SP AusNet's proposed forecast capex allowance of $22.4m to reflect this assessment.

In relation to the 'Replacement of station and control centre SCADA' project, the AER accepts PB's recommendation that SP AusNet has demonstrated a clear need to replace and upgrade its SCADA systems over the forthcoming regulatory control period. The AER agrees with PB that SP AusNet has not demonstrated that the

amount of $8.2m for enhancement to the SCADA system reasonably reflects prudent and efficient expenditure required to meet the capex objectives in cl. 6A.6.7(a) of the NER. On this basis the AER has made a downward adjustment to SP AusNet's proposed forecast capex allowance of $8.2m.

With respect to SP AusNet's proposed 'Response capability for undefined works' project, PB recommends removing the entire $5.5m allowance on the basis that SP AusNet already has sufficient discretion within its overall replacement capex program to ensure minor unforeseen risks can be addressed. The AER agrees with this assessment, and considers that SP AusNet has not demonstrated that a capex allowance of undefined scope reasonably reflects the expenditure of a prudent and efficient TNSP required to meet the capex objectives in cl. 6A.6.7(a) of the NER. The AER considers that SP AusNet's estimation processes are accurate down to a fine level of detail, and that its asset management practices are flexible enough to address risks in a systematic and efficient way. On this basis the AER has removed this allowance, resulting in a downward adjustment to SP AusNet's forecast capex allowance of $5.5m.

Compliance, security and 'other' projects

In relation to the proposed 'Replacement of post-type CTs' program, the AER agrees with PB that SP AusNet has demonstrated a need to replace CTs assessed as having a high risk of failure in the CT risk model. Further, the AER agrees that SP AusNet's proposed timing for replacement of CTs within this program appears aggressive and inefficient in some cases, especially given that many of the assets proposed for replacement have been assigned a life expectancy in the CT risk model which extends significantly beyond the end of the forthcoming regulatory control period. PB recommends removing the proposed capex allowance for replacement of all CTs assessed as having a life expectancy of greater than six years in the CT risk model, except at locations where it considers reasonable efficiencies can be captured by undertaking multiple replacements (of both high-risk and lower-risk CTs) at one time.

The AER largely accepts PB's recommendations, but has included a capex allowance to replace all CTs with a life expectancy of seven years or less (rather than six), to allow SP AusNet some flexibility to prioritise replacement of the highest risk CTs over the forthcoming regulatory control period. The AER considers that an allowance of $15.41m for the targeted CT replacement program (replacement of 49 out of the 73 sets proposed) will allow SP AusNet to achieve a significant (>20%) reduction in its overall level of CT failure risk over the forthcoming regulatory control period. The AER is not satisfied that an allowance for replacement of 24 sets of CTs reasonably reflects prudent and efficient capex required to meet the capex objectives over the forthcoming regulatory period. On this basis the AER has made a downward adjustment of $9.09m to SP AusNet's proposed forecast capex allowance to remove the capex allowance for replacement of 24 (out of 73) sets of CTs.

Non-system capex

With respect to the proposed vehicle replacement program (non-network capex), the AER accepts PB's recommendation to amend SP AusNet's allowance to reflect the actual replacement profile observed during the current regulatory control period. On

this basis the AER has made a downward adjustment of $3.42m to SP AusNet's proposed forecast capex allowance.

AER's conclusions

Table 4.8 sets out PB's recommendations and the AER's conclusions regarding adjustments to SP AusNet's forecast capex allowance on the basis of the detailed sample project reviews.

Table 4.8: Detailed sample project review – Comparison of PB's recommendations and the AER's conclusions ($m, 2007-08)

		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Refurbishment of HWPS	PB	0.00	-0.80	-0.80	-0.80	-0.80	-0.80	-4.00
	AER	0.00	-0.80	-0.80	-0.80	-0.80	-0.80	-4.00
Redevelopment of RTS	PB	0.00	0.00	0.00	-7.20	-24.50	-20.00	-51.70
	AER	0.00	0.00	0.00	-7.20	-24.50	-20.00	-51.70
Transformer replacements	PB	-3.50	-5.40	2.50	-5.50	-2.90	-4.50	-19.30
	AER	-3.50	-5.40	2.50	-3.60	-7.90	-4.50	-22.40
Replacement of SCADA	PB	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
	AER	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
Resp capability undefined works	PB	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
	AER	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
Replacement of CTs	PB	-2.00	-3.60	-2.84	-2.54	-1.04	0.00	-12.02
	AER	-2.00	-3.60	-2.80	-1.37	-0.42	1.10	-9.09
Vehicle replacements	PB	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
	AER	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
Total	**PB**	**-8.29**	**-12.59**	**-4.03**	**-18.93**	**-32.13**	**-28.17**	**-104.14**
	AER	**-8.29**	**-12.59**	**-3.99**	**-15.86**	**-36.51**	**-27.07**	**-104.31**

In summary, the AER accepts PB's recommended adjustments for five of the seven sample projects subject to a detailed review. With respect to the transformer and the CT replacement programs, the AER's conclusions differ slightly from PB's recommendations. See appendix B.1 of this draft decision for details.

4.6.4 Extension of findings on detailed sample project reviews to remainder of the forecast capex allowance

PB's detailed review of a representative sample of SP AusNet's proposed forecast capex projects identified a number of issues that it considered may be prevalent across the entire proposed forecast capex allowance. These issues include the apparent aggressive timing of asset replacements, the lack of clear economic justification, and the apparent inefficient scoping of some projects. Despite the issues identified, PB did not recommend any further adjustments to SP AusNet's proposed forecast capex allowance on the basis that it had not undertaken a detailed review of projects outside the sample list.

Based on PB's advice, the AER has reviewed the information provided by SP AusNet on other projects to examine the extent to which the issues identified throughout the

course of the detailed sample project review may indeed be prevalent across the remainder of the proposed forecast capex allowance. The AER, as informed by the outcomes of the detailed sample project review, considers that the information provided by SP AusNet during the review is sufficient to draw conclusions on other elements of the proposed forecast capex allowance.

This section discusses:

- The issues identified throughout the course of PB's sample project review, and through its review of SP AusNet's risk management practices.
- The AER's consideration of the issues identified by PB and the extent to which PB's findings are underpinned by SP AusNet's overarching risk management strategy.
- The AER's analysis and conclusions with respect to SP AusNet's targeted asset replacement programs not subject to a detailed sample project review by PB.
- The AER's conclusions with respect to SP AusNet's station rebuild / refurbishment projects not subject to a detailed sample project review by PB.

The AER engaged Nuttall Consulting to review the AER's analysis and the subsequent adjustments to SP AusNet's proposed forecast capex allowance set out in this section.[100] In particular the AER sought advice from Nuttall Consulting on whether the technical / engineering grounds for each of the AER's further adjustments to SP AusNet's proposed forecast capex allowance are reasonable and appropriate. Nuttall Consulting's observations and conclusions are discussed together with the AER's considerations below.

Consultant's review

In its report, PB identified a number of issues specific to the projects subject to the detailed sample project review that it considered may be prevalent across the remainder of SP AusNet's proposed forecast capex allowance, including:

- Lack of a clear need supporting some elements of SP AusNet's proposed forecast capex – particularly in relation to the 'Replacement of post-type CTs' and the 'Transformer replacement' programs.
- Aggressive timing and lack of a clear economic justification for some aspects of replacement – particularly in relation to the 66kV switchyard redevelopment and the transformer replacements proposed as part of the 'Redevelopment of RTS' project.
- Inefficient scoping of some projects – particularly in relation to the proposed reconfiguration of the 220kV switchyard as part of the 'Redevelopment of RTS' project and some elements of the proposed scope of works for the 'Refurbishment of HWPS' project.

[100] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007.

- Use of a 5% real capex escalator in NPV analyses (which acts to disadvantage deferral options) – as evidenced during the detailed review of the 'Refurbishment of HWPS' project.[101]

In addition, through its detailed review of the six sample network capex projects, PB gained a thorough understanding of SP AusNet's practical implementation of its AMS. In particular, PB looked at the appropriateness of the level of the 'threshold' risk ranking (see table 4.6 above) – above which SP AusNet undertakes a detailed review with a view to including assets for replacement in its proposed forecast capex allowance. By observing the detailed quantitative risk model outputs alongside SP AusNet's replacement capex plans, PB gained an understanding of SP AusNet's practical implementation of its over-arching replacement strategy for the forthcoming regulatory control period.

PB makes the following general observations in relation to SP AusNet's implementation of its risk management strategy:

- In four of the six network projects sampled as part of the detailed review, SP AusNet's proposed forecast capex allowance is underpinned by a detailed and rigorous risk-based approach to asset management, where individual assets are assigned a relative risk ranking in the asset risk models according to their assessed condition.
- The risk model inputs are based on contemporary and systematic condition monitoring programs (eg. oil and dissolved gas analysis, dielectric tests) that enable the model outputs (ie. risk of failure ranking relative to other assets in the fleet) to reflect the dynamic and changing characteristics of SP AusNet's critical plant.
- SP AusNet uses its detailed risk models as a preliminary and systematic tool to inform its general views, however it exercises a considerable degree of engineering judgement to capture aspects within projects not specifically addressed through the detailed risk models – namely compliance matters, operational improvements and economic efficiencies,
- SP AusNet has presented reasonable and appropriate arguments to support its approach that a 'run-to-failure' approach is a less efficient and practical approach compared to targeted and planned replacements.
- As a general finding, the expenditure proposed for SP AusNet has a good technical and risk-based foundation, however the timing of the expenditure appears to be aggressive and there appear to be a number of opportunities to prioritise tasks and defer some expenditure.[102]

[101] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.121-122. In response to PB's request to provide evidence that a 5% real capex escalator had not been applied in any other NPV analyses, SP AusNet provided its NPV analyses for its station rebuild projects. PB did not identify the application of an escalator in the NPV analyses for any of these other projects.

[102] ibid., pp.103-104.

As part of the detailed review SP AusNet provided the outputs from each of its five quantitative asset failure risk models. PB's general findings with respect to SP AusNet's application of the risk model outputs are summarised in table 4.9, which indicates that the main areas of concern appear to be with respect to the replacement strategy for CBs, CTs and Transformers.

Table 4.9: PB analysis – SP AusNet's application of the detailed risk model outputs

Risk Model	Positive	Neutral	Negative
CB risk model	Majority of High, Very High risk CBs replaced	Moderate number of CBs replaced in lower risk categories	Aggressive reduction in relative risk
CT risk model	Evidence of strong continuous improvement framework	Moderate number of CTs replaced with long life expectancy	Aggressive reduction in relative risk
Transformer risk model	Majority of highly ranked transformers to be replaced	Ranking on average lower than current replacements	Large number of units targeted for replacement under the assessment threshold
Lines risk model	Stable reduction in risk	Good balance between old and new for replacements	
Protection relay risk model	Moderate reduction in relative risk	Modernisation of technology	

Source: PB Strategic Consulting[103]

PB considers that although its detailed review potentially raises issues with some elements of the remainder of SP AusNet's forecast capex proposal, the issues have been identified with respect to individual projects. On this basis PB considered that it is not possible for it to extrapolate findings from the detailed project reviews to the balance of SP AusNet's forecast capex allowance without undertaking a detailed bottom-up review of individual projects.

AER's considerations

Given that the sample of SP AusNet's projects subject to detailed review was intended to be representative of the total forecast capex program, the AER considers that the issues identified by PB as part of the detailed project reviews may be indicative of the issues likely to be encountered across SP AusNet's entire proposed forecast capex allowance. The AER considers that the issues most likely to be prevalent are:

- Aggressive timing and the lack of a clear replacement need identified by SP AusNet (eg. for its targeted CT and Transformer replacement programs).
- Lack of a clear economic and risk-based justification (eg. for some elements of the RTS Redevelopment).

[103] ibid., p.120.

The AER is also informed by PB's analysis with respect to SP AusNet's application of the quantitative risk model outputs (table 4.9), which concludes that SP AusNet is seeking an 'aggressive' reduction in relative asset failure risk over the forthcoming regulatory control period – particularly for CBs, CTs and Transformers. The AER notes that, during the detailed review, the discussion and analysis of SP AusNet's approach to risk management was extensive, and related to both individual sample projects as well as to the wider capex program.

At a strategic level, SP AusNet's application of a quantified 'threshold' or 'recommended' risk level in formulating its forecast capex proposal provides clear outcomes. PB advises that SP AusNet's implementation of its replacement capex program over the current and forthcoming regulatory control periods (ie. 2003 – 2013) will result in an overall reduction in asset failure risk across five major asset classes of around 11% (ie. 54% in 500%) by 2013, as illustrated in table 4.10.

Table 4.10: PB analysis – SP AusNet's proposed reduction in overall asset failure risk

Asset failure risk	2003 level	2008 level	2013 level – with capex	2013 level – no capex	Reduction (03-13)
Circuit breakers	100%	85%	65%	180%	35%
Current transformers[1]	100%	90%	75%	140%	25%
Transmission line insulators	100%	105%	98%	138%	2%
Power transformers	100%	120%	115%	146%	(15%)
Protection relays	100%	105%	93%	124%	7%
TOTAL	500%	505%	446%	728%	54%

Note 1, using original CT risk model output based on 2008-2013 timeframes for consistency

Source: PB Strategic Consulting[104]

The AER notes from table 4.10 that SP AusNet proposes to reduce its relative asset failure risk across these five asset types by 12% (ie. 59% in 505%) over the forthcoming regulatory control period (2008 – 2013).[105] It is noted in particular that SP AusNet proposes a significant reduction in relative asset failure risk for CBs and CTs over the forthcoming regulatory control period (20% and 15% respectively).

The AER considers that there are significant strategic benefits available to SP AusNet for a reduction in its asset failure risk, given the direct relationship between the level of asset failure risk and the service SP AusNet provides (quality, reliability, safety and security of electricity transmission supply). However under cl. 6A.6.7 of the NER the AER cannot accept a TNSP's proposed forecast capex unless it is satisfied that it reasonably reflects prudent and efficient expenditure required to maintain the quality, reliability, safety and security of supply. Table 4.10 suggests that, through the implementation of its proposed forecast capex program, SP AusNet may be proposing

[104] ibid., p.117.

[105] For clarification, note that the 12% reduction in overall asset failure risk over the period 2008-13 is based on a 59% asset failure risk reduction on the 505% base 2008 total risk level (ie. 505% less 446%).

a reduction in asset failure risk which is beyond that required to meet the capex objectives. In order to satisfy the requirements of the NER, SP AusNet needs to provide a thorough and rigorous economic assessment that demonstrates that an apparent strategic reduction in risk is economically justified in accordance with the capex objectives prescribed in the NER. Based on the information provided by SP AusNet during the review, the AER considers that there are certain elements of SP AusNet's proposed forecast capex allowance for which it has not provided a robust economic justification as required by the NER.

On the basis of PB's advice and the above considerations, the AER is concerned that, at a high-level, SP AusNet's proposed forecast capex allowance is underpinned by an aggressive strategic reduction in risk which may not be economically justified over the forthcoming regulatory control period. The AER considers that the most significant issues are likely to be prevalent in the following proposed forecast capex projects:

- Targeted replacement programs – these projects are intended to capture replacement of assets which are located at a station not requiring major works over the forthcoming regulatory control period, hence the replacement decision appears to be heavily influenced by the risk 'threshold' established at a strategic level.
- Station rebuild / refurbishment projects – these projects are intended to 'package' a significant proportion of assets at an individual station into one large replacement project, hence for some elements of the project the replacement decision may involve an important trade-off between the deferral of upfront capex (if possible based on asset condition) and the opportunity to capture scale and scope efficiencies in the work.

In order to investigate whether further adjustments to SP AusNet's proposed forecast capex allowance are warranted, the AER has undertaken a detailed review of the documentation supplied by SP AusNet for these project types, including the quantitative risk model outputs. The AER, as informed by the outcomes of the detailed sample project review, considers that the information provided by SP AusNet during the review is sufficient to draw conclusions on these particular elements of the proposed forecast capex allowance.

The following sections present the AER's consideration of the efficiency and prudence of SP AusNet's proposed forecast capex allowance for its targeted replacement programs and station rebuild / refurbishment projects. The projects considered were not subject to PB's detailed sample project review.

Targeted replacement programs

The AER notes that the main areas of concern identified in PB's analysis with respect to SP AusNet's practical application of the quantitative risk model outputs are in relation to the timing of replacement of CBs, CTs and Transformers (see table 4.10). In order to explore whether similar issues to those uncovered during the detailed sample project review are prevalent across other targeted replacement programs, the AER has reviewed the following:

- SP AusNet's documentation relating to its targeted replacement programs for CB, CT and Transformer assets.
- SP AusNet's quantitative risk model outputs for these three asset types.

With respect to SP AusNet's apparent aggressive timing of CT and Transformer replacements, the AER considers that, in terms of targeted replacement programs, these issues have been adequately addressed as part of PB's detailed sample project reviews for the 'Replacement of post-type CTs' and the 'Transformer replacement' programs. This is because SP AusNet's targeted replacement of CTs and Transformers at the margin (ie. close to or above the threshold for detailed review) occurs within these targeted replacement programs. PB's analysis and the AER's considerations of the capex allowance associated with these two targeted replacement programs has been informed by the quantitative CT and Transformer risk model outputs. The AER's detailed analysis and conclusions with respect to these two programs are contained at appendix B.1 to this draft decision.

In relation to the 'aggressive reduction in relative risk' identified by PB with respect to SP AusNet's application of the CB risk model outputs, PB makes a number of specific observations:

- There are 99 CBs scheduled for replacement in the forthcoming regulatory control period with a risk of failure in the 'Medium' or 'Medium/Low' category – corresponding to a Mean Time Between Failure (MTBF) of between 19 and 29 years, and a normalised age of between 25 and 35 years. In the absence of a detailed review of individual projects PB considers that there may be other technical aspects not covered in the CB risk model which are driving the replacement decision. In addition, PB notes that SP AusNet appears to be planning ahead for the large number (>200) of 66kV bulk oil CBs that will need to be replaced over the next 15 years.
- There are 2 (capacitor bank) CBs scheduled for replacement in the forthcoming regulatory control period with a risk of failure in the 'Low' category – corresponding to an MTBF of greater than 38 years, and a normalised age of one year. PB considers that although there is no clear need identified for replacement of these two 66kV capacitor bank CBs, the replacement cost has an immaterial impact on the total proposed forecast capex allowance.[106]

On the basis of PB's analysis, the AER has conducted a further examination of SP AusNet's documentation and the quantitative risk model outputs relating to a number of targeted CB replacement projects not subject to PB's detailed sample project review, including.

- 'Replacement of 22kV bays' at three terminal stations (BETS, KGTS and RCTS), with a forecast capex cost of $11.3m (real, 2007-08).[107]

[106] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.108.

[107] SP AusNet, Replacement program for 22kV switch-bays, 14 February 2007.

- ‘Replacement of bulk oil CBs at DDTS’, with a forecast capex cost of $5.5m (real, 2007-08).[108]
- ‘Replacement of 66kV CBs’ at two terminal stations (HOTS and MWTS), with a forecast capex cost of $3.5m (real, 2007-08).[109]
- ‘Replacement of 500kV CBs’ at two stations (LYPS and HWTS), with a forecast capex cost of $4.2m (real, 2007-08).[110]

The AER has reviewed the CB risk model outputs provided by SP AusNet to get an indication of the condition of the individual CBs proposed for replacement as part of these four targeted CB replacement projects.[111] The AER considers that the information provided by SP AusNet with respect to these four projects is sufficient to draw conclusions on the efficiency and prudence of the associated proposed forecast capex allowance.

Firstly, the AER considers that the CB risk model outputs indicate a clear need to replace the units identified for replacement as part of the first two projects listed above – all the CBs included for replacement in these two projects have been assigned a ‘Very high’ or ‘High’ asset failure risk ranking (corresponding to an MTBF of between 7.4 and 12.5 years). On this basis the AER is satisfied that, as required by cl. 6A.6.7(e)(4) of the NER, the forecast capex associated with these projects reasonably reflects the expenditure that would be incurred by a prudent and efficient TNSP in order to meet the capex objectives.

Secondly, in relation to the assets proposed for replacement as part of the ‘Replacement of 66kV CBs’ project, the relevant outputs from the CB risk model are illustrated in table 4.11.

Table 4.11: Replacement of 66kV CBs project – outputs of CB risk model

Replacement of 66kV CBs	**Ranking in CB risk model (MTBF yrs)**				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units at Horsham (HOTS)				6	
Units at Morwell (MWTS)				8	

As table 4.11 indicates, all of the CBs proposed by SP AusNet for replacement as part of the ‘Replacement of 66kV CBs’ project (bulk-oil units, ‘LG4C’ type) have been assigned a risk ranking of ‘Medium/Low’, indicating that they are currently in relatively good condition. This is confirmed by SP AusNet in its documentation:

[108] SP AusNet, Dederang 220kV Terminal Station Refurbishment, 24 November 2006.

[109] SP AusNet, Replacement program for 66kV switch-bays, 12 December 2006.

[110] SP AusNet, Replacement program for 500 kV circuit breakers, 24 November 2006.

[111] SP AusNet, CB Model Output (21 May 07).xls, 23 May 2007.

> While the general reliability of this type of circuit breaker is good, they are old, and reliability reduces after a large number of operations.[112]

SP AusNet advises in its documentation that the key drivers for the targeted replacements at HOTS and MWTS include:

- Manufacture of these types of 66kV CBs ('LG4C' units) has ceased and therefore spare parts are not readily available.
- Replacement will release maintenance spares.
- Replacement provides an opportunity to upgrade where necessary.
- The bushing insulation on these types of 66kV CBs is deteriorating.
- The large LG4C fleet (over 200 units) carries the risk that any rapid deterioration will be difficult to handle, and therefore the planning response is to schedule replacement over a prolonged period to keep the annual expenditure down to a minimum.[113]

The AER has undertaken an analysis of the information presented by SP AusNet regarding the 66kV CB replacements at HOTS and MWTS. The AER considers that SP AusNet has not demonstrated a clear economic need to replace these units over the forthcoming regulatory control period. The CB risk model outputs indicate that the units proposed for replacement are in relatively good condition, and they are expected to last in service for up to 15 years. In relation to the release of spare units for maintenance purposes, the AER considers that SP AusNet should consider utilising 66kV units released from its station rebuild program. The AER also notes that SP AusNet currently holds a number of spare 66kV CB units for contingency planning purposes.[114]

Nuttall Consulting reviewed the AER's analysis and SP AusNet's documentation relating to the need for replacement of 66kV LG4C CBs to release maintenance spares, and makes the following comments:

> Nuttall Consulting notes that around 17 *LG4C* 66kV breakers that are in very good condition will be retired from the committed BETS, BATS and TGTS station rebuild projects occurring in this period, and the AER is allowing the retirement of a further 7 *LG4C* breakers from the proposed RWTS rebuild project in the next period.
>
> At this stage, and noting the relatively good condition of the existing fleet, Nuttall Consulting does not consider that SP AusNet has presented a sufficient technical argument that these retirements will not provide an efficient level of spares i.e. they will have spares to cover approximately 10% of the fleet.[115]

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[112] SP AusNet, Replacement program for 66kV switch-bays, 12 December 2006, p.7.

[113] SP AusNet, Replacement program for 66kV switch-bays, 12 December 2006.

[114] SP AusNet, *Strategic spares policy,* 29 April 2007, p.10. SP AusNet states that it currently holds two spare 66kV spare CBs for each type of 66kV CB. In addition, the AER has identified SP AusNet's plans to purchase a number of spare 66kV CBs over the forthcoming regulatory control period as part of its proposed 'Response capability for primary equipment failures' project.

[115] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.4.

On this basis the AER is not satisfied that the proposed replacement of 66kV CBs at HOTS and MWTS reasonably reflects prudent and efficient capex required to meet the capex objectives over the forthcoming regulatory control period. Specifically, the AER considers that SP AusNet's proposed capex for this project:

- does not reasonably reflect the benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- does not fully take into account the opex-capex trade-off, given that there are likely to be more economic options available to release maintenance spares (cl. 6A.6.7(e)(7)).

The AER has made a downward adjustment of $3.5m to SP AusNet's proposed forecast capex allowance, as set out in table 4.12.

Table 4.12: AER's conclusion – 'Replacement of 66kV CBs' project ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.27	2.06	0.14	0.02	0.00	0.00	3.49
PB's recommended adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AER's adjustment	-1.27	-2.06	-0.14	-0.02	0.00	0.00	-3.49
AER's conclusion	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The final targeted replacement project considered as part of this review is the 'Replacement of 500kV CBs' project at LYPS and HWTS. SP AusNet advises that the underlying driver for the proposed replacement of these two units is to release spares to be used in support of its refurbishment program for 500kV CBs (SF^6 units, '3AT5' type) that are close to or at the end of their economic lives.[116] The AER has not been able to identify these two 500kV CBs in SP AusNet's CB risk model outputs, and SP AusNet has not provided any indication of deteriorating condition of these particular units.

The AER has examined the CB risk model outputs and identified twenty three (23) 500kV CBs proposed by SP AusNet for refurbishment as part of its asset works program (opex) for the forthcoming regulatory control period, including fourteen (14) 500kV SF^6 (3AT5) CBs. The AER considers that the 500kV CB (SF^6) refurbishment program is extensive, and accepts that spare units may be required to maintain the reliability and security of supply while refurbishments are undertaken. However according to the PB report, the external contractor cost for the SF^6 CB refurbishments appears to already include the cost of purchasing spare parts.[117]

On this basis the AER is not satisfied that SP AusNet's proposed replacement of a further two 500kV CBs for release as spares is necessary in order to meet the capex objectives. At most, the AER considers that SP AusNet has justified the replacement of one 500kV (3AT5) CB for release as an additional spare.

[116] SP AusNet, Replacement program for 500 kV circuit breakers, 24 November 2006.

[117] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.175-176.

Nuttall Consulting reviewed the AER's analysis and SP AusNet's documentation relating to the need for replacement of 500kV SF^6 (3AT5) CBs to release maintenance spares, and makes the following comments:

> …it is very difficult in the context of this review to confirm how many breakers will need to be retired to achieve an optimal level.
>
> …although Nuttall Consulting accepts that there may be a reasonable technical argument to replace a number of *3AT5* 500kV breakers to release spares, nothing in the information presented confirms that the basis of the AER's adjustments will not allow SP AusNet to maintain the quality, reliability, and security of the transmission network.[118]

On this basis the AER is not satisfied that SP AusNet's proposed replacement of a second 500kV CB for use as a spare reasonably reflects prudent and efficient expenditure required to meet the capex objectives in cl. 6A.6.7(a) of the NER. Specifically, the AER considers that SP AusNet's proposed capex for replacement of both 500kV CBs:

- does not reasonably reflect the benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- does not fully take into account the substitution possibilities between opex and capex across its network, given that the cost of 500kV maintenance spares appears to be included in the opex allowance (cl. 6A.6.7(e)(7)).

On this basis the AER has made a conservative downward adjustment of $2.1m to SP AusNet's proposed forecast capex allowance, as set out in table 4.13.

Table 4.13: AER's conclusion – 'Replacement of 500kV CBs' project ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.50	0.70	0.00	0.00	0.00	0.00	4.20
PB's recommended adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AER's adjustment	-3.50	1.40	0.00	0.00	0.00	0.00	-2.10
AER's conclusion	0.00	2.10	0.00	0.00	0.00	0.00	2.10

Station rebuild / refurbishment projects

On the basis of PB's analysis and its recommendations regarding the Redevelopment of RTS project, the AER considers that similar issues may be prevalent across other station rebuild / refurbishment projects. The AER has reviewed the documentation provided by SP AusNet regarding the seven station projects not included as part of the detailed sample project review, which include:

- Redevelopment of Brunswick Terminal Station (BLTS).
- Refurbishment of Thomastown Terminal Station (TTS).
- Redevelopment of Ringwood Terminal Station (RWTS).

[118] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.5.

- Refurbishment of Glenrowan Terminal Station (GNTS).
- Refurbishment of Keilor Terminal Station (KTS).
- Refurbishment of Hazelwood Terminal Station (HWTS).
- Refurbishment of Geelong Terminal Station (GTS).

The AER considers that the information provided by SP AusNet on these projects is sufficient to allow conclusions to be formed on the prudence and efficiency of the associated proposed forecast capex. The AER has reviewed the following documentation provided by SP AusNet during the detailed project review:

- SP AusNet's detailed risk model outputs for power transformers, circuit breakers and current transformers.[119]
- SP AusNet's NPV analyses relating to each of the seven station rebuild / refurbishment projects listed above.[120]
- Project-specific documentation provided as part of SP AusNet's initial Proposal.

The AER's detailed station-by-station analysis relating to these seven projects is contained at appendix B.2 of this draft decision. On the basis of the information provided by SP AusNet for these seven station projects, the AER makes a number of conclusions, which are summarised below.

1. Replacement of assets within 66kV switchyards

   The AER considers that SP AusNet has not demonstrated a need for replacement of assets within 66kV switchyards for five out of the six station projects which include an associated capex allowance (at BLTS, TTS, GNTS, KTS and GTS). SP AusNet's proposed redevelopment of 66kV switchyards appears primarily driven by its strategic aim to phase out all bulk-oil CBs over the next fifteen years,[121] in particular its large fleet of 66kV 'LG4C' bulk-oil CBs. SP AusNet advises that:

   > The large fleet represents a significant risk for SP AusNet if a rapid failure mode develops in that fleet, because the company would not be able to address such an event when there are over 200 circuit breakers connected to the transmission system.[122]

   However all of the 66kV CBs proposed for replacement as part of these six station projects (around 70 in total) have been assigned an asset failure risk ranking of 'Medium/Low' in the CB risk model, corresponding to a Mean Time Between Failure (MTBF) of between 19.38 and 29.82 yrs. The relatively good condition

[119] SP AusNet, Transformer Ranking List (21 May 07), 22 May 2007; CB Model Output (21 May 07), 23 May 2007; and CT Data, 28 May 2007.

[120] SP AusNet, Emails to AER/PB, 25 May 2007 and 6 June 2007.

[121] SP AusNet, Asset Management Strategy – Victorian Electricity Transmission Network, February 2007, pp.68-69.

[122] SP AusNet, Thomastown Terminal Station Refurbishment, 17 January 2007, p.4.

and continued reliability of the 66kV LG4C CBs is confirmed by SP AusNet in its AMS documentation:

> The fleet of LG4C CBs number approximately 208 and is the largest within the SP AusNet fleet. They are in the medium range in terms of overall per unit cost of ownership (planned and unplanned maintenance costs combined).
>
> They are at present quite reliable with the ratio of planned to unplanned maintenance activities being approximately 2 to 1 in terms of both cost and work orders.[123]

On the basis of the information provided by SP AusNet, the AER considers that the need and economic justification for replacement of assets within 66kV switchyards (particularly the LG4C fleet of CBs) over the forthcoming regulatory control period is questionable. The AER does not accept SP AusNet's claims that advanced replacement of 66kV CBs is required over the forthcoming regulatory control period so as to prevent a 'bow-wave' of replacement in future regulatory control periods.

Nuttall Consulting reviewed SP AusNet's AMS documentation relating to its replacement strategy for the 66kV LG4C CBs, and makes the following comments:

> …a type-based replacement strategy would not be considered best practice, unless a type-specific failure mechanism was known, and/or the risks of such a mechanism occurring were significant.
>
> The SP AusNet documentation does not discuss any known systemic problems with the *LG4C* breakers that specifically warrant an early replacement program. Furthermore, SP AusNet's circuit breaker risk model indicates that the fleet of *LG4C* breakers are in a good condition, whereby the "effective" age of the breakers proposed for replacement is significantly younger than their actual age.
>
> …setting aside unknown fleet risks, it would appear reasonable to assume that most of these breakers will last at least another 10 years.[124]

Further, given SP AusNet's advice that the 66kV LG4C CBs are currently relatively inexpensive to maintain, the AER considers that SP AusNet's inclusion of significant refurbishment costs in its NPV analyses for deferred replacement options is questionable. Nuttall Consulting comments:

> On this matter, it is not clear why this overhaul is required at all, noting that the risk model indicates they are in relatively good condition.[125]

More generally, the AER considers that there are a number of inconsistencies across each of the NPV analyses presented by SP AusNet (discussed below), which detracts from the robustness of SP AusNet's economic justification for its

[123] SP AusNet, AMS – Victorian Electricity Transmission Network: Circuit Breakers – Summary of issues and strategies, 9 January 2007, p.21.

[124] Nuttall Consulting, Review the of AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.3.

[125] ibid.

proposed forecast capex. After reviewing the NPV analyses for SP AusNet's proposed 66kV switchyard redevelopments, Nuttall Consulting considers that, given the observed inconsistencies:

> …it is difficult to gain comfort from this NPV analysis that the replacement of these breakers, while they are still in good condition, is prudent and efficient.[126]

On the basis of a station-by-station analysis of SP AusNet's documentation, and as informed by SP AusNet's apparent strategic drivers, the AER has concluded that SP AusNet's proposed capex allowance for the redevelopment of 66kV switchyards in five station rebuild / refurbishment projects can not be said to reasonably reflect prudent and efficient expenditure required over the forthcoming regulatory control period.

The exception is SP AusNet's proposed redevelopment of the 66kV switchyard at RWTS, which the AER considers reasonably reflects prudent and efficient expenditure given the need to release 66kV LG4C maintenance spares.[127]

After reviewing the AER's analysis and SP AusNet's documentation relating to the proposed replacement of 66kV LG4C CBs, Nuttall Consulting concludes:

> …based upon the information provided to Nuttall Consulting for this review, a clear technical argument has not been demonstrated that SP AusNet's proposed replacements during the next period will be required to maintain the quality, reliability and security of the transmission network.[128]

2. Replacement of assets within 220kV switchyards

The AER considers that SP AusNet's proposed redevelopment of 220kV switchyards is justified for five out of the six station projects which include an associated capex allowance (at TTS, RWTS, GNTS, KTS and GTS). For the BLTS project, the AER considers that SP AusNet's quantitative asset failure risk model outputs do not support the need to redevelop the entire 220kV switchyard. Given the option to implement a targeted replacement of high-risk assets in the 220kV switchyard (particularly 220kV CTs) rather than redeveloping the entire switchyard, the latter can not be said to reasonably reflect prudent or efficient expenditure required over the forthcoming regulatory control period.

3. Replacement of transformers

The AER considers that SP AusNet has demonstrated a need for transformer replacements at each of the five stations which include an associated capex allowance. However the AER considers that SP AusNet's proposed replacement of one transformer (at TTS) is not justified given the outputs of the Transformer

[126] ibid.

[127] This assessment should be considered in conjunction with the AER's conclusions regarding SP AusNet's 'Replacement of 66kV CBs' project (discussed above).

[128] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.3.

risk model and taking into account the opportunity to use spare units released from elsewhere on its network.

In reviewing the NPV analyses provided by SP AusNet for these seven station projects, the AER makes the following observations:

- SP AusNet's selection of options for detailed review is often somewhat subjective and is inconsistent across similar projects.
- SP AusNet applies an 'inefficiency factor'[129] to the capex costs associated with the deferred replacement option for many of its station projects (ranging from 15% to 29%), which acts to advantage the upfront replacement option.
- SP AusNet has not justified the significant additional costs associated in its analyses with the deferral options (eg. refurbishment costs, bunding costs) for some of its station projects.
- SP AusNet has combined multiple elements of the project scope together into a single NPV in some cases, while in other cases each element is presented in a separate NPV analysis.

Given the inconsistencies within the NPV analyses presented by SP AusNet, the AER considers that it is difficult to rely heavily on them as providing a robust economic justification for upfront capex in marginal cases. Nuttall Consulting reviewed the NPV analyses provided by SP AusNet, and makes the following comments:

> …the NPV analysis appears inconsistent in the treatment of maintenance costs, risk costs and capital costs across the various substation rebuild projects. For example, in some cases a deferral option requires an expensive overhaul/refurbishment of the *LG4C* breakers; in others the overhaul is not required.
>
> …Furthermore, there are many parameters that impact the lowest NPV option that do not have a clear explanation as to their derivation.[130]

Based on a thorough analysis of the information provided by SP AusNet, the AER has made a downward adjustment of $37.3m to SP AusNet's proposed forecast capex allowance to reflect its conclusions in relation to these seven station rebuild / refurbishment projects. The AER considers that these adjustments result in a forecast capex allowance for these projects which reasonably reflects an efficient and prudent level of capex that will allow SP AusNet to comfortably maintain the quality, reliability and security of supply in accordance with the NER.

After reviewing all of the AER's analysis and SP AusNet's documentation regarding the proposed forecast capex at these seven stations, Nuttall Consulting concludes:

[129] The 'inefficiency factor' or 'cost penalty' is applied by SP AusNet as a percentage of capex costs for the deferred replacement options in the NPV analyses for a number of station projects. It is intended to capture the additional costs associated with staged replacement and multiple design and project management related expenditures.

[130] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.3.

> There are a number of significant technical matters raised by SP AusNet in support of its proposed ex ante capital expenditure. Whilst these matters are appropriate in principle, Nuttall Consulting does not consider that SP AusNet's documentation provides sufficient evidence in support of these technical matters to reasonably justify that its proposed expenditure is prudent and efficient.
>
> Further, Nuttall Consulting has found nothing in the information presented to confirm that the basis of the AER's adjustments will not allow SP AusNet to maintain the quality, reliability and security of the transmission network.[131]

In conclusion, the AER notes that although these seven projects were not included in the detailed sample project review, these findings are consistent with PB's detailed project-specific findings, particularly with respect to the RTS and HWPS project reviews. Further, these findings tend to confirm the AER's concerns that, at a strategic level, SP AusNet's proposed replacement capex program appears unjustifiably aggressive in terms of addressing genuine asset failure risks expected over the forthcoming regulatory control period. On the basis of these findings, the AER considers that SP AusNet's proposed capex allowance is excessive, and does reasonably reflect a prudent and efficient level of expenditure required to meet the capex objectives.

The AER's downward adjustment of $37.28m is set out in table 4.14 below, on a station-by-station basis.

The AER's detailed station-by-station analysis of these seven projects is set out in appendix B.2 of this draft decision.

[131] ibid., p.6.

Table 4.14: AER's conclusions – Adjustments to station rebuild / refurbishment projects ($m, 2007-08)

		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Brooklyn TS (BLTS)	*SPA*	0.00	0.00	5.19	29.87	16.80	0.00	51.85
	AER	0.00	0.00	-0.54	-8.27	-1.75	0.00	-10.56
Thomastown TS (TTS)	*SPA*	3.90	22.92	15.37	1.54	0.00	0.00	43.73
	AER	-2.14	-9.06	0.00	0.00	0.00	0.00	-11.20
Ringwood TS (RWTS)	*SPA*	10.94	8.85	0.42	1.18	1.62	6.36	29.38
	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Glenrowan TS (GNTS)	*SPA*	0.00	0.00	0.00	0.43	6.82	14.07	21.32
	AER	0.00	0.00	0.00	0.00	-2.46	-2.46	-4.92
Keilor TS (KTS)	*SPA*	15.14	12.22	0.25	3.92	8.09	0.00	39.62
	AER	-1.56	-3.64	0.00	0.00	0.00	0.00	-5.20
Hazelwood TS (HWTS)	*SPA*	0.00	0.39	6.21	12.81	0.00	0.00	19.41
	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Geelong TS (GTS)	*SPA*	10.42	5.90	12.17	0.00	0.00	0.00	28.50
	AER	-2.20	0.00	-3.21	0.00	0.00	0.00	-5.41
Total - seven station projects:								
SP AusNet's proposed capex		40.40	50.28	39.61	49.75	33.33	20.44	233.80
PB's recommended adjustment		0.00	0.00	0.00	0.00	0.00	0.00	0.00
AER's total adjustment		**-5.89**	**-12.70**	**-3.75**	**-8.27**	**-4.21**	**-2.46**	**-37.28**
AER's conclusion		34.50	37.58	35.85	41.48	29.12	17.98	196.52

4.6.5 Adjustment as a result of detailed sample project review of selected past capex projects

The AER has reviewed SP AusNet's documentation regarding its ex post capex on inventory, and agrees with PB that SP AusNet has incorrectly capitalised opex items (ie. 'normal store lines' – nuts, bolts, washers, etc) during the current regulatory control period.[132] However the AER considers that applying an adjustment to SP AusNet's ex post capex allowance for inventory to reflect this assessment is problematic given that expenditure on 'normal store lines' represents prudent and efficient opex, and therefore a corresponding ex post opex adjustment would be required. Based on its findings in the detailed ex post review of SP AusNet's proposed prudent capex allowance for inventory, PB recommends a downward adjustment of $0.24m to SP AusNet's forecast capex allowance for inventory to remove the capitalisation of 'normal store lines' going forward.

The AER accepts PB's recommendations, and considers that SP AusNet's current practice of capitalising 'normal store lines' into its RAB and receiving a return on these items is not in accordance with standard accounting practice, nor with SP AusNet's own capitalisation policy.[133] Specifically, the AER considers that SP AusNet's proposed capex for this project:

[132] Appendix A to this draft decision (past capex) contains PB's findings and the AER's considerations with respect to the detailed ex post review of SP AusNet's capex on inventory.

[133] SP AusNet, PN 1: Property,Plant and Equipment.

- does not reasonably reflect benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- does not take into account the substitution possibilities between opex and capex across its network, given that these items should be included in the opex (rather than capex) allowance (cl. 6A.6.7(e)(7)).

On this basis the AER agrees with PB's recommendations to make a downward adjustment of $0.24m to SP AusNet's proposed forecast capex allowance, as set out in table 4.15. This amount represents around 10% of SP AusNet's proposed forecast capex for inventory – the estimated proportion of 'normal store lines'.

Table 4.15: AER's conclusion – Adjustment to forecast capex allowance for inventory ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	0.35	0.38	0.38	0.38	0.38	0.38	2.25
PB's recommended adjustment	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.24
AER's adjustment	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.24
AER's conclusion	0.31	0.34	0.34	0.34	0.34	0.34	2.01

The AER has included a corresponding amount in SP AusNet's forecast opex allowance to offset the forecast capex adjustment in table 4.15 (see section 7.7.4 of this draft decision).

4.6.6 SP AusNet's cost accumulation process

This section examines whether SP AusNet's cost accumulation process provides a reasonable basis for estimating the cost and profile of its forecast capex over the forthcoming regulatory control period. Specifically it reviews SP AusNet's proposed base unit costs, labour and materials cost escalations, project expenditure profiles ('S-curves'), 'brownfield factors', and contingency allowances.

SP AusNet has undertaken the following cost accumulation process in developing its annual forecast capex profile (for network asset projects) for the forthcoming regulatory control period:

- estimated the capital cost in $2006-07, using base materials and labour cost estimates developed in 2005-06
- applied real escalations for labour and materials costs
- escalated by a forecast inflation rate (2.6%) to arrive at $2007-08 capex costs
- determined the likely expenditure profile of each proposed project using S-curves based on the type, location and size of the project.

In addition to this general cost accumulation process, SP AusNet has applied specific cost adjustments to certain aspects of its forecast capex proposal, as follows:

- A 'brownfield factor' is applied to certain projects and in certain locations where the work is forecast to take place at an existing site, to reflect the additional cost associated with the need to plan and work around existing assets to maintain reliability. The brownfield factor has been applied as either a generalised percentage of base capital costs (as high as 11% of total project costs in some cases), or built into the base capital costs themselves.
- A contingency allowance (average 7%) has been included in cost estimates for all station rebuild / refurbishment projects proposed over the forthcoming regulatory control period.

PB outlines three methods that SP AusNet uses to develop its forecast project capex costs:

(1) Base unit cost estimates are based on high-level unit prices and contain limited information regarding site-specific requirements.

(2) Preliminary planning estimates consider site-specific requirements in conjunction with high-level unit costs.

(3) The 'Expert Estimator' system allows detailed, highly categorised cost estimates to be prepared based on a detailed project specific scope and a thorough understanding of site requirements.[134]

PB considers that the accuracy of the SP AusNet's forecast capex cost estimates increases significantly as the estimate progresses through each of the three stages of cost estimation.

Base unit costs

This section sets out PB's analysis and the AER's considerations with respect to SP AusNet's base unit cost estimates, which is the first stage in SP AusNet's cost accumulation process.

SP AusNet's proposal

SP AusNet's base unit costs underpin all of its cost estimates for capex projects forecast to be undertaken over the forthcoming regulatory control period. These are essentially unit rates for different transmission asset types including switchgear, transformers and reactive support, as well as more general substation civil and establishment costs. SP AusNet states that it developed its $2006-07 base unit cost database using cost estimates developed in 2005-06. SP AusNet has then escalated these base unit costs to form the $2007-08 costs which underpin its forecast capex proposal.[135]

[134] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.123. PB notes that SP AusNet has used the Expert Estimator system to develop its cost estimates for nine of the ten station rebuild projects.

[135] Base unit costs have been escalated by CPI (2.6%) as well as real labour and materials escalations (see discussion below).

Consultant's review

As part of its review PB developed unit cost benchmarks from a range of external and internal sources to compare against SP AusNet's proposed $2007-08 base unit costs (inclusive of escalations).

PB has examined individual unit costs (70 in total) that SP AusNet has used in its planning processes for a range of its proposed forecast capex projects.[136] PB compares SP AusNet's average unit cost for each element against:

- costs incurred by SP AusNet for the same or similar types of equipment purchased / installed during the current period
- publicly available unit cost information
- PB's own internal database of unit costs.

In order to make a reasonable comparison between SP AusNet's proposed unit costs and the benchmark unit costs, PB has adjusted for a number of different variables (ie. CPI, exchange rates, voltage, capacity, design differences). PB also makes an adjustment for the 'brownfield factor' of 8% where applicable, to reflect the additional cost associated with the need to plan and work around existing assets at an existing site. PB states that an average 8% brownfield factor is supported by the SKM report provided by SP AusNet in support of its proposal.[137]

Even after making these specific adjustments, PB recognises that:

> PB considers that when comparing SPA's forecast costs with the publicly available information and the information from its own database of costs, there will be some element of error. PB is of the view that costs within 20% of the benchmark should be considered to be reasonable.[138]

PB concludes that all of SP AusNet's unit costs are within ± 20% of its benchmark costs, with one exception, as illustrated in table 4.16.

Table 4.16: Benchmark of SP AusNet's unit costs – items with a significant variance ($m, 2007-08)

Description	SP AusNet ($/average)	PB benchmark ($/average)	Variance (%)
New control room giving extra space	975,000	300,000	69.2

Source: PB[139]

[136] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.55-60.

[137] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* p.40.

[138] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.56.

[139] ibid., pp.59-60.

PB advises that SP AusNet's average substation control room cost was derived from four projects examined as part of the detailed review – three ex post station projects (MTS, RCTS, BTS) and one ex ante station project (HWPS).

PB considers that although SP AusNet's control room unit costs are outside the ± 20% range according to its benchmark costs, the adjustment required would be immaterial to the aggregate forecast capex requirement. On this basis PB does not recommend an adjustment for the cost variance on control room costs.

AER's considerations

The AER considers it important to benchmark SP AusNet's unit cost estimates against external independent data in order to inform an assessment on the overall efficiency of its forecast capex proposal. The AER accepts PB's benchmark costs as representing efficient and prudent costs against which to compare SP AusNet's proposed forecast capex, given the nature and number of the data sources used. It is also accepted that a range of ± 20% is reasonable for this type of benchmarking exercise, given that the benchmark transmission elements are unlikely to be a perfect proxy for SP AusNet's transmission equipment elements.

Having regard to PB's analysis the AER considers that, on the whole, SP AusNet's unit cost estimates represent reflect efficient and prudent costs.

In relation to SP AusNet's control room costs, the AER considers that PB has attempted to account for all reasonable and material variances (ie. cost and scope) in its analysis. On this basis the AER considers that SP AusNet's proposed cost of this item can not be said to reasonably reflect a prudent and efficient capex cost. Although the amount of the adjustment is unlikely to be materially significant in terms of the total project costs, the AER considers it appropriate to remove control room costs in excess of the PB benchmark from the forecast capex allowance for the Refurbishment of HWPS project, for the following reasons:

- PB's benchmark costs of $300,000 for a similar scoped control room represent the costs of a prudent and efficient TNSP (cl. 6A.6.7(e)(4)).
- SP AusNet's proposed control room costs at HWPS[140] of around $693,000 exceed the efficient benchmark costs by a material amount (around 53%).

On this basis, the AER has made an adjustment of $0.33m to SP AusNet's proposed control room costs at HWPS to remove costs in excess of the benchmark expenditure (>20% variance) that, on the basis of PB's advice, would be incurred by an efficient TNSP. The AER's adjustment is set out in table 4.17.

[140] SP AusNet, Refurbishment of Hazelwood Power Station 220kV Switchyard, 25 January 2007.

Table 4.17: AER's conclusion – Adjustment to allowance for HWPS Refurbishment for inefficient control room costs ($m, 2007-08)[141]

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	4.90	11.70	8.60	3.40	5.60	1.50	35.70
PB's recommended adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AER's adjustment	0.00	-0.33	0.00	0.00	0.00	0.00	-0.33

* During the review SP AusNet revised its capex estimate for HWPS to $35.7m (the amount in the published Proposal was $36.6m).

Labour and materials price escalations

This section sets out PB's advice and the AER's considerations of SP AusNet's proposed real capex escalations over the forthcoming regulatory control period.

SP AusNet's proposal

SP AusNet proposes to apply a real escalation to its base capex estimates to account for real increases in labour and materials prices expected over the forthcoming regulatory control period. SP AusNet states that as 2005-06 costs have been used to generate its $2006-07 cost estimation database, it has applied a once-off real escalation (of around 4.7% averaged across its asset base) to reflect the labour and materials cost increases observed towards the end of the current regulatory control period. SP AusNet proposes to maintain capex costs at this level in real terms throughout the forthcoming regulatory control period. As table 4.18 illustrates, the effect of applying SP AusNet's proposed real escalations to its capex is to increase its proposed forecast capex allowance by a total of $35.7m over the forthcoming regulatory control period.

Table 4.18: SP AusNet's proposed real labour and materials escalations – all capex ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	5.4	5.8	5.8	5.9	6.1	6.6	35.7

SP AusNet's proposed escalations for each of its seven network asset classes are set out in table 4.19 below, which indicates that labour is the dominant component in SP AusNet's proposed capex estimates (over 60%).

[141] As the AER expects that construction of the control room at HWPS will occur in the early part of the forthcoming regulatory control period, the adjustment has been made to year two expenditure.

Table 4.19: SP AusNet's proposed real labour and materials escalators - by asset class

Asset class	Materials component (%)	Materials escalation (%)	Labour component (%)	Labour escalation (%)	Effective escalation (%)
Secondary	25.0%	0.0%	75.0%	6.0%	4.5%
Switchgear	40.0%	3.0%	60.0%	5.0%	4.2%
Transformers	70.0%	10.0%	30.0%	5.0%	8.5%
Reactive	45.0%	3.0%	55.0%	5.0%	4.1%
Lines	30.0%	0.5%	70.0%	4.0%	3.0%
Establishment	20.0%	2.0%	80.0%	4.0%	3.6%
Communications	25.0%	0.0%	75.0%	6.0%	4.5%
Non-network	N/A	N/A	N/A	N/A	N/A
Average	**36.4%**	**2.6%**	**63.6%**	**5.0%**	**4.6%**

Source: SP AusNet[142]

The effect of applying the proposed escalations is to increase SP AusNet's capex forecast by a total of $35.7m over the forthcoming regulatory control period, as indicated by table 4.20.

Table 4.20: SP AusNet's proposed real labour and materials escalations

Asset class	Base year capex ($m)	Escalation (%)	Escalation ($m)	Proposed capex ($m, 07-08)*
Secondary	107.2	4.5%	4.8	114.9
Switchgear	282.2	4.2%	11.9	301.0
Transformers	124.4	8.5%	10.6	138.4
Reactive	34.1	4.1%	1.4	36.4
Lines	29.3	3.0%	0.9	30.9
Establishment	125.6	3.6%	4.5	133.4
Communications	36.7	4.5%	1.7	39.4
Non-network	59.3	0.0%	0.0	60.8
	798.8	**4.6%**	**35.7**	**855.2**

* Capex in 2007-08 real terms includes a CPI adjustment of 2.6%
Note: SP AusNet's proposed escalations in table 4.20 are based on its original proposed forecast capex allowance.

SP AusNet advises that it has generated its proposed real capex escalations internally, using its experience in purchasing, design and installation from past projects. SP AusNet submitted a report by Sinclair Knight Merz (SKM),[143] which it states validates its proposed escalations over the forthcoming regulatory control period. By way of comparison with SKM's observations of real cost increases over the current regulatory control period, SP AusNet presents its proposed real step-change in capex as:

[142] SP AusNet, *Escalation of project costs*, pp.6-7. Given that SP AusNet has not provided the materials and labour components of its 'Communications' asset class, the AER has assumed the same split of labour and materials as in the 'Secondary' asset class.

[143] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* 21 February 2007.

> …a more conservative assumption than the increase observed in the SKM Report, which estimated that substation switchbay costs exceeded CPI by 5 percent and transformer bay costs exceeded CPI by 6 percent.[144]

SP AusNet also states that its proposal to maintain its capex costs (on average) at this level in real terms for the duration of the forthcoming regulatory control period is conservative compared with SKM's projections.

Consultant's review

PB undertook a review of SP AusNet's documentation relating to its proposed real capex escalations, including the SKM report, and drew the following conclusions:

- SKM's observations of real cost increases between 2005-06 and 2006-07 for substations (3.3%) and transformers (9.2%) support SP AusNet's proposed step-change to its base year 2005-06 capex costs.
- SP AusNet's proposal to maintain capex costs in real terms over the forthcoming regulatory control period is reasonable and slightly more conservative than SKM's projections.
- SP AusNet's adjusted 2007-08 real capex costs (ie. after the real average step-change) benchmark reasonably well against both publicly available information and PB's own internal cost database.
- SP AusNet's allocation of materials and labour costs is reasonable.
- The SKM report is well-presented and reliable as a reference.

AER's considerations

The AER accepts PB's advice that a base year assumption of 2005-06 is reasonable and accurate (for modelling purposes) and on this basis a base year assumption of 2005-06 has been adopted throughout this section.[145]

On the basis that SP AusNet's escalated $2007-08 capex costs benchmark reasonably well, PB advises that SP AusNet's proposed real capex escalations appear reasonable. The AER accepts PB's advice with respect to SP AusNet's escalated $2007-08 costs, however the results of the benchmarking exercise do not necessarily imply that real capex costs should remain at this level for the duration of the forthcoming regulatory control. In order to assess the reasonableness of SP AusNet's proposed real capex escalations for each year of the forthcoming regulatory control period the AER has undertaken a detailed analysis of the information provided by SP AusNet in support of its proposal.

The AER has considered the views of interested parties in forming a view as to the reasonableness of SP AusNet's proposed real capex cost escalations for the forthcoming regulatory control period, in particular the views expressed in

[144] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, p.56.

[145] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.55-60. The AER confirmed the 2005-06 base year assumption with SP AusNet (Email, SP AusNet to AER, 18 July 2007).

submissions from Transend, the EUCV and the EUAA. The AER agrees that it is optimal to seek competitive neutrality between the regulated and competitive sectors of the economy with respect to input cost increases, however it is important to recognise that:

- Electricity transmission plant is specialised and technical equipment, with few (if any) substitutes.
- It is generally acknowledged that there is a skills shortage in the utilities sector at present.

Therefore the AER considers it reasonable for SP AusNet to be compensated for real labour and materials price increases over the forthcoming regulatory control period, provided the level of real escalation reasonably reflects a realistic expectation of costs in accordance by cl. 6A.6.7(c)(3) of the NER.[146]

The AER considers it particularly important to assess the reasonableness of SKM's observations / projections over the period 2005-2013 given that the SKM report was submitted by SP AusNet in support of its internally generated real capex cost escalations. At a high-level, the AER considers that the SKM report is detailed and reasonably thorough, and the data upon which SKM has based its conclusions is relatively transparent and accessible. In forming a view on the reasonable level of real cost increases expected over the period SKM has considered a broad range of cost drivers in transmission equipment (including aluminium, copper, steel, oil, labour, and exchange rates).

The AER's detailed analysis of SP AusNet's proposed real capex cost escalations for the forthcoming regulatory control period is set out at appendix B.3 of this draft decision.

The AER's conclusions are summarised as follows:

- SKM's observations / projections represent a reasonable basis for comparison with SP AusNet's proposed real capex cost escalations over the forthcoming regulatory control period.[147]
- On the balance of the available information SKM's assumption of a lag between movements in base metals prices and transmission equipment prices appears reasonable, however the AER considers that the lag is not likely to be greater than one year over the forthcoming regulatory control period.
- SP AusNet's proposed real capex cost escalations are not fully supported by the data in the SKM report (lagged one year), in particular:

[146] Specifically, under cl. 6A.6.7(c)(3) the AER must accept SP AusNet's forecast capex (including real escalations) if it is satisfied that it reasonably reflects a realistic expectation of the cost inputs required to meet the capital expenditure objectives in cl. 6A.6.7(a).

[147] The AER considers SKM's observations / projections for materials and labour prices over the period are reasonable when compared against data from a number of independent sources (including ABARE, the World Bank, BIS Shrapnel and Econtech). See appendix B.3 of this draft decision for details.

- SP AusNet's proposed real cost escalations for its 'Switchgear', 'Reactive' and 'Transformers' asset classes appear to have been over-estimated and therefore do not reasonably reflect a realistic expectation of prudent and efficient capex costs.
- SP AusNet's proposed real cost escalations for its 'Secondary', 'Communications' and 'Establishment' asset classes appear to have been under-estimated and therefore an upwards adjustment has been made for capex associated with these asset classes.
- SP AusNet's proposed real cost escalations for its 'Lines' asset class compare reasonably well and therefore reasonably reflect a realistic expectation of prudent and efficient capex costs.

On the basis of the detailed analysis contained in appendix B.3 of this draft decision (summarised above), the AER is not satisfied that a net amount of $6.70m of SP AusNet's proposed real capex cost escalations reasonably reflects a realistic expectation of the cost inputs required to meet the capex objectives (cl. 6A.6.7(c)(3) of the NER). The AER has made corresponding downward adjustments to SP AusNet's proposed real capex cost escalations for each of its network asset classes, as outlined in table 4.21.

It is important to note that, for consistency, the AER's adjustments to the forecast capex allowance for real capex escalations have been made after all of the AER's other project-specific adjustments have been made.

Table 4.21: AER's conclusions – real capex cost escalations ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal (adjusted)*	3.99	4.23	5.25	4.62	3.76	4.67	26.53
AER's adjustments							
Secondary	-0.13	0.12	0.42	0.60	0.47	0.35	1.82
Switchgear	-0.42	-0.60	-1.06	-0.94	-1.79	-3.41	-8.22
Transformers	-0.02	-0.26	-0.98	-1.82	-1.45	-1.06	-5.60
Reactive	-0.01	-0.14	-0.15	-0.24	-0.18	-0.55	-1.27
Lines	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Establishment	0.34	0.78	1.14	1.25	0.94	1.63	6.09
Communications	-0.07	0.06	0.20	0.14	0.04	0.12	0.49
AER's total adjustments	**-0.31**	**-0.05**	**-0.44**	**-1.00**	**-1.99**	**-2.91**	**-6.70**
AER's conclusion	3.69	4.18	4.81	3.62	1.78	1.76	19.83

* For consistency, SP AusNet's proposed escalators have been applied to the forecast capex allowance by asset class, after all of the AER's other adjustments.

Brownfield factor

This section sets out PB's analysis and the AER's considerations of SP AusNet's application of a 'brownfield' cost factor and its cost estimation processes more generally.

SP AusNet's proposal

While in most cases SP AusNet does not apply a brownfield factor as a general escalator of base project costs (ie. in percentage terms), its detailed site-specific cost estimation process explicitly takes account of the brownfield nature of each individual site.

Consultant's review

PB advises that the extent of SP AusNet's brownfield factor is not easily observable in project cost estimates in many cases, as it is built into the base costs. However PB considers that SP AusNet has taken brownfield factors into consideration in all of its cost estimates.

During the detailed project review PB identified a number of instances where the brownfield factor had been applied by SP AusNet as a percentage escalation of base unit costs, and advises that it is as high as 11% in some cases.[148]

PB considers that SP AusNet has undergone an extensive 'learning process' throughout the current regulatory control period, especially in relation to managing the complexities of brownfield (live) terminal station redevelopment projects. PB considers that SP AusNet's project scoping and cost estimates for station projects undertaken in the current regulatory control period were developed at a high level and hence did not take full account of the technical, logistical and access issues that are specific to individual brownfield sites. PB observes that SP AusNet has used its experience from the current regulatory control period to develop an improved understanding of the particular cost drivers associated with its capex projects, particularly brownfield station projects. The learning process is evidenced by the fact that the defined scope of works associated with SP AusNet's more recently completed projects is significantly more accurate compared with the defined scope of works associated with projects undertaken earlier in the current regulatory control period.

Given these observations PB states that:

> …PB is of the view that SPA's proposed capital works are better scoped, and that the associated forward capex estimates will be considerably more accurate.[149]

AER's considerations

It is evident from the detailed sample project review that SP AusNet has (in the majority of cases) undertaken a detailed study of the scope, sequencing and cost of the proposed works included in its forecast capex proposal.

The AER agrees with PB that SP AusNet appears to have reflected its experience in implementing the current period capex program in its forecast capex proposal for the

[148] For example PB identified that SP AusNet applied a brownfield factor of around 11% and 10% in developing its cost estimates for the 'Redevelopment of RTS' and the 'Replacement of post-type CTs' projects, respectively.

[149] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.39.

forthcoming regulatory control period. This learning process is especially evident in SP AusNet's evolving application of the brownfield factor in project cost estimates as it has gained more experience – particularly with station rebuild / refurbishment projects. Further, the increasing level of accuracy in SP AusNet's forecasting over the current period is supported by PB's findings in relation to the detailed ex post project reviews (eg. refurbishment of Bendigo terminal station). The AER expects that SP AusNet's recent implementation of the Expert Estimator system has facilitated further improvements in the accuracy of its forecast project cost estimates.

On this basis the AER considers that SP AusNet's cost estimates for its forecast capex projects are generally well-considered, well-scoped and take full account of site-specific requirements. In the absence of a direct and fully transparent application of the brownfield factor (ie. percentage escalator) the AER considers that SP AusNet's application of the brownfield factor is reasonable given that:

- it is built into project cost estimates on a site-specific basis and therefore reflects SP AusNet's improved cost estimation processes
- SP AusNet's unit costs (inclusive of brownfield costs) benchmark reasonably well in the PB report.

Contingency allowance

This section sets out PB's advice and the AER's consideration of the contingency allowance included in SP AusNet's cost estimates for its proposed station rebuild / refurbishment projects.

SP AusNet's proposal

SP AusNet proposes to add a 'contingency allowance' to the cost estimates for its station rebuild / refurbishment projects forecast over the forthcoming regulatory control period. SP AusNet's proposed contingency allowance of $24.8m is set out in table 4.22 below.

Table 4.22: SP AusNet's proposed contingency allowance ($m, 2007-08)

Project	Proposed capex ($m, 2007-08)	Contingency ($m, 2007-08)	Contingency (%)
Redevelopment of Brooklyn (BLTS)	51.9	2.8	5.5%
Refurbishment of Glenrowan (GNTS)	21.3	1.5	7.0%
Refurbishment of Geelong (GTS)	28.5	2.5	8.7%
Refurbishment at Hazelwood (HWPS)*	35.7	1.7	4.8%
Refurbishment at Hazelwood (HWTS)	19.4	1.4	7.1%
Refurbishment of Keilor (KTS)	39.6	3.4	8.6%
Redevelopment of Ringwood (RWTS)	29.4	1.6	5.4%
Refurbishment of Thomastown (TTS)	43.7	3.7	8.6%
Redevelopment of Richmond (RTS)	89.7	6.1	6.8%
Total / Average	**359.2**	**24.8**	**7.0%**

Source: SP AusNet[150]
* SP AusNet's capex estimate for HWPS has been revised to $35.7m (the amount in the published Proposal was $36.6m), however the contingency amount of $1.7m remains unchanged from SP AusNet's documentation.

In support of this contingency allowance, SP AusNet advises that:

> …the contingency allowed for the station refurbishments is to cover costs that arise when this type of complex refurbishment work is undertaken. The cost estimate only covers the scope of work that could be defined. Naturally issues will arise as the detailed design and installation work is undertaken.[151]

SP AusNet did not provide any further documentation substantiating the quantum of its proposed contingency allowances for individual projects.

Consultant's review

PB recommends removing SP AusNet's proposed contingency allowance on the basis that:

- SP AusNet's base unit costs (without the inclusion of a contingency allowance) represent efficient costs when benchmarked against PB's cost database.
- The generalised 'brownfield' factor (which is as high as 11% in some cases), and the labour and materials escalations may act to double count on some of the unknowns to which the proposed contingency relates.
- The application of a contingency reduces the incentive for SP AusNet to forecast costs accurately and implement projects efficiently.

[150] SP AusNet, *Template with Estimate Technique*, 3 May 2007. Note that the contingency amount of $5.4m for the RTS Redevelopment was not included in this document from SP AusNet. On the basis of its detailed project review, PB advises that SP AusNet's cost estimate for RTS of $89.7m includes a (weighted average) contingency allowance of 6.8%.

[151] Email, SP AusNet to PB, 4 May 2007.

- The risk is effectively transferred to customers, who pay for the allowance regardless of whether the cost included for contingencies is realised.[152]

AER's considerations

The AER has reviewed SP AusNet's 'Procurement manual' supplied during the detailed review, which states that:

> Not all supply contracts require a Contingency Sum. Generally, technically complex works or projects may require a Contingency Sum where there maybe unforeseen technical issues that make it difficult to accurately scope the supply of materials or labour beyond an estimated contract quantity…
>
> The value of the Contingency Sum is nominally 5% of the contract award value. Higher Contingency Sum values may be sought from the EAC [Expenditure Approval Committee] if justified.[153]

The AER recognises that unforeseen events may occur during the implementation stage of a project that are inherently difficult to forecast at the project design and cost estimation stage. However the AER considers that SP AusNet's proposed contingency allowance is inappropriate, for the following reasons:

- SP AusNet has not presented any strong evidence justifying the need or quantum of its proposed contingency allowances for each individual station rebuild project.
- The proposed average contingency allowance of 7.0% of total project costs is above the level that the AER would expect given the types of risks that SP AusNet states that it is attempting to capture.[154]
- It is likely that SP AusNet's base unit costs already address some cost uncertainties given that the cost database is updated on an ongoing basis to reflect actual project outcomes.
- SP AusNet has had five years of experience undertaking complex station rebuild / refurbishment projects, in both regional and metropolitan areas. It should therefore have a more thorough understanding of the typical project scope and the scope changes that can occur during implementation, reducing the need for such a significant generalised contingency factor.
- SP AusNet has included a number of other risk mitigation allowances in its forecast capex proposal. These include the 'brownfield factor' in all cost estimates involving work at a brownfield site, a suite of 'response capability' projects catered to unforeseen events, and real labour and materials cost escalations. The combined effect of these allowances and the proposed contingency allowance for station rebuild / refurbishment projects potentially

[152] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.123.

[153] SP AusNet, Procurement Manual: Buying for SP AusNet, June 2006, p.47

[154] For example, the AER approved a 'Cost estimation risk factor' in the recent Powerlink decision of 2.6% (AER Decision, *Powerlink Queensland transmission network revenue cap: 2007-08 to 2011-12,* 14 June 2007, p.43).

double-counts the risks intended to be captured by the proposed contingency allowance, and overestimates the costs likely to be incurred.

While the AER recognises that provision for a contingency allowance is a common budgeting practice, the AER does not consider that SP AusNet has, in this instance, demonstrated that the contingency allowance for its proposed station rebuild / refurbishment projects reasonably reflects the capex of a prudent and efficient TNSP (cl. 6A.6.7(e)(4)) required to meet the capex objectives in the NER.

Therefore in the absence of a robust justification for the proposed contingency allowance, the AER has made an adjustment to SP AusNet's proposed forecast capex allowance of $21.8m to remove the contingency allowance from all nine station rebuild / refurbishment projects, as set out in table 4.23.

Table 4.23: AER's conclusion – contingency allowance ($m, 2007-08)[155]

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.54	4.24	3.57	3.76	5.51	4.19	24.81
PB's recommended adjustment	-2.30	-2.60	-2.30	-2.90	-4.10	-4.30	-18.60
AER's adjustment	-3.54	-4.24	-3.57	-3.76	-3.84	-2.83	-21.78
AER's conclusion	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Expenditure profiles

This section sets out PB's analysis and the AER's considerations of SP AusNet's proposed capital expenditure profiles (S-curves) for its proposed forecast capex projects.

SP AusNet's proposal

SP AusNet advises that it has used over 27 different S-curves to generate expenditure profiles ('as-incurred') for its 56 proposed forecast capex projects. SP AusNet states that it has developed its S-curves based upon historical profiles for similar projects.[156]

[155] Given the AER's conclusions with respect to the detailed review of the RTS Redevelopment (see appendix B.1 of this draft decision), a portion of the 6.8% contingency allowance included in the cost estimate for RTS has already been removed from the forecast capex allowance. The AER has removed the contingency amount from the AER's approved amount of capex at RTS. Note that PB's recommended adjustment did not include removal of the RTS contingency allowance.

[156] SP AusNet, Escalation of project costs, p.4.

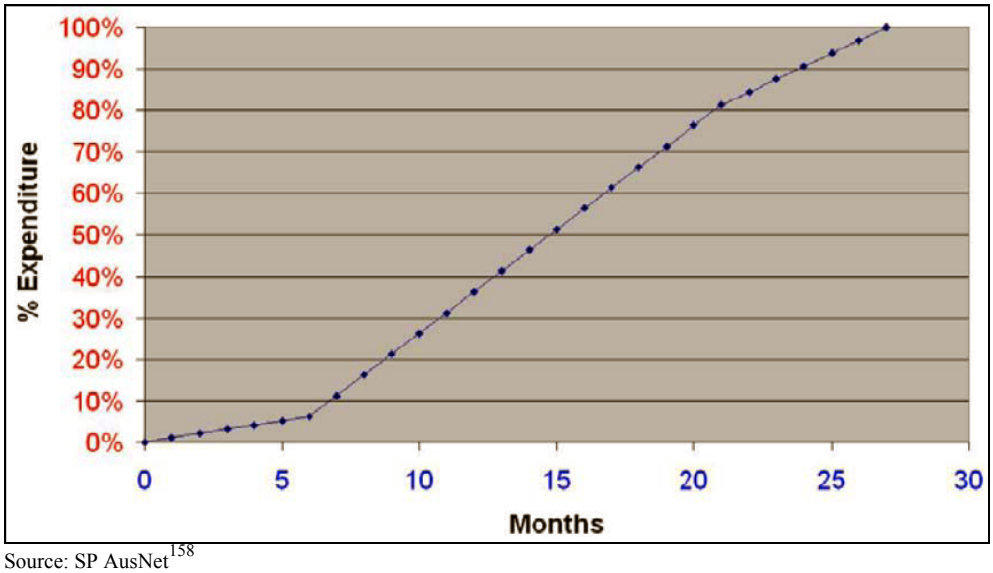
Consultant's review

During the review SP AusNet supplied a sample of four of its twenty seven S-curves to PB.[157] Based on an analysis of these four S-curves, PB makes the following observations:

- *S-curve for purchase and install replacement 220kV CTs*: the overall timeframe of 7 months to complete is reasonable however the 3-month installation time seems higher than expected, albeit not unreasonable.
- *S-curve for insulator strings on high load towers*: a 5-month profile is not unreasonable given supply lead times and work scheduling requirements.
- *S-curve for station rebuild > $25m*: the timing profile provided over the 27-month period potentially front-loads the project expenditure, and is therefore considered unreasonable.

Later in the review process SP AusNet provided a second version of the S-curve for station rebuild projects (>$25m) to PB. The two S-curves submitted by SP AusNet are displayed in figures 4.2 and 4.3 below.

Figure 4.2: S-curve for station rebuild > $25m (Version 1)

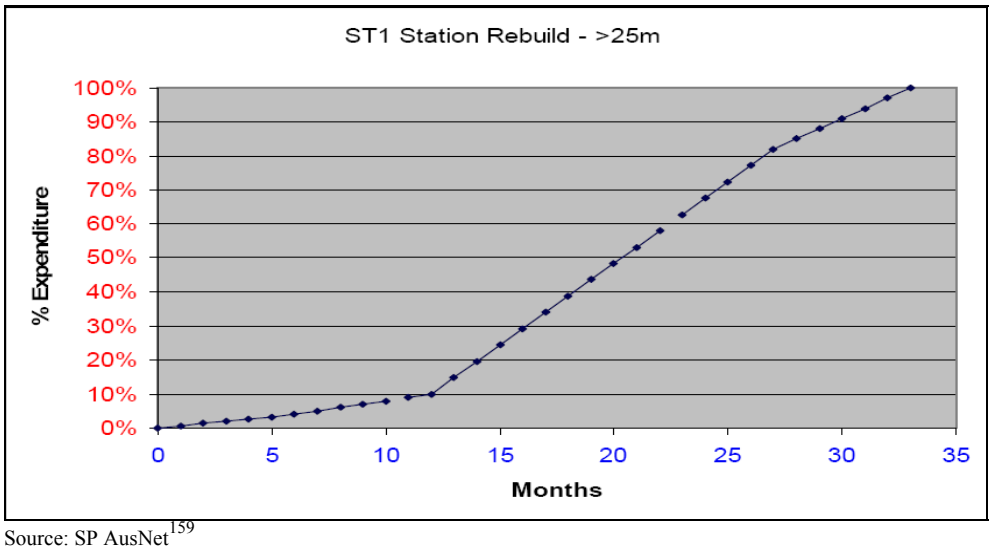


Source: SP AusNet[158]

[157] These included S-curves for: security fence upgrade; replacement of 220kV CTs; insulator strings on high load towers; and station rebuilds (>$25m).

[158] SP AusNet, Escalation of project costs.

Figure 4.3: S-curve for station rebuild > $25m (Version 2)

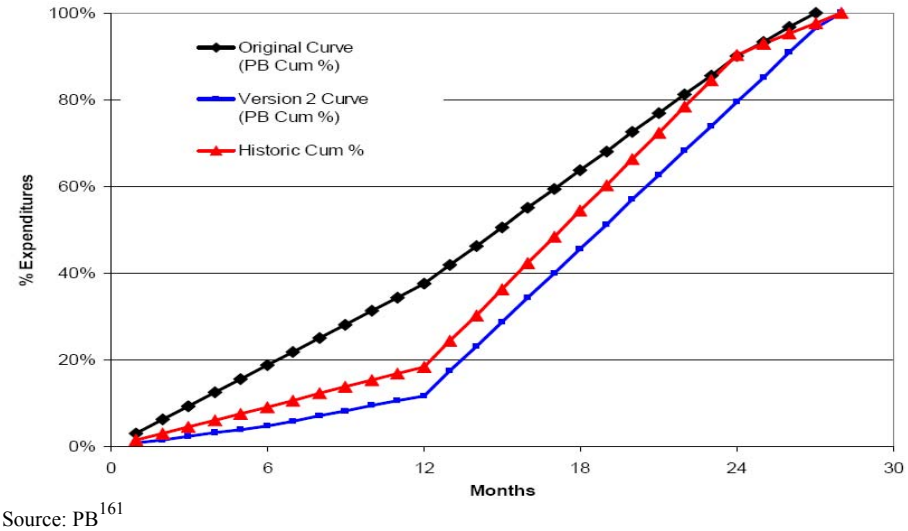


Source: SP AusNet[159]

On the basis of the two curves submitted by SP AusNet, PB considers that use of the original S-curve (Version 1) would have the effect of inappropriately and inefficiently advancing the project cash flow by around 20-25% (compared to Version 2).[160]

PB undertook an analysis of data from SP AusNet's ex post station rebuild projects which indicated that, on average, ex post station rebuild projects were completed in around 28 months. PB then applied the same timeframe to both versions of SP AusNet's ex ante station rebuild S-curves. The results are shown in figure 4.4.

Figure 4.4: PB's analysis – comparison of SP AusNet's S-curves for station rebuilds (>$25m)



Source: PB[161]

[159] Email, SP AusNet to PB, 19 June 2007.

[160] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.125.

[161] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.128.

On this basis PB considers that application of SP AusNet's original S-curve for station rebuild projects (Version 1) significantly front-loads expenditure when compared with both the revised S-curve (Version 2) and the ex post station rebuild S-curve. On this basis PB concludes that:

- SP AusNet has presented conflicting evidence regarding the S-curve actually used for its large station rebuild projects.
- The original S-curve as submitted by SP AusNet is inappropriate.

As part of the detailed project review for the 'Redevelopment of RTS' project, SP AusNet submitted an S-curve that is reflective of Version 2 of the station rebuild S-curve (figure 4.3). On the basis that this S-curve reflects a reasonable expenditure profile PB does not recommend any high-level adjustments to SP AusNet's proposed forecast capex allowance.

AER's considerations

The AER has examined SP AusNet's documentation and PB's analysis in forming its conclusions with respect to SP AusNet's proposed expenditure profiles.

The AER notes that SP AusNet's application of 27 different S-curves over its 56 separate projects (ie. around one S-curve for every two projects) is unusually high based on a comparison with other TNSPs.[162] However the AER considers that this may simply be indicative of SP AusNet's fine-tuning of project expenditure profiles according to the particulars of individual projects. This assessment is consistent with the AER's observations of SP AusNet's cost estimation processes in other areas (eg. brownfield factor). Therefore the fact that SP AusNet applies such a large number of S-curves is not necessarily of concern.

Based on PB's advice, the AER is concerned that the profile applied by SP AusNet for its large station rebuild projects may be front-loaded. Although it is evident that the S-curve submitted by SP AusNet supporting its expenditure profile for the 'Redevelopment of RTS' project reflects a reasonable profile, the AER sought to ascertain whether the original S-curve provided by SP AusNet has been applied in any cases.

The AER sought a further two S-curves from SP AusNet relating to the following station rebuild projects proposed for inclusion in the forecast capex allowance:

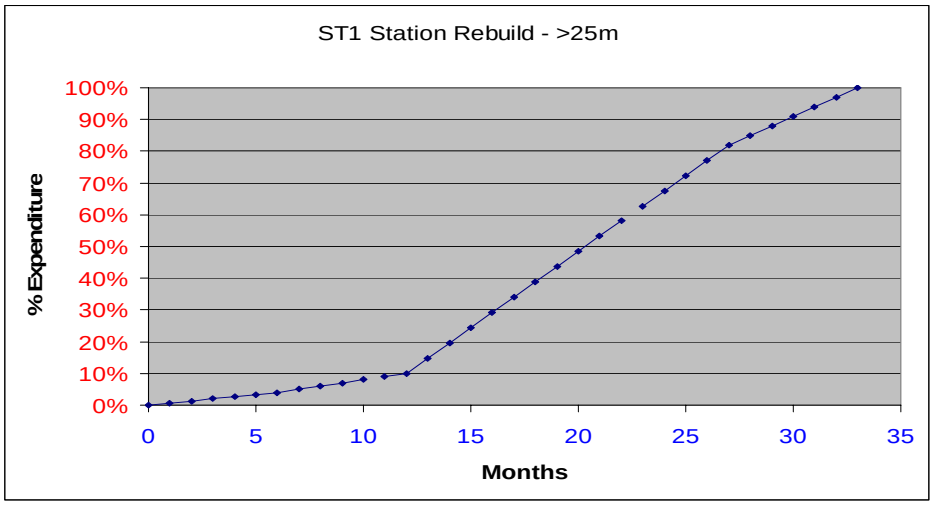
- Refurbishment of Thomastown Terminal Station (TTS) – total forecast capex cost $43.7m, spanning 2008-09 to 2011-12.
- Redevelopment of Ringwood Terminal Station (RWTS) – total forecast capex cost $29.4m, spanning 2008-09 to 2013-13.[163]

[162] For example, in its revenue proposal for the 2007-2012 regulatory control period, Powerlink used 10 generic S-curves to generate its forecast capex proposal, which included 424 separate projects.

[163] SP AusNet, *RWTS S-curves and Escalations*, and *TTS S-curve and escalation*, 18 July 2007. Note that SP AusNet provided six separate S-curves for RWTS to reflect the different types/stages of proposed works.

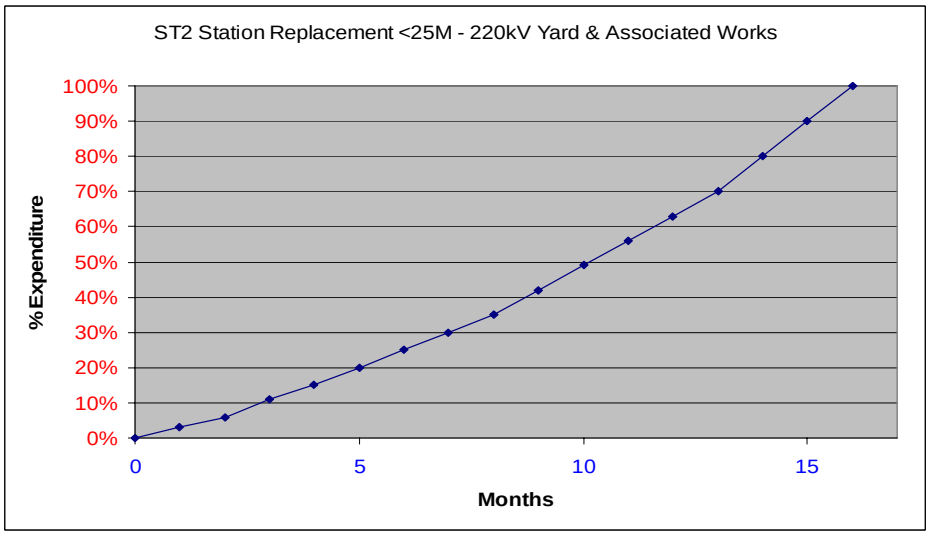
The S-curves supplied by SP AusNet for these two station projects are set out below.

Figure 4.5: SP AusNet's S-curve used for the TTS Refurbishment – Station rebuild > $25m



Source: SP AusNet

Figure 4.6: SP AusNet's S-curve for the RWTS Redevelopment – 220kV yard and associated works



Source: SP AusNet

The S-curve provided by SP AusNet for the TTS Refurbishment (figure 4.5) is equivalent to the revised S-curve for large station rebuild projects ('Version 2', figure 4.3), spanning over a 33-month timeframe. Based on PB's advice with respect to the appropriate expenditure profile for a large brownfield station rebuild project, the AER considers that the S-curve supplied by SP AusNet for the TTS Refurbishment is reasonable and appropriate. However, as table 4.24 below indicates, the profile depicted in figure 4.5 is not reflective of the profile originally proposed by SP AusNet for expenditure at TTS.

Although the difference in profile is marginal – around 4% project expenditure is brought forward to the first two years of the period using the original profile – the AER has made an adjustment to the TTS expenditure profile to reflect the appropriate S-curve submitted by SP AusNet, as set out in table 4.24.

Table 4.24: AER's conclusion – TTS Refurbishment – Expenditure profile 'as-incurred' ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.90	22.92	15.37	1.54	0.00	0.00	43.73
SP AusNet - S-curve (TTS)	3.50	21.86	18.37	0.00	0.00	0.00	43.73
AER's adjustment	-0.40	-1.06	3.00	-1.54	0.00	0.00	0.00
AER's conclusion	3.50	21.86	18.37	0.00	0.00	0.00	43.73

SP AusNet provided a total of six separate S-curves for the RWTS Redevelopment, relating to each of the separate elements of the proposed works. The proposed staging of works is broadly summarised as follows:

- 2008-09 – 2010-11: refurbishment of the 22kV yard and associated secondary and establishment works (around 30 months).
- 2010-11 – 2012-13: refurbishment of the 66kV yard and associated works (16 months).
- 2012-13 – 2013-14: refurbishment of the 220kV yard and associated works (16 months).

Each of the six S-curves has a profile of 16 months, and the same shape as depicted in figure 4.6 for the 220kV Yard works (ie. 63% of expenditure occurs in the first twelve months of each element of the project).

Although the total duration of the proposed works at RWTS (around 70 months) is greater than expected for a station rebuild project, the AER considers that SP AusNet's proposed expenditure profile at RWTS is reasonable given:

- the project scope is complex, involving refurbishment of three separate yards at different voltages
- the brownfield nature of the RWTS site.

The AER considers that while the total forecast project cost is over $29m, the fact that SP AusNet's uses a different profile to the S-curve for 'station rebuild >$25m' appears reasonable due to the staggered nature of the proposed works.

However as table 4.25 indicates, the total expenditure profile submitted to the AER by SP AusNet for the RWTS redevelopment is not perfectly reflective of the profile originally proposed by SP AusNet for expenditure at RWTS. Although the difference in profile is not large, the AER has made an adjustment to the RWTS expenditure profile to accurately reflect the S-curve submitted by SP AusNet, as set out in table 4.25.

Table 4.25: AER's conclusion – RWTS Refurbishment – Expenditure profile 'as-incurred' ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	10.94	8.85	0.42	1.18	1.62	6.36	29.37
SP AusNet - S-curve (RWTS)	10.96	8.65	0.53	1.01	2.00	6.21	29.37
AER's adjustment	0.02	-0.20	0.11	-0.17	0.39	-0.15	0.00
AER's conclusion	10.96	8.65	0.53	1.01	2.00	6.21	29.37

On the basis of the additional sample of S-curves for two station rebuild projects, the AER has made minor adjustments to the expenditure profiles for each of these projects. While the discrepancies identified between SP AusNet's originally proposed expenditure profiles and the S-curves submitted as part of the review is of potential concern, the AER has not made any further changes to SP AusNet's expenditure profile for the following reasons:

- the S-curves presented appear reasonable and appropriate given the nature of the projects reviewed,
- the adjustments made for discrepancies with SP AusNet's original proposed profile are minor and not of the possible magnitude suggested by PB, and
- as the adjustments made to the profiles for TTS and RWTS had the effect of bringing some expenditure forward as well as pushing some expenditure back, it is difficult to conclude that there is an overall bias towards front-loading in SP AusNet's proposal.

On the basis of the information provided, the AER considers that, on balance, SP AusNet's proposed expenditure profiles for station rebuild projects are reasonable and appropriate, and no further adjustments have been made to the remainder of the forecast capex allowance.

4.7 AER's conclusions

Based on all the available information, the AER is not satisfied that SP AusNet's total proposed forecast capex allowance of $855.26m reasonably reflects:

- the efficient costs of achieving the capex objectives
- the costs that a prudent operator in SP AusNet's circumstances would require to achieve the capex objectives
- a realistic expectation of the demand forecast and cost inputs required to achieve the capex objectives.

In undertaking its assessment of SP AusNet's proposed forecast capex allowance in accordance with the NER, the AER has had regard to the capex factors listed at cl. 6A.6.7(e). In forming conclusions with respect to specific elements of SP AusNet's proposal, the AER has given explicit consideration to:

- the information presented by SP AusNet in its revenue proposal (cl. 6A.6.7(e)(1))

- submissions from interested parties received in the course of consulting on SP AusNet's revenue proposal (cl. 6A.6.7(e)(2))
- the AER's own analysis, as outlined in this draft decision, and the analysis and recommendations of PB, Nuttall Consulting and Econtech (cl. 6A.6.7(e)(3))
- benchmark capex that would be incurred by an efficient TNSP over the regulatory control period (cl. 6A.6.7(e)(4))
- SP AusNet's actual and expected capex during the current regulatory control period (cl. 6A.6.7(e)(5))
- the relative prices of operating and capital inputs (cl. 6A.6.7(e)(6))
- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

The AER considers that the total labour costs included in SP AusNet's capex forecasts are not inconsistent with the incentives provided by the AER's service target performance incentive scheme (cl. 6A.6.7(e)(8)).

The AER notes with respect to SP AusNet's forecast capex proposal that:

- SP AusNet has not advised of any related party contracts, and
- SP AusNet has not proposed, and the AER has not identified, any projects more appropriately included in this draft decision as contingent projects.

The capex factors identified in cl. 6A.6.7(e)(9) and (10) are therefore not relevant to the AER's assessment of SP AusNet's proposal.

Under cl. 6A.6.7(d) of the NER the AER must not accept SP AusNet's total proposed total forecast capex of $855.26m, as it is not satisfied that it reasonably reflects the capex criteria taking into account the capex factors.

The AER is therefore required under cl. 6A.14.1(2)(ii) to provide an estimate of the total capex that SP AusNet will require over the forthcoming regulatory control period which the AER is satisfied reasonably reflects the capital expenditure criteria, taking into account the capex factors.

The AER has considered the proposed replacement capex program that has informed SP AusNet's forecast of the capex it will require over the forthcoming regulatory control period. The objective of the AER's assessment of specific projects has been to test the efficiency and prudence of SP AusNet's policies, procedures, replacement strategies and cost estimates, as they relate to the entire forecast capex proposal. Table 4.26 sets out the adjustments to SP AusNet's proposed forecast capex allowance for the forthcoming regulatory control period that follow from the AER's consideration of SP AusNet's forecast capex proposal under the capex criteria, and with regard to the capex factors.

Although the adjustments in table 4.26 are for the most part set out on a project-specific basis, the AER notes that the total capex after all of these adjustments is an allowance only. The AER's project-specific conclusions should not be taken to bind

SP AusNet to a particular set of project-specific capex budgets – SP AusNet has the ultimate discretion in how it allocates its capex allowance.

The total of the AER's adjustments is $176.23m, which represents around 21% of SP AusNet's total proposed forecast capex allowance of $855.26m. The AER's total adjustments to SP AusNet's proposed forecast capex result in a revised forecast capex allowance of $679.04m. The AER considers that this provides SP AusNet with sufficient allowance to meet the capex objectives over the forthcoming regulatory control period.

Table 4.26: AER's conclusions – Total adjustments to SP AusNet's forecast capex allowance ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	**128.02**	**147.70**	**140.14**	**140.85**	**139.69**	**158.87**	**855.26**
PB's recommended adjustments	-10.63	-15.23	-6.37	-21.87	-36.31	-32.55	-122.96
AER's adjustments							
Refurbishment of HWPS	-0.28	-1.41	-1.08	-1.08	-1.08	-1.08	-6.03
Redevelopment of RTS	0.00	0.00	0.00	-8.24	-25.54	-21.04	-54.81
Transformer replacements	-3.50	-5.40	2.50	-3.60	-7.90	-4.50	-22.40
Replacement of SCADA systems	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
Response capability undefined works	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
Replacement of CTs	-2.00	-3.60	-2.80	-1.37	-0.42	1.10	-9.09
Vehicle replacements	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
Inventory	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.24
Replacement of 500 kV CBs	-3.50	1.40	0.00	0.00	0.00	0.00	-2.10
Replacement of 66kV switch-bays	-1.27	-2.06	-0.14	-0.02	0.00	0.00	-3.49
Redevelopment of BLTS	0.00	0.00	-1.48	-9.22	-2.69	0.00	-13.40
Refurbishment of TTS	-3.48	-11.05	2.06	-2.48	0.00	0.00	-14.95
Redevelopment of RWTS	-0.24	-0.46	-0.16	-0.44	0.12	-0.42	-1.60
Refurbishment of GNTS	0.00	0.00	0.00	0.00	-3.21	-3.21	-6.42
Refurbishment of KTS	-2.42	-4.49	0.00	-0.86	-0.86	0.00	-8.62
Refurbishment of GTS	-3.02	-0.83	-4.04	0.00	0.00	0.00	-7.89
Refurbishment of HWTS	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-1.39
Labour and materials escalations	-0.31	-0.05	-0.44	-1.00	-1.99	-2.91	-6.70
AER's total adjustment	**-23.07**	**-31.02**	**-8.74**	**-31.46**	**-46.72**	**-35.20**	**-176.23**
AER's conclusion	**104.95**	**116.68**	**131.40**	**109.39**	**92.97**	**123.67**	**679.04**

Note 1: SP AusNet's proposed forecast capex allowance includes revisions made by SP AusNet during the detailed review.

Note 2: The contingency allowance has been removed from each of the nine station rebuild / refurbishment projects on an individual basis.

Note 3: The adjustment for labour and materials escalations has been made to SP AusNet's total capex numbers revised in accordance with the AER's adjustments.

Note 4: Totals may not add due to rounding.

5 Cost of capital

5.1 Introduction

This chapter provides an estimate of the weighted average cost of capital (WACC) to be applied during SP AusNet's forthcoming regulatory control period. SP AusNet's WACC should represent the return required by investors in a commercial enterprise with a similar degree of non-diversifiable risk as that faced by a benchmark efficient Transmission Network Service Provider (TNSP). The WACC has several uses in the Post-Tax Revenue Model (PTRM), in particular, the WACC is applied to the regulatory asset base (RAB) to produce the return on capital, a significant building block in SP AusNet's maximum allowed revenue (MAR).

Due to the specific WACC formula prescribed by the NER, debt raising costs, equity raising costs and corporate tax are not compensated for through the WACC. Accordingly, the analysis of debt and equity raising costs can be found in chapter 6 on opex, and the analysis of corporate tax can be found in chapter 8 which addresses the MAR. This chapter does, however, consider the issue of forecast inflation, which has typically been derived by reference to the nominal risk-free rate (a WACC parameter) and is used in the PTRM.

It is important to note that the WACC calculated in this chapter is indicative only and will differ in the final decision, as the risk free rate and debt risk premium is to be calculated using data not available until closer to the date of the final decision. Therefore, in order to calculate the WACC for the purposes of this draft decision, the AER has assumed the same risk free rate and debt risk premium assumed by SP AusNet in its revenue proposal.

5.2 Regulatory requirements

Cost of capital

The AER must determine the WACC by reference to the values, methodologies and benchmarks prescribed in chapter 6A of the NER. Cl. 6A.6.2 provides that the appropriate expression of the rate of return for a TNSP under the post-tax nominal framework is the nominal vanilla WACC. Cl. 6A.6.2(b) states that the WACC is to be calculated as:

$$WACC = k_e \frac{E}{V} + k_d \frac{D}{V}$$

where:

k_e = the required rate of return on equity or cost of equity

k_d = the required rate of return on debt or cost of debt

E/V = the market value of equity as a proportion of the market value of equity and debt, which is deemed to be 40%

D/V = the market value of debt as a proportion of the market value of equity and debt, which is deemed to be 60%

Under cl. 6A.6.2(b):

- the return on equity (k_e) is to be determined using the capital asset pricing model (CAPM), calculated as:

$$k_e = r_f + \beta_e \times MRP$$

where:

r_f = the expected nominal risk-free rate of return, which is to be determined using the methodology outlined below

β_e = the equity beta, which represents the systematic risk of a company relative to the market, which under the NER is deemed to be 1.0

MRP = the market risk premium, which represents the expected return of the market in excess of the risk-free rate, which under the NER is deemed to be 6%

- the return on debt (k_d) is to be calculated as:

$$k_d = r_f + DRP$$

where:

r_f = the expected nominal risk-free rate of return, which is to be determined using the methodology outlined below

DRP = the debt risk premium, which is to be determined using the methodology outlined below

Under cl. 6A.6.2(c):

- the expected nominal risk free rate is the rate determined by the AER:

…on a moving average basis from the annualised yield on Commonwealth Government bonds with a maturity of 10 years using

1. the indicative mid rates published by the Reserve Bank of Australia; and
2. a period of time which is either:
   - a period proposed by the relevant TNSP, and agreed by the AER (such agreement is not to be unreasonably withheld); or

- a period specified by the AER, and notified to the provider prior to the commencement of that period, if the period proposed by the provider is not agreed by the AER

If there are no bonds with a maturity of 10 years on any day in the averaging period, cl. 6A.6.2(c) requires the AER to determine the nominal risk free rate by:

> …interpolating on a straight line basis from the two Commonwealth Government bonds closest to the 10 year term and which also staddle the 10 year expiry date.

Cl. 6A.6.2(c) provides that the averaging period may be kept confidential, but only until the expiration of the period. Cl. 6A.6.2(c) also states that the AER must notify the TNSP of its final decision on the TNSP's proposed period within 30 business days of receipt of the revenue proposal.

- the debt risk premium is the premium determined by the AER:

> …as the margin between the 10 year Commonwealth annualised bond rate and the observed annualised Australian benchmark corporate bond rate for corporate bonds which have a BBB+ credit rating from Standard and Poors and a maturity of 10 years.

Forecast inflation

Cl. 6A.5.3(b) states that the PTRM published by the AER must specify:

> …a methodology that the AER determines is likely to result in the best estimates of expected inflation.

The First Proposed PTRM[164], released on 31 January 2007, specifies that the same forecast inflation rate is to be used in each year of the regulatory control period, and is to be calculated as:

$$f = \frac{\left(1 + r_f\right)}{\left(1 + r_{rf}\right)} - 1$$

where:

f	=	forecast inflation
r_f	=	the expected nominal risk-free rate of return
r_{rf}	=	the expected real risk-free rate of return

[164] Cl. 11.6.18 of the NER provides that the First Proposed Guidelines, including the First Proposed PTRM, are to be used for the purposes of making SP AusNet's forthcoming transmission determination. The final version of these guidelines, to be published by the AER by 28 September 2007, will not apply to SP AusNet's forthcoming transmission determination.

AER requirement to approve revenue proposal

Cl. 6A.14.3(b) states that the AER must approve the total revenue cap and maximum allowed revenue as set out in the revenue proposal, if the AER is satisfied that:

- those amounts have been properly calculated using the post-tax revenue model, and
- those amounts, and any amount required to be calculated, determined or forecast for the purposes of calculating those amounts, have otherwise been calculated, determined or forecast in accordance with the requirements of Part C

For matters that the AER is not required to approve or accept, cl.6A.14.3(a) states that the AER may, but is not required to, refuse to approve or accept that matter.

5.3 SP AusNet's proposal

Cost of capital (Proposal - 28 February 2007)

In calculating the WACC for its revenue proposal, SP AusNet has used the values for the parameters set out in the NER, where these values are prescribed. For the nominal risk free rate, SP AusNet has provided an estimated value, proposing that this value be recalculated for the final decision using an averaging period of 10 days over dates proposed confidentially to the AER on 3 April 2007. For the debt risk premium, SP AusNet has proposed a value of 125 basis points, calculated using a hybrid approach of averaging historical data from Bloomberg and data from CPA Spectrum it has adjusted to correct for an alleged bias relating to the credit spread. SP AusNet proposes that the debt risk premium be calculated over the 20 trading days between 30 October 2006 and 24 November 2006. The key parameters underlying SP AusNet's estimate of the WACC are outlined in table 6.1 below.

Table 6.1 SP AusNet's proposal - WACC parameters[165]

WACC parameter	SP AusNet's proposal
Nominal risk free rate	5.70% (indicative)
Equity beta	1.0
Market risk premium	6%
Debt risk premium	1.25% (125bp)
Gearing (D/V)	60%
Nominal cost of equity	**11.70% (indicative)**
Nominal cost of debt	**7.06% (indicative)**
Nominal vanilla WACC	**8.85% (indicative)**

Source: SP AusNet[166]

[165] The AER notes that as SP AusNet has proposed the debt risk premium be calculated over historical dates, this figure is not affected by recent events in the US sub-prime mortgage market. SP AusNet's proposed nominal risk free rate will only be affected by the recent events in the US sub-prime mortgage market if these events have an impact on the CGS market during the period SP AusNet has proposed the nominal risk free rate be calculated (these dates were submitted confidentially).

[166] SP AusNet, Electricity Transmission Revenue Proposal 2008-09 – 2013-14, p.108.

Forecast inflation (Proposal - 28 February 2007)

For the purpose of its revenue proposal submitted on 28 February 2007, SP AusNet has derived an annual forecast inflation rate of 3.02%. This rate was determined by SP AusNet as the difference between its indicative estimates of the nominal risk free rate (5.70 %) and the real risk free rate (2.60 %), using the Fisher equation. This rate has been applied throughout SP AusNet's proposal. SP AusNet stated in its initial application that, for the final decision, the inflation rate will be:

> …derived from the difference between nominal and indexed bond yields over the period corresponding to the revenue control period.[167]

First NERA report (submitted 31 May 2007)[168]

The first NERA report affects the forecast inflation rate in SP AusNet's proposal. Adopting the conclusions of this report results in forecast inflation being calculated as the difference, via the Fisher equation, between the yield on nominal Commonwealth Government Securities (CGS) and the yield on inflation-indexed CGS adjusted upwards by 20bp. This adjustment lowers the inflation forecast by approximately 20bp.

NERA posits that special factors impacting on the inflation-indexed CGS markets and nominal CGS markets, have suppressed the yields of these securities from what they otherwise would be. NERA attributes this downward bias to current demand and supply conditions in both markets. Specifically, increased institutional demand for indexed and nominal CGS has occurred while the supply of these bonds has reduced relative to Gross Domestic Product (GDP). NERA posits that these supply/demand influences have been more pronounced in the indexed CGS markets, leading to a "relative bias" in indexed CGS yields relative to nominal CGS yields. The first NERA report focuses on the relative bias, though also provides a preliminary study of the "absolute bias" in nominal CGS yields which is dealt with more fully in NERA's second report. On the relative bias, NERA detects that "a bias in the range of 17-24 basis points is observable" and that the relative bias "currently is around 20bp".[169]

SP AusNet states:

> SP AusNet believes that the recommendations of the report should be accepted by the AER when setting the real risk-free rate…[170]

The AER notes that the only direct use of the real risk free rate is in the PTRM's calculation of forecast inflation, via the Fisher equation. While the real risk free rate is not an input into the calculation of the nominal WACC, it is an indirect input into the calculation of the real WACC, because it is used to forecast inflation.

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[167] ibid, p.107.

[168] NERA, Bias in Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate, March 2007.

[169] ibid, p.21.

[170] SP AusNet, Bias in CGS Markets as a Proxy for Real Risk-free Rate, Letter to AER, 31 May 2007, p.1.

For the purposes of assessing SP AusNet's proposal under the NER, the AER accepts SP AusNet's proposal as incorporating the recommendations of the first NERA report, where applicable, submitted to the AER on 31 May 2007.

Second NERA report (submitted 14 June 2007) [171]

The second NERA report affects the nominal risk free rate in SP AusNet's proposal.

Adopting the conclusions of this report results in the nominal risk free rate being calculated as an estimate of the yields on nominal corporate bonds less matched credit default swap (CDS) rates. As present, NERA finds that this would lead to a nominal risk free rate approximately 66bp greater than if the nominal risk free rate is calculated as the yield on nominal CGS.

In the second report, NERA completes its study of the absolute bias in nominal CGS yields as a proxy for the CAPM nominal risk free rate. NERA argues that:

> On 1 March 2007, the yield on five year nominal CGS underestimated the five year nominal risk free rate by around 66bp[172]

NERA states that, in its view, the best estimate of the nominal risk free rate is equal to the yield on corporate bonds less the cost of insuring these bonds against default, being the CDS rate. Equivalently, NERA states that regulators could continue to use nominal CGS yields but add:

> …an increment to this to reflect contemporaneous market evidence on the level of bias in CGS yields (and in recognition that this bias is not constant over time).[173]

In SP AusNet's letter accompanying the second report, SP AusNet states that:

> NERA identifies two approaches to correct for the identified biases, but recommends that instead of adjusting CGS yields, an alternative approach where the risk free rate is set equal to the yield on corporate bonds less the cost of insuring those bonds against default should be adopted. SP AusNet submits that the AER consider adopting this approach when estimating the [nominal] risk free rate for determination of the cost of capital in a regulatory review.[174]

For the purposes of assessing SP AusNet's proposal under the NER, the AER accepts SP AusNet's proposal as incorporating the recommendations of the second NERA report, where applicable, submitted to the AER on 14 June 2007.

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[171] NERA, Absolute Bias in (Nominal) Commonwealth Government Securities, 7 June 2007.

[172] NERA, Absolute Bias in (Nominal) Commonwealth Government Securities, 7 June 2007, p.13.

[173] ibid, p.14.

[174] SP AusNet, *NERA Report on Absolute Bias and Revised WACC Proposal*, Letter to AER, 14 June 2007. SP AusNet's letter erroneously attributes NERA's discussion of these two approaches to the real, rather than the nominal, risk free rate.

5.4 Submissions

5.4.1 Submissions on proposal

Energy Users Association of Australia

In its submission, the Energy Users Association of Australia (EUAA) comments extensively on the WACC parameters, including some of the parameters prescribed in the NER. The EUAA believes that the "enshrining" of some of the WACC parameters into the NER will not serve the interests of end users or the market objective well.[175]

The EUAA notes that there is some academic opinion appearing to suggest that the current method for determining the risk-free rate requires revision. On this the EUAA states that:

> …the determination of the rate has considerable implications for the market and any review should be conducted in an environment where the issue can be comprehensively reconsidered.[176]

The EUAA also notes it is more appropriate for a five year bond rate to be used to coincide with the length of the standard regulatory control period.

The EUAA considers that recent regulatory decisions using a market risk premium (MRP) of 6% grossly inflate the returns on equity above the level required be the market. It notes that the MRP of 6% is set in the NER, but states that:

> The AER should note that UK regulators have all adopted a forward-looking market view in estimating the MRP. UK regulators adopt substantially lower values for the market risk premium (of 3.5% - 4%) than do Australian regulators, who all adopt values of around 6%.[177]

The EUAA states that it believes an equity beta of 1.0 is far too high for a regulated monopoly with a guaranteed level of revenue.

Regarding the debt risk premium (DRP), the EUAA notes that SP AusNet seeks a DRP of 125 basis points (bp). The EUAA considers that a DRP of 115bp must form the very upper bounds of the AER's considerations. It notes that the AER allowed 115bp in the Powerlink decision, and that SP AusNet should receive an allowance no more generous than this.

Energy Users Coalition of Victoria

The Energy Users Coalition of Victoria (EUCV) notes that the utilities sector is outperforming the market based on the ASX200, and is also outperforming the market

[175] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p.19.

[176] ibid.

[177] ibid, p.20.

comparing the industry dividend yield against that of the wider market. The EUCV attributes this largely to the generous equity beta of 1.0 locked into the NER.[178]

In relation to the NERA reports on the risk free rate, the EUCV states that care should be taken in making adjustments based on short term movements, when it is the long term average that has been used consistently for the basis of all inputs in the CAPM.

The EUCV also points out that there is a relationship between the MRP and the risk free rate, and if the risk free rate is deemed to be understated requiring adjustment, then the MRP will be overstated also requiring adjustment.

On the AEMC's intent in prescribing the WACC parameters, the EUCV states that:

> The stated concept behind the AEMC decision was that there would be no debate as to which part of the CAPM was open to debate. The AEMC stated quite clearly that it wanted to set all parameters so the TNSPs would have a degree of consistency in the development of the WACC.

5.4.2 Submissions on supplementary proposal (NERA reports)

Energex

Energex considers that NERA has put forward a compelling case in support of the existence of and need to correct for a relative and absolute bias associated with the use of CGS yields in estimating the risk free rate.

5.5 Consultant's review

In 2007, the ACCC commissioned Dr John Handley (The University of Melbourne) to provide an independent and objective commentary on the appropriateness of using the observed difference in yields on nominal and indexed CGS as an estimate of the expected inflation rate. The report was commissioned in the context of the two NERA reports.

Handley notes that, in support of the relative bias argument, NERA has referenced the RBA which has noted that, whilst the spread between nominal and indexed yields:

> …is usually seen as a measure of expected inflation, its recent increase is at odds with other measures of inflation and reflected special factors, unrelated to inflationary pressures.[179]

Handley also reiterates another RBA quote used by NERA in regards to the current demand and supply conditions in the indexed bond market, being:

> This has reduced the usefulness of these yields in providing information about movements in inflation expectations.[180]

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[178] ECCV, SP AusNet and VENCorp Applications – A response by the Energy Users Coalition of Victoria, June 2007, p.22.

[179] RBA, Statement on Monetary Policy, 13 February 2006 (in Handley, John, *A Note on the Fisher Equation*, 23 July 2007, p.4 quoting NERA, Bias in *Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate*, March 2007.)

Whilst Handley states that, on matters of monetary policy, the views of the RBA are highly regarded and arguably highly persuasive, he considers that:

> …even though the RBA has attributed this phenomenon to "special factors, unrelated to inflationary pressures", the root cause appears to be due to current market conditions – an increase in demand "against a background of small, tightly held domestic supply" – rather than an issue associated with the uniqueness or otherwise of Indexed CGS. It is not clear how long this situation will last.[181] [emphasis added]

Handley also considers that the RBA's comments appear to be heavily directed at the indexed CGS market (i.e. concurring with the existence of a relative bias between indexed and nominal bonds) rather than directed at the nominal CGS market (i.e. concurring with the existence of an absolute bias in nominal bonds).

Handley concludes that the choice as to what is the appropriate expected inflation rate is ultimately a policy decision for the regulator to make, and suggests the ACCC/AER seek further advice from the RBA in this regard.

5.6 Issues and the AER's considerations

As stated above, the NER prescribe the values for many of the WACC parameters. Inserting these deemed values into the prescribed WACC formula results in the following expression:

$$WACC = \left(r_f \times 1 \times 0.06\right) \times 0.4 + \left(r_f + DRP\right) \times 0.6$$

Also outlined above, for the nominal risk free rate and debt risk premium (i.e. the remaining WACC parameters), the NER prescribe the methodologies to be applied by the AER in determining the value for these parameters at the time of each determination. The application of these methodologies is set out in this section. Forecast inflation is also analysed in this section.

5.6.1 Nominal risk free rate

The methodology that must be used to determine the nominal risk free rate is set out under cl. 6A.6.2(c) and (d) of the NER

Accordingly, the AER considers that the NER prohibits the adjustment proposed by NERA to correct for an alleged bias in the yield of nominal CGS as a proxy for the CAPM risk free rate.

Under cl. 6A.6.2, SP AusNet's role in proposing the nominal risk free rate is limited to proposing the dates and length of the averaging period, and the AER's role is limited to assessing the reasonableness of the proposed averaging period, and using

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[180] RBA, Statement on Monetary Policy, 4 May 2007 (in Handley, John, *A Note on the Fisher Equation*, 23 July 2007, p.5 quoting NERA, Bias in *Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate*, March 2007.)

[181] Handley, John, *A Note on the Fisher Equation*, 23 July 2007, p5.

the proposed period (or the period determined by the AER) to calculate the nominal risk free rate using the methodology set out under cl. 6A.6.2(c) and (d).

Any separate adjustments to the prescribed WACC values or methodologies would be inconsistent with the AEMC's stated objective of locking these parameters into the NER, specifically to provide certainty to TNSPs in the interim periods between the AER's five yearly cost of capital reviews, as required under the NER.

In its revenue proposal, SP AusNet proposed an averaging period length of 10 days.[182] On 3 April 2007, SP AusNet provided separately and confidentially to the AER the dates over which it proposed the averaging period be calculated.[183]

Cl. 6A.6.2(c)(iii) of the NER states that the start and end dates of the averaging period may be kept confidential, but only until after the expiration of the averaging period. SP AusNet has requested these dates be kept confidential. Accordingly the AER may not reveal the averaging period until after its expiration.

Cl. 6A.6.2(c)(iv) of the NER required the AER to make its decision on the proposed averaging period and notify SP AusNet within 30 business days of the date of submission of its revenue proposal.

The NER states that in assessing the proposed period the AER's agreement is not to be unreasonably withheld. The AER considered that the 10 day averaging period proposed by SP AusNet was reasonable. The AER also considered the dates proposed by SP AusNet over which to calculate the averaging period to be reasonable. On 13 April 2007, the AER notified SP AusNet of its agreement to both the length and dates of the averaging period proposed by SP AusNet. Accordingly, for the final decision, the AER will determine the nominal risk free rate using the period proposed by SP AusNet and the methodology prescribed under the NER.

The AER notes that whilst the NER do not allow the AER discretion to alter the WACC parameters for electricity transmission determinations, this prescription does not apply under the National Third Party Access Code for Natural Gas Pipeline Systems in respect of the current responsibilities of the ACCC to regulate gas transmission networks. Accordingly, the AER in conjunction with the ACCC is reveiwing the NERA reports' recommendations on the nominal risk free rate in the context of the ACCC's review of GasNet's 2008-12 access arrangement revisions.

5.6.2 Forecast inflation

Forecast inflation has several uses in the PTRM. In particular, forecast inflation is used to convert real inputs to nominal values, and to convert the nominal vanilla WACC to a real vanilla WACC.

The AER's accepted approach to forecasting inflation, and the approach specified in the First Proposed PTRM, has been to measure the difference between nominal CGS

[182] SP AusNet, Op cit, p.107.

[183] The nominal risk-free rate of 5.70% in SP AusNet's revenue proposal was intended to be indicative only.

and inflation-indexed CGS using the Fisher equation. As other parameters relating to the WACC are based on a benchmark length of 10 years, 10 year (or interpolated 10 year) nominal and indexed government bond yields have also been used for this purpose.

The AER notes that the RBA has been expressing concern over the present usefulness of this approach to measuring forecast inflation.[184]

The AER also notes Dr John Handley's finding that it is the current market conditions in the indexed CGS market, which appears to be lowering the usefulness of this approach. Handley concludes that the choice of the appropriate expected inflation rate is ultimately a policy decision for the regulator to make, and suggests the ACCC/AER seek further advice from the RBA in this regard.

Following Handley's advice, the ACCC contacted the RBA and the Australian Treasury in relation to both NERA reports, seeking commentary on the alleged absolute and relative biases in CGS yields as a proxy for the risk free rate. The RBA and Treasury's replies are discussed later in this chapter.

SP AusNet's compliance with First Proposed PTRM

Under cl. 6A.14.3(b) of the NER, if the AER is satisfied that the total revenue cap and MAR proposed by a TNSP has been properly calculated in accordance with the PTRM then the AER must approve them. The reference to "properly calculated" requires that the components that make up the total revenue cap and maximum allowed revenue also be calculated in accordance with the PTRM. In other words, the AER considers that if a component or input into the calculation of the total revenue cap or MAR has been properly calculated in accordance with the PTRM, then the AER would not be able to reject it.

In the First Proposed PTRM, which applies to SP AusNet, forecast inflation is calculated as the difference between the yield on nominal and indexed CGS, using the Fisher equation. As stated above, SP AusNet revised its proposal, in respect of forecast inflation, to incorporate the recommendations of the NERA report. Therefore SP AusNet's revised proposal is for forecast inflation to be calculated as the difference between nominal CGS and indexed CGS, adjusted upwards by 20 bp, and calculated using the Fisher equation. As SP AusNet's proposal, in respect of forecast inflation, is not compliant with the PTRM, then the AER is not required to accept it under cl. 6A.14.3(b).

This leaves the AER with the discretion to accept SP AusNet's forecast inflation proposal under cl. 6A.14.3(a). In determining whether or not to refuse to accept SP AusNet's forecast inflation proposal, the AER has been guided, as per cl. 6A.5.3(b), by the principle that the appropriate approach to forecasting inflation should be a methodology that the AER determines is likely to result in the best estimates of expected inflation.

[184] See for example, references found in NERA, Bias in Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate, March 2007.

First NERA report

Having considered the first NERA report, the AER does not consider that the addition of 20bp to the yield of indexed CGS, then estimating inflation as the spread between the yield on nominal CGS and the adjusted yield on indexed CGS, using the Fisher equation, is a methodology that is likely to result in the best estimate of expected inflation.

NERA observes that the supply of indexed CGS has fallen in recent years when measured as a percentage of GDP. NERA also observes that over the same period institutional demand for these bonds has risen, as pension funds and other institutions with inflation-indexed long-dated liabilities attempt to match those liabilities with inflation indexed CGS. From this NERA concludes that yields on indexed CGS will show a "downward bias" from what they would show had it not been for these factors. NERA notes that whilst increases in demand and reductions in supply are also occurring in the nominal CGS market, these factors have been more pronounced in the indexed CGS market. NERA posits that this will lead to a downward bias in indexed CGS yields greater than the downward bias in nominal CGS yields. NERA terms this a "relative bias" in indexed CGS. NERA notes that the RBA has commented on the current demand/supply pressures in the indexed CGS market, noting that this had lead to the difference between nominal and indexed CGS being a less reliable measure of expected inflation.

In an attempt to quantify this bias, NERA examines the nominal and indexed bonds of two companies (ElectraNet and Envestra). NERA posits that if nominal and indexed bonds were both equally biased (or equally unbiased) the spread between the nominal corporate bond to the indexed bond of the same company whould equal the spread between the nominal CGS to the indexed CGS.[185] NERA states that if a relative bias exists the spread between indexed corporate and CGS bonds must be greater than the spread on nominal bonds (as shown in the expression below) and that this phenomenon will have developed in late 2004 and 2005.

$$\text{Yield}_{\text{Indexed Corp}} - \text{Yield}_{\text{Indexed CGS}} > \text{Yield}_{\text{Nominal Corp}} - \text{Yield}_{\text{Nominal CGS}}$$

The AER has identified several issues with NERA's study.

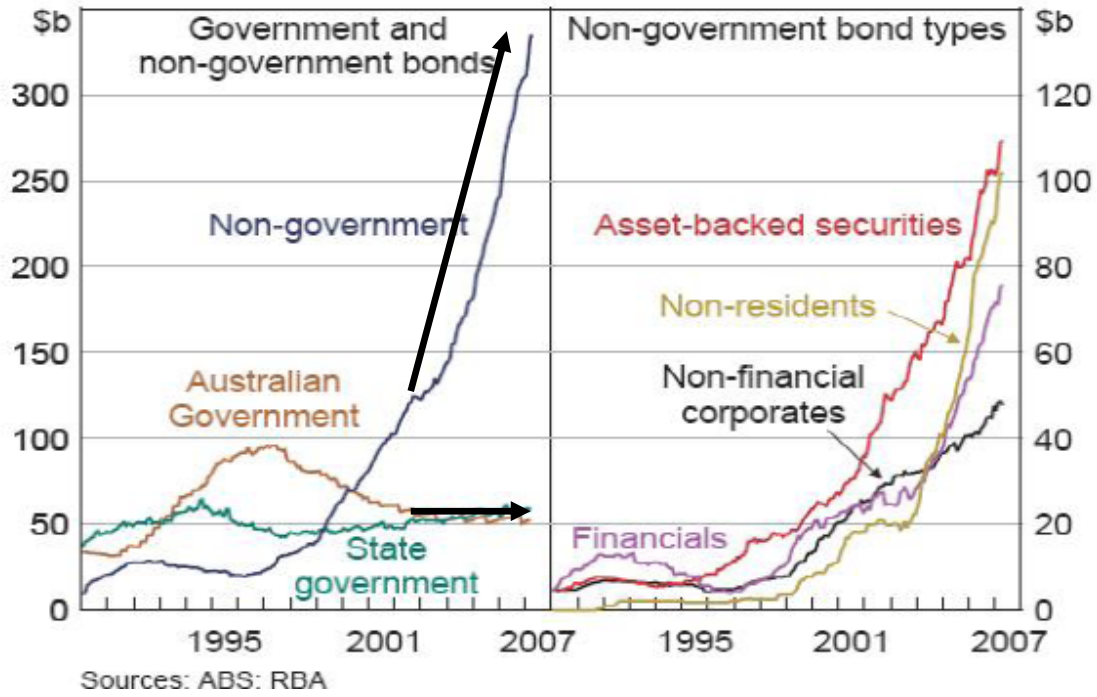
Demand/supply pressures

NERA comments extensively on the reduced supply (relative to GDP) of CGS since 2004, and the effect that such a large reduction would have had on CGS yields. NERA has not noted the very dramatic increase in non-government debt over the same period and the effect this would have on corporate bond yields. This has important implications for the test NERA has employed to calculate the relative bias, as it assumes the corporate bond market is unaffected by any unique or temporal demand/supply factors over the test period (i.e. since 2004). Yet as can be seen in figure 5.1, the issue of non-government bonds has mushroomed since around 2004,

[185] NERA, Bias in Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate, March 2007, pp.10-11.

and by comparison, the issue of Australian government bonds has remained almost flat.

Figure 5.1 NERA – Bonds on Issue in Australia



Source: NERA[186] [emphasis added]

Sample size

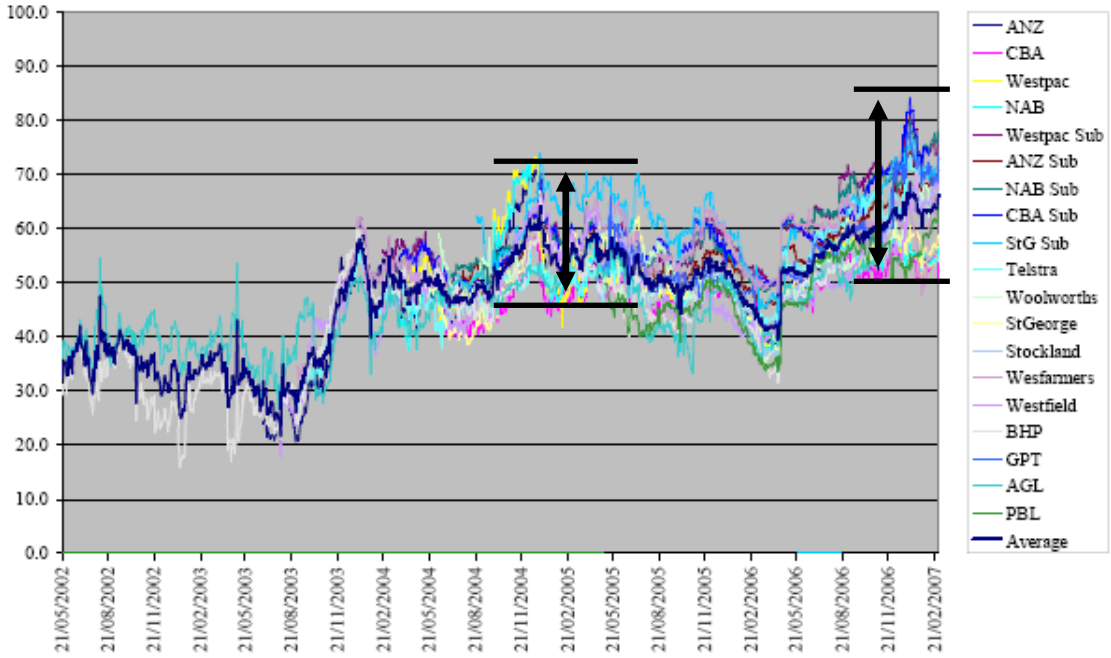
NERA's study is based on a sample of only two companies. For NERA's hypothesis to be accurate it must hold across the bonds of many different companies. In particular, the AER is uncertain how on the one hand, NERA considers a sample of between 10 and 15 companies is required in order to adequately calculate the absolute bias,[187] and yet on the other hand considers that a sample of only two companies is sufficient to calculate the relative bias.

As can be seen in figure 5.2 below, often at the same point in time, a large range is observable in NERA's absolute bias. This bias appears most pronounced in late 2004/early 2005 and in the most recent data. In fact, in late 2006 the range appears to be in the order of 35bp, with the minimum calculated bias a little under 50bp at the same time that the maximum bias is around 85bp. If NERA's hypothesis is correct, it is unclear why a wide range, at certain points in time, is observable. This range also indicates that the measurement of the average bias (which NERA uses to base its conclusion) is highly sensitive to the choice of corporate bonds that enter that average. The extent of this range in the absolute bias indicates that a sample of only two companies to calculate the alleged relative bias is unlikely to produce a representative estimate of the alleged bias.

[186] NERA, Absolute Bias in (Nominal) Commonwealth Government Securities, 7 June 2007, p.4.

[187] ibid, p.14.

Figure 5.2 NERA - Bias in 5 Year CGS as a Proxy for the Risk Free Rate



Source: NERA[188]

Stability of bias

NERA recognises that the absolute bias is not constant in time, and so must be continuously redetermined, yet does not consider that the relative bias is also dynamic and so must also be continuously redetermined. Given that both the absolute and relative biases have shown a similar degree of historical volatility, the AER considers these two recommendations to be at odds with each other. This is especially so considering that NERA states that its calculated magnitude of the relative bias, being around 20bp, is true for only one date in time (21 March 2007), just as its proposal for the absolute bias is unique to a one-day period.

Inflation risk premium

It is worth noting that NERA considers the alleged overestimation of inflation using the difference between nominal and indexed CGS is prima facie evidence of a relative bias. However, after estimating the magnitude of the bias, NERA does not explicitly recommend that an appropriate forecast of inflation should be derived using the difference between nominal and indexed CGS, adjusting the indexed CGS by 20bp. In fact, NERA recognises that an inflation risk premium also exists, limiting the ability of the spread between nominal and indexed CGS to be an unbiased estimate of inflation.

> An implication of our work is that there is something other than an inflation risk premium that currently explains the difference between indexed and nominal CGS. That does not mean to say that there is no inflation risk premium.[189]

[188] ibid, p.10.

[189] NERA, Bias in Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate, March 2007, p.20.

It is implicit from NERA's recognition of an inflation risk premium that NERA does not consider that the difference between nominal and indexed CGS is an unbiased estimate of inflation, even after adjusting the indexed yield by 20bp.[190]

AER's conclusion – first NERA report

For the reasons detailed above, the AER does not consider that the addition of 20bp to the yield of indexed CGS, then estimating inflation as the spread between the yields on nominal and (20bp adjusted) indexed CGS, using the Fisher equation, is a methodology that is likely to result in the best estimates of expected inflation.

Accordingly, pursuant to cl. 6A.14.3(a) of the NER, the AER does not consider SP AusNet's proposed forecast inflation methodology is reasonable.

General approach to forecasting inflation

The AER's current method of using the spread between nominal and indexed CGS yields, has historically been a commonly used method of forecasting inflation, and is based on widely available market data. In general, the AER's preference, in regards to forecast inflation and other aspects related to the cost of capital, is to rely on widely available market data. This approach provides transparency, replicability and objectivity in the calculation of forecast inflation and other aspects related to the cost of capital. However, the AER considers that, based on comments by the RBA and Treasury, there is some basis for the argument that the AER's method of forecasting inflation does not currently result in the best estimate of inflation.

According to the RBA, there have been no indexed bonds issued since February 2003, outstandings are limited to just three issues, and demand for these bonds has increased as supply has fallen. The RBA notes that it has stated on many occasions that inflation expectations derived from the indexed CGS market are at odds with other measures of inflation, such as surveys.[191]

Treasury states:

> …we agree that as Treasury Indexed Bonds (TIBs) mature without replacement, their usefulness for estimating long term real risk free rates will diminish. Consequently, their use for estimating the market-implied inflation forecast will lead to inflation estimates with an upward bias.[192]

The AER recognises that due to the supply influences, at this time, the difference between nominal and indexed government bonds may not produce the "best" estimate of inflation. However, the AER will continue to monitor the issue, and should it form the view that this method does produce the best estimates of inflation; the AER will resume application of this method.

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[190] ibid.

[191] RBA, Letter to ACCC, 9 August 2007, p.3.

[192] Australian Treasury, Letter to ACCC – The Treasury Bond Yield as a Proxy for the CAPM risk-free rate, 7 August 2007, p.5.

Accepting the argument that its current method of forecasting inflation may not produce the best estimate of forecast inflation at this time, the AER must consider other alternatives that are likely to result in the best estimates of expected inflation.

Given the AER's concerns over NERA's study, and NERA's recognition of an inflation risk premium, the AER does not consider that adjusting the indexed CGS yield by 20bp then estimating inflation as the spread between the nominal CGS yield and (adjusted) indexed CGS yield, using the Fisher equation, is likely to result in the best estimate of expected inflation.

The AER considers a more general approach to forecasting inflation is, at this time, appropriate and likely to result in the best estimate of expected inflation. A general approach to estimate expected inflation involves consideration of the RBA's inflation range, which lies between 2% and 3% and considering a range of inflation indicators to determine an inflation forecast, with the most sensible outcomes appearing to be either 2 %, 2.5 % or 3 %.

The AER considers that, at present, and after considering a range of inflation indicators, applying this methodology favours an inflation forecast at the upper end of the RBA's target range, of 3 %, as opposed to the mid-point or lower end of the range (2% or 2.5%).

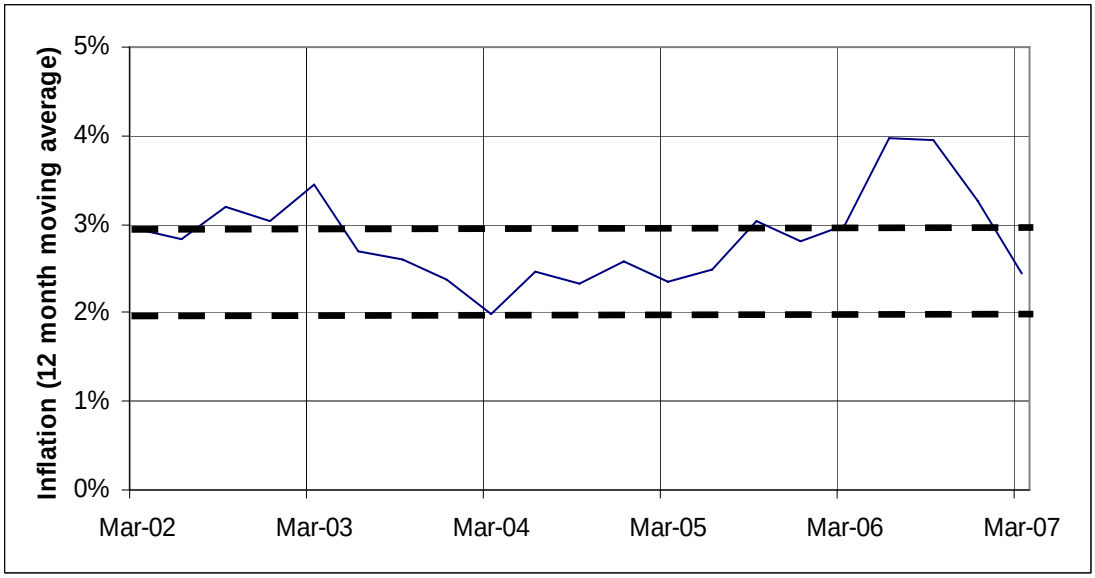
Target inflation range

The RBA's objective is for inflation to be, on average, between 2–3 % over the business cycle. The AER considers this range the appropriate starting point for a general approach to forecasting inflation. However it should be noted that whilst 2-3 %, on average, is the RBA's target range, this does not imply that inflation would not be outside the boundaries of this range at any particular time, or that the average should be expected to fall in the middle of this range. However, it is in consideration of the RBA's target range that the AER has determined that 2 %, 2.5 % and 3% are the options that should be considered under a general approach to forecasting inflation.

Historical inflation

Chart 5.3 shows actual inflation over the last five years. As can be seen, inflation has rarely been as low as 2 %, tending more towards 2.5 %, 3 % or even over 3 %. Over the last five years, inflation has averaged 2.9 %, using a simple arithmetic average, or 3.1 %, using a compound average. Whilst this is a backward looking measure, it shows that in the past, a general approach predicting average inflation of 3% would have lead to a reasonable outcome, more accurate than a forecast of 2 % or 2.5 %.

Figure 5.3 Actual Inflation 2002-07 (CPI, Australia, All groups)



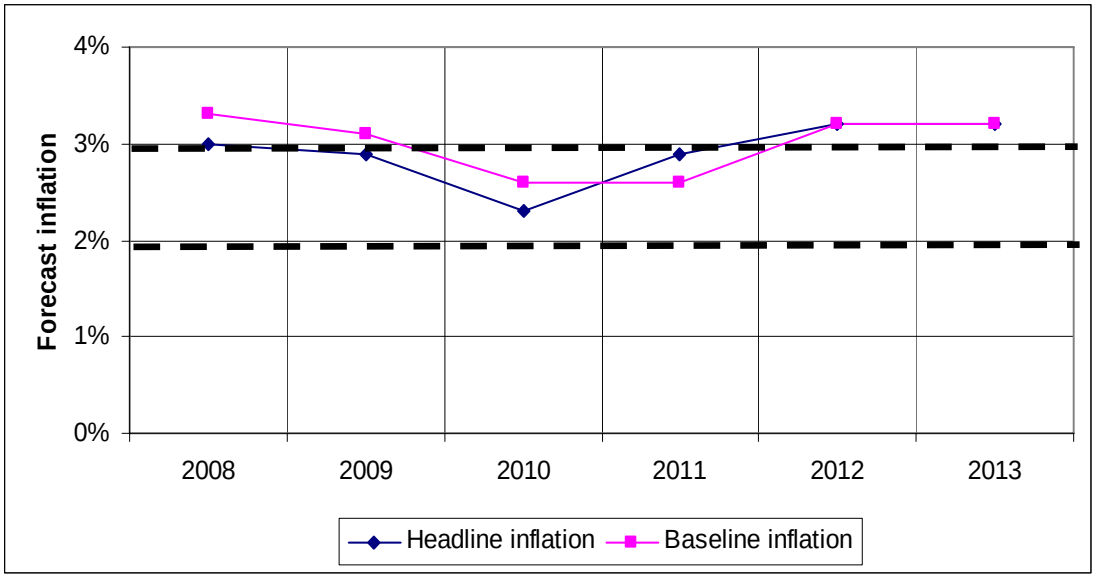
Source: ABS, AER analysis

Independent forecasts

In support of its real labour cost escalator of 2.8 %, SP AusNet submitted a report by BIS Shrapnel on the outlook of wages in the electricity, gas and water sector to 2012/13. In determining the 2.8 % real labour escalator, BIS Shrapnel relied on its headline inflation forecast of 2.9 %, on average, between 2008 and 2013.
BIS Shrapnel also forecast baseline inflation to be, on average, 3.0 % between 2008 and 2013.[193] BIS Shrapnel's yearly inflation forecasts can be seen in figure 5.4 below. BIS Shrapnel's forecasts for both headline and baseline inflation support the AER's general approach to determining an inflation forecast of 3 %.

[193] BIS Shrapnel, Outlook for Wages to 2012-13: Electricity, Gas and Water Sector Australia and Victoria, March 2007, p.8.

Figure 5.4 BIS Shrapnel – Forecast Inflation 2008-13



Source: BIS Shrapnel[194]

Though the AER notes that an inflation forecast of 3 % is consistent with BIS Shrapnel's forecast, submitted by SP AusNet in support of its proposal, there does not appear to be a general consensus among economic consultants on the long term estimates of inflation. The AER notes that Econtech's annual inflation forecasts over the ten years from 2006/07 to 2015/16 range from between 2.2% and 3.0%.[195]

RBA and Treasury correspondence

As noted above, the ACCC sought commentary from the RBA and Australian Treasury on NERA's allegations of an absolute and relative bias in CGS yields as a proxy for the risk free rate.

The RBA's response focused on the nominal risk free rate issue and NERA's proposed solution to its alleged bias. In relation to the real risk free rate, the RBA notes:

> Given inflation expectations have been firmly anchored by the Bank's inflation-target regime for some time, a rough estimate of a real risk-free rate would be the nominal government bond yield less the centre of the inflation target band (ie the nominal yield less 2 ½ per cent).[196]

Treasury's reply also focused on the nominal risk free rate issue. However, on the real risk free Treasury comments:

> We suggest that working with nominal yields and, where a real return is required, making an inflation adjustment based on the mid point of the RBA's 2 to 3 per cent target range, is entirely reasonable.[197]

[194] BIS Shrapnel, Op cit, p.8.

[195] Econtech, *Labour costs growth forecasts*, 4 July 2007, p.20.

[196] RBA, Letter to ACCC, 9 August 2007, p.3.

The AER notes that whilst the RBA and Treasury's comments suggest an adjustment of 2.5 %, neither is a forecast of inflation. Rather both suggestions appear based on 2.5 % being the mid-point of the target range. On the other hand, the AER has determined a forecast of inflation, based on a range of inflation indicators, and what these factors indicate forecast inflation to be at this time.

The RBA has recently released its Statement on Monetary Policy which includes its forecast of inflation over the next few years.[198] The RBA forecasts headline and underlying inflation for the year to June 2008 to be 3%. For the year to June 2009, the RBA's:

> …central forecast is for both underlying and headline inflation to remain near the top of the target range.[199]

Inflation swaps

On the 6 August 2007, Bloomberg displayed the prevailing rate on a 10 year inflation swap to be 3.37%. This rate essentially represents the mid price at which the market is buying/selling 10 year inflation contracts based on CPI. The AER notes that whilst inflation swap rates give an estimate of the price at which firms can hedge inflation risk, they may not necessarily indicate the market's expectation of inflation. The swap rate is likely to include a positive or negative inflation risk premium, though of an unknown magnitude. The AER does contend though, that whilst inflation swaps may not produce the best estimate of forecast inflation, the prevailing rate on the 10 year inflation swap does support a general inflation forecast of 3%, as opposed to 2% or 2.5%. This conclusion is drawn from the analysis that if an inflation forecast of 2.0 % or 2.5 % was determined, the current yield on inflation swaps would indicate that these inflation swaps include a positive inflation risk premium in the order of 137 bp or 87 bp, respectively.

[197] Australian Treasury, *Op cit*, p.5.

[198] RBA, Statement on Monetary Policy, 13 August 2007.

[199] ibid, p.63.

Current difference between nominal and indexed CGS yields

The AER also notes that at present the difference between nominal and indexed CGS yields produces a 10 year inflation forecast of 3.23% (based on a 10 day moving average) or 3.29% (based on a 40 day moving average).[200] As mentioned above, the AER accepts that the current supply factors in the indexed CGS market may be making this measure a less useful indicator of forecast inflation. Whilst the AER has identified issues with NERA's study of the relative bias, it notes that even if a 20 bp adjustment was accepted this would lead to an inflation forecast of near 3%. In particular, the AER notes that a general inflation forecast of 2.5% or 2%, would imply a relative bias (or relative bias and inflation risk premium) in the order of 75bp or 125bp, respectively. The AER notes that NERA has not argued that the alleged relative bias (or relative bias and inflation risk premium) is in the order of 75bp or 125bp.

AER's conclusion – general approach to forecasting inflation

The AER considers that a general approach to forecasting inflation, selecting between the options of 2 %, 2.5 % and 3%, and considering a range of inflation indicators in making that selection, is the methodology that is likely to result in the best estimates of expected inflation at this time.

For the reasons outlined above, the AER considers that, at present, and after considering a range of inflation indicators, applying a general approach to forecasting inflation favours an inflation forecast of 3 %, as opposed to 2% or 2.5 %.

5.6.3 Debt risk premium

The debt risk premium (DRP) is added to the nominal risk free rate to calculate the cost of debt, an input into the WACC calculation. The DRP is the premium, above the risk free rate, a benchmark efficient TNSP is likely to face in sourcing funding from suppliers of debt finance.

In its revenue proposal, SP AusNet proposed a debt risk premium of 125 basis points.

SP AusNet states that this is:

> …the observed average over the twenty trading days between 30 October 2006 and 24 November 2006 of:
>
> - the adjusted yield for a 10 year BBB+ bond of 136 basis points (sourced from CBA Spectrum data adjusted for the downward bias by 25.6 basis points); and
> - the yield for 10 year BBB bond of 115 basis points (sourced from Bloomberg)

As outlined above, the NER require the AER to determine the debt risk premium by applying the prescribed methodology set out in cl. 6A.6.2(c). In determining the appropriate approach to implement this methodology, the AER has had regard to the approach in SP AusNet's proposal.

[200] As at 6 August 2007.

SP AusNet's proposed approach consists of two elements, the days on which to calculate the debt risk premium (i.e. the sampling period), and the data source on which to base the debt risk premium.

Sampling period

The AER does not consider that the dates proposed by SP AusNet are reasonable. The twenty trading days between 30 October 2006 and 24 November 2006 are significantly outdated, and do not adhere with the principle of using the most up to date data possible in calculating forward looking financial parameters. More importantly, the dates proposed by SP AusNet to calculate the corporate bond yield aspect of the debt risk premium are different to the dates proposed by SP AusNet, and agreed to by the AER, to calculate the nominal risk free rate. The AER considers that matching these dates is fundamental, as the debt risk premium is the yield on corporate debt minus the risk free rate.

Accordingly, the AER considers that the dates proposed by SP AusNet to calculate the debt risk premium are not reasonable. Instead, the AER considers the debt risk premium should be calculated over the same dates as the nominal risk free rate..

Data source

The AER does not consider the adjusted hybrid data source approach proposed by SP AusNet is reasonable. SP AusNet cites in support of its 25.6bp adjustment to the CBA Spectrum data a study by NERA.[201] NERA found that actual historical yields on long dated, low rated Australian bonds were higher than the yields estimated by CBA Spectrum. NERA found that due to the estimation procedure employed by CBA Spectrum, it would be expected that it underestimated the yields on long dated low rated bonds.[202]

However, on the precise calculation of this bias, NERA stated that:

> There is limited data for us to be definitive on the 'most likely' as opposed to 'minimum adjustment required.[203]

Three different approaches by NERA to quantify the minimum bias resulted in different but similar calculations of the alleged bias, being 24.3bp, 25.6bp, and 26.4bp.

In regards to the use of Bloomberg, NERA found that:

> The Bloomberg representative yield on long dated "BBB rated bonds" will be an unbiased estimate of the yield on long dated BBB+ rated bonds.[204]

[201] NERA, Critique of available estimates of the credit spread on corporate bonds, May 2005.

[202] ibid, p.2

[203] ibid, p.11.

[204] ibid, p.12.

Given NERA's difficulty quantifying the exact magnitude of the CBA Spectrum bias and its own comments regarding Bloomberg, the AER considers there is no compelling reason to average data from Bloomberg with adjusted data from CBA Spectrum.

The AER considers the use of BBB data from Bloomberg alone should be employed to calculate the corporate bond yield used in the debt risk premium.

5.7 AER's conclusion

Cost of capital

The NER prescribes many of the values of the WACC parameters. As outlined above, inserting these deemed values into the prescribed WACC formula results in the following expression:

$$WACC = \left(r_f \times 1 \times 0.06\right) \times 0.4 + \left(r_f + DRP\right) \times 0.6$$

For the two parameters where the value is not prescribed, being the nominal risk free rate and the debt risk premium, the NER prescribes the methodology to be used by the AER in determining the parameters.

In relation to the nominal risk free rate, the methodology to be applied is prescribed in cl. 6A.6.2(c) and cl. 6A.6.2(d). The AER considers this methodology prohibits the adjustment proposed by NERA to correct for an alleged bias in the yield of nominal CGS as a proxy for the risk free rate.

In regards to the debt risk premium, the AER considers that the debt risk premium should be determined using data from Bloomberg and over the same dates as the nominal risk free rate.

As the nominal risk free rate and debt risk premium will not be determined until closer to the date of the final decision, for the purposes of the draft decision the AER has utilised the indicative nominal risk free rate and the debt risk premium used by SP AusNet in its proposal. However, this use in no way constitutes the AER's acceptance of these values for the final decision.

Accordingly, the AER has employed SP AusNet's proposed (indicative) nominal vanilla WACC of 8.85% throughout this draft decision.

Forecast inflation

The AER considers that SP AusNet's proposed methodology to forecast inflation, being the difference between the yields on nominal and (20 bp upwards adjusted) indexed CGS, does not comply with the PTRM. Accordingly, under cl. 6A.14.3(a), the AER may but is not required to accept SP AusNet's proposed forecast inflation methodology.

For the reasons detailed above, the AER does not consider that SP AusNet's proposed methodology is likely to result in the best estimates of forecast inflation, and therefore does not approve this approach.

The AER considers that the methodology that is likely to result in the best estimates of expected inflation is a general approach to forecasting inflation, selecting between the options of 2 %, 2.5 % and 3%, and considering a range of inflation indicators in making that selection.

After considering a range of inflation indicators, the AER considers that, at present, applying a general approach to forecasting inflation favours an inflation forecast of 3 %, as opposed to 2 % or 2.5 %.

6 Operating and maintenance expenditure

6.1 Introduction

The Australian Energy Regulator (AER) is required to assess SP AusNet's proposed forecast operating expenditure (opex) for the forthcoming regulatory control period against the requirements of the National Electricity Rules (NER).

The opex forecasts in SP AusNet's proposal[205] are SP AusNet's forecast opex requirements for the provision of prescribed services for the forthcoming regulatory control period.[206]

This chapter sets out SP AusNet's forecast opex proposal, submissions from interested parties, the results of consultants' reviews and the AER's draft decision on SP AusNet's forecast opex allowance for the forthcoming regulatory control period.

SP AusNet's opex glide path allowance, accrued during the current regulatory control period, is addressed in chapter 8, which addresses SP AusNet's maximum allowed revenue (MAR).

6.2 Regulatory requirements

Opex objectives

Cl. 6A.6.6(a) of the NER provides that a Transmission Network Service Provider (TNSP) must include in its revenue proposal a forecast of the total opex for the regulatory control period that the TNSP will require in order to achieve four prescribed objectives (the opex objectives), which are to:

1) meet the expected demand for prescribed transmission services over that period;
2) comply with all applicable regulatory obligations associated with the provision of prescribed transmission services;
3) maintain the quality, reliability and security of supply of prescribed transmission services; and
4) maintain the reliability, safety and security of the transmission system through the supply of prescribed transmission services

[205] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, 28 February 2007.

[206] SP AusNet's forecast opex proposal does not cover the opex requirements relating to assets commissioned by VENCorp during the forthcoming regulatory control period, nor does it cover past assets that SP AusNet has chosen not to roll into its regulated asset base, or for other reasons sit outside its regulatory asset base. As VENCorp commissions assets on a "build, own, operate" basis, the opex relating to these assets should be recovered through VENCorp's planned and committed augmentation charges.

Opex criteria and factors

Under cl. 6A.6.6(b) of the NER, the AER must accept the forecast opex included in a revenue proposal if the AER is satisfied that the total forecast opex for the regulatory control period reasonably reflects the operating expenditure criteria (opex criteria), which are:

1) the efficient costs of achieving the operating expenditure objectives
2) the costs that a prudent operator in the circumstances of the relevant TNSP would require to achieve the operating expenditure objectives; and
3) a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

In making this assessment, the AER must have regard to the following factors (the opex factors), which are listed in cl. 6A.6.6(e) of the NER:

1) the information included in or accompanying the revenue proposal;
(2) submissions received in the course of consulting on the revenue proposal;
(3) such analysis as is undertaken by or for the AER and is published prior to or as part of the draft decision of the AER on the revenue proposal under rule 6A.12 or the final decision of the AER on the revenue proposal under rule 6A.13 (as the case may be);
(4) benchmark operating expenditure that would be incurred by an efficient TNSP over the regulatory control period;
(5) the actual and expected operating expenditure of the TNSP during any preceding regulatory control periods;
(6) the relative prices of operating and capital inputs;
(7) the substitution possibilities between operating and capital expenditure;
(8) whether the total labour costs included in the capital and operating expenditure forecasts for the regulatory control period are consistent with the incentives provided by the applicable service target performance incentive scheme in respect of the regulatory control period;
(9) the extent to which the forecast of required operating expenditure of the TNSP is referable to arrangements with a person other than the provider that, in the opinion of the AER, do not reflect arm's length terms; and
(10) whether the forecast of required operating expenditure includes amounts relating to a project that should more appropriately be included as a contingent project under cl. 6A.8.1(b).

Cl. 6A.6.6(d) states if the AER is not satisfied that a TNSP's forecast opex reasonably reflects the operating expenditure criteria then the AER must not accept the forecast opex in a revenue proposal.

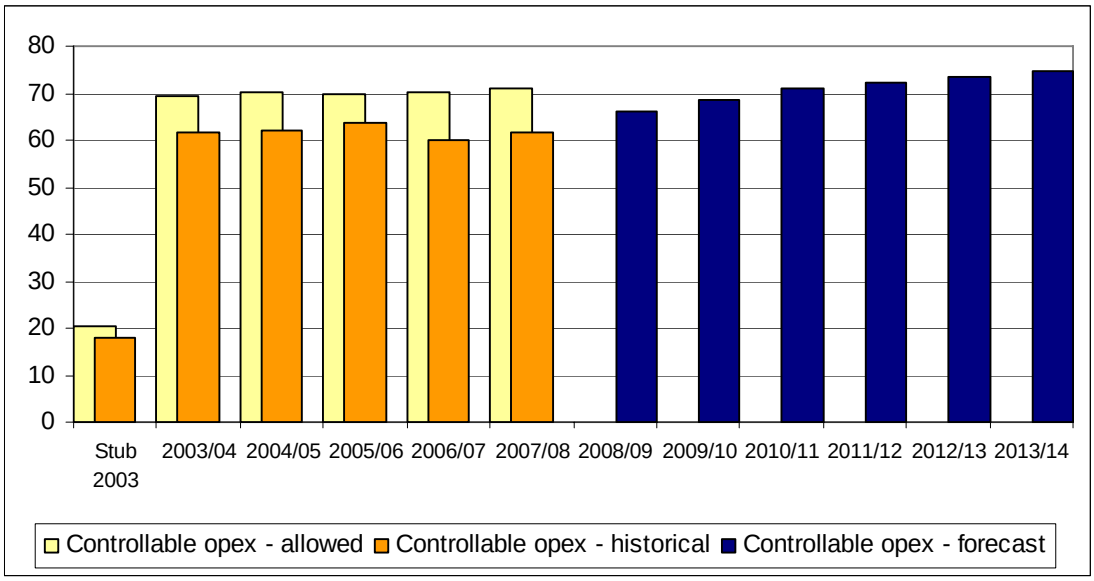
If the AER does not accept the total forecast opex proposed by a TNSP, cl. 6A.14.1(3)(ii) of the NER requires the AER to include in its draft decision:

> …an estimate of the total of the Transmission Network Service Provider's required operating expenditure for the regulatory control period that the AER is satisfied reasonably reflects the operating expenditure criteria, taking into account the operating expenditure factors.

6.3 SP AusNet's proposal

SP AusNet underspent on its controllable opex allowance in each year of the current regulatory control period. However, SP AusNet claims that its average annual controllable operating expenditure[207] for the forthcoming period is expected to increase by 20 % in real terms compared to its average annual (actual) expenditure in the current regulatory control period.[208]

Figure 6.1 SP AusNet - Allowed, historical and forecast controllable opex, 2003-2013-14 ($2007-08, $m) [209]



Source: SP AusNet[210]

SP AusNet claims that there are a number of factors that together act to increase its forecast of the opex required in the forthcoming regulatory control period, including:

- asset failure risks – and the associated increase in maintenance activity – associated with the ageing asset base;
- increased resource requirements associated with compliance with legislation, rules and regulations;
- increasing labour costs created by skilled labour shortages and the current resources boom;
- the increase in prescribed service opex in the forthcoming regulatory period associated with the rolling-in of non-contestable excluded service assets constructed in the current regulatory period; and
- the inclusion of the Company's self insurance claim[211]

[207] Controllable opex relates to routine maintenance, asset works, corporate opex and opex associated with assets SP AusNet proposes to roll into its RAB at the start of the forthcoming regulatory control period. Controllable opex excludes self-insurance, equity raising costs, debt raising costs, rebates and easement land tax.

[208] ibid., p.78.

[209] 2006-07 and 2007-08 historical figures are SP AusNet estimates. "Stub 2003" refers to the period 1 January 2003 to 31 March 2003.

[210] ibid., pp. 81-97 (as revised)

In total, SP AusNet proposes an opex forecast of $1 034.3m ($2007-08) over the forthcoming 6 year regulatory control period. SP AusNet's revenue proposal breaks its forecast opex into two major categories: controllable opex and "other opex".

Controllable opex covers the routine maintenance and asset works costs related to SP AusNet's transmission system, and its corporate costs which are non-system costs. SP AusNet's forecast opex under the routine maintenance, asset works and corporate categories relates only to assets in its Regulatory Asset Base (RAB) as at the commencement of the current regulatory control period associated with the provision of prescribed services. SP AusNet has augmented the total of these forecast costs by 2.72%, which is intended to cover the routine maintenance, assets works and corporate opex requirements relating to the non-contestable assets being rolled into the asset base from the commencement of the forthcoming regulatory control period. SP AusNet's controllable opex forecasts account for $426.0m ($2007-08) of its total opex forecasts (around 41%). The largest controllable opex category is routine maintenance which accounts for $206.6m ($2007-08), or nearly half (48.5%) of its total controllable opex forecasts.

"Other opex" covers SP AusNet's claims for self-insurance,[212] equity raising costs, debt raising costs, rebates, and easement land tax. Easement land tax is the largest single opex category and accounts for $530.9m ($2007-08), or 87.26% of its total other opex forecasts and more than half (51.32%) of SP AusNet's overall (i.e. controllable and other) opex forecast. Table 6.1 below outlines SP AusNet's opex proposal in the categories explained above.

[211] ibid., p.81.

[212] In some parts of SP AusNet's revenue proposal self-insurance is categorised under controllable opex, whereas in other parts self-insurance is categorised under other opex. For consistency, the AER has categorised self-insurance under other opex throughout this decision.

Table 6.1 SP AusNet's proposal - Opex (2007-08 $m)[213]

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Asset works	13.6	14.6	15.5	15.5	15.5	15.5	**90.3**
Routine maintenance	32.3	33.2	34.1	34.9	35.7	36.4	**206.6**
Corporate	18.7	19.0	19.4	19.8	20.2	20.6	**117.7**
Rolled in assets opex	1.8	1.8	1.9	1.9	2.0	2.0	**11.4**
Controllable opex	**66.3**	**68.7**	**70.9**	**72.2**	**73.4**	**74.5**	**426.0**
Self-insurance	2.5	2.5	2.5	2.5	2.5	2.5	**15.2**
Equity raising costs	1.9	1.9	2.0	2.0	2.0	2.0	**11.8**
Debt raising costs	1.7	1.7	1.7	1.7	1.7	1.8	**10.3**
Rebates	6.7	6.7	6.7	6.7	6.7	6.7	**40.1**
Easement land tax	78.4	84.8	84.8	91.8	91.8	99.2	**530.9**
Other opex	**91.2**	**97.7**	**97.7**	**104.7**	**104.7**	**112.2**	**608.3**
Total opex	**157.6**	**166.4**	**168.7**	**176.9**	**178.1**	**186.8**	**1 034.3**

Source: SP AusNet[214]

As stated above, SP AusNet considers increasing labour costs as one of the factors contributing to its increased forecast opex requirements in the forthcoming regulatory control period. SP AusNet has proposed a 2.8 % real, or above CPI, annual labour cost escalator. In support of this proposal, SP AusNet has provided a report prepared by BIS Shrapnel which forecasts 2.8 % real annual wage growth for the electricity, gas and water sector in Australia over 2008-13.[215]

In forecasting parts of its opex proposal, SP AusNet has taken its costs for 2006-07, and escalated these by its proposed labour cost escalator and inflation. SP AusNet has not made any adjustments to its base year expenditure. This approach has been used in forecasting each component of its corporate opex and routine maintenance, with the exception of taxes and insurance, which have been forecast separately. The support component of SP AusNet's asset works proposal was also forecast in this manner, however the majority of the asset works program, being non-recurrent, was not forecast from a base year.

6.4 Submissions

Transend

Transend is "concerned at the use of benchmarking analysis", commenting that:

[213] After lodging its proposal, SP AusNet revised its forecasts for routine maintenance (taxes), rebates and easement land tax. These revisions have been incorporated into the table.

[214] ibid. (as revised).

[215] The AER notes that SP AusNet's revenue proposal includes a real labour escalator of 2.83%. This figure was based on a draft report submitted by BIS Shrapnel to SP AusNet. The final BIS Shrapnel report included a real labour cost escalator of 2.8%. BIS Shrapnel's final report was not provided to SP AusNet in time for it to amend its proposal. The AER's analysis is based on the final BIS Shrapnel report and corresponding real labour escalator of 2.8%.

> …the analysis presented by SP AusNet, provides very limited guidance on the relative performance of the TNSPs. The value of the benchmarking analysis is severely compromised because the partial measures fail to normalise the data for TNSP-specific issues such as:

- network design;
- the location and type of generation; and
- load characteristics, including its size and location and customer density.[216]

Also on benchmarking, Transend notes that:

> …SP AusNet's measures cannot provide a like-for-like comparison with other TNSPs that have much broader planning and network augmentation responsibilities.[217]

Energy Users Association of Australia

In its submission, the Energy Users Association of Australia (EUAA) states that it is:

> …concerned that there has been significant overstatement of the required levels of opex in the past, and, like the past, this application has been similarly overstated[218]

The EUAA queries SP AusNet's claim that its asset base is ageing given that:

> …expenditure on non-augmentation capex in the next regulatory period is proposed at $815.4m ($2007/08); and represents a 55 percent real increase in the capital program for the period 2008/09 to 2013/14.[219]

Energy Users Coalition of Victoria

The Energy Users Coalition of Victoria (EUCV) comments on the use of benchmarking in SP AusNet's proposal, noting that the benchmark costs for SP AusNet are understated compared to its comparators, as the costs exclude the opex included in the works commissioned by VENCorp.[220]

More specific comments from these submissions have been included in the detailed analysis below with the issue to which the comments relate.

6.5 Consultant's review

PB reviewed the recurrent, non-recurrent and self-insurance elements of SP AusNet's opex proposal. The recurrent expenditure relates to routine maintenance, corporate costs and the opex relating to assets that SP AusNet is proposing to roll into its RAB at the start of the forthcoming regulatory control period. The non-recurrent expenditure relates to SP AusNet's forward asset works program. PB did not review

[216] Transend, Letter regarding VENCorp and SP AusNet Revenue Proposals, 13 June 2007, pp. 2-.3.

[217] ibid., p.3.

[218] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p.iii.

[219] ibid., p.15.

[220] EUCV, *Response to AER review of Victorian electricity transmission,* June 2007, p.33.

SP AusNet's proposed debt and equity raising cost allowances, rebate forecasts or easement land tax forecasts.

PB's overall recommendations are listed in the table below.

Table 6.2 PB's recommendations (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Recurrent opex							
SP AusNet's proposal	51.6	52.9	54.2	55.4	56.6	57.8	**328.4**
PB's adjustment	-0.8	-1.3	-1.8	-2.3	-2.8	-3.3	**-12.3**
PB's recommendation	50.7	51.6	52.4	53.2	53.8	54.5	**316.1**
Non-recurrent opex							
SP AusNet's proposal	13.6	14.6	15.5	15.5	15.5	15.5	**90.3**
PB's adjustment	-1.0	-0.7	-0.9	-1.2	-0.9	-1.2	**-5.8**
PB's recommendation	12.6	13.9	14.6	14.3	14.6	14.3	84.4
Self-insurance							
SP AusNet's proposal	2.5	2.5	2.5	2.5	2.5	2.5	15.2
PB's adjustment	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	**-6.9**
PB's recommendation	1.4	1.4	1.4	1.4	1.4	1.4	**8.3**
Inventory							
PB's adjustment	+0.0	+0.0	+0.0	+0.0	+0.0	+0.0	**+0.2**
Total (Recurrent, non-recurrent, self-insurance and inventory)							
SP AusNet's proposal	69.4	71.9	74.1	75.4	76.6	77.8	**445.3**
PB's adjustment	-3.5	-3.7	-4.5	-5.3	-5.5	-6.4	**-28.9**
PB's recommendation	65.9	68.1	69.6	70.1	71.1	71.5	**416.4**

Source: PB[221]

In relation to recurrent opex, the most significant of PB's recommendations concern SP AusNet's maintenance forecasts. PB considers that these forecasts do not take into account the expected opex savings that will result from SP AusNet's forward capex and asset works programs ($4.8m reduction, $2007-08). PB also considers SP AusNet's proposed opex allowance relating to the non-contestable assets it is rolling into its asset base does properly take into account the opex requirements that would be expected for these relatively new assets ($4.0m reduction, $2007-08).

On non-current opex (i.e. asset works) PB's main findings relate to an adjustment to SP AusNet's miscellaneous works program ($2.0m reduction, $2007-08), and an inflation related error in SP AusNet's opex model ($1.1m reduction, $2007-08).

In relation to self-insurance, PB found that SP AusNet overestimated the risks of:

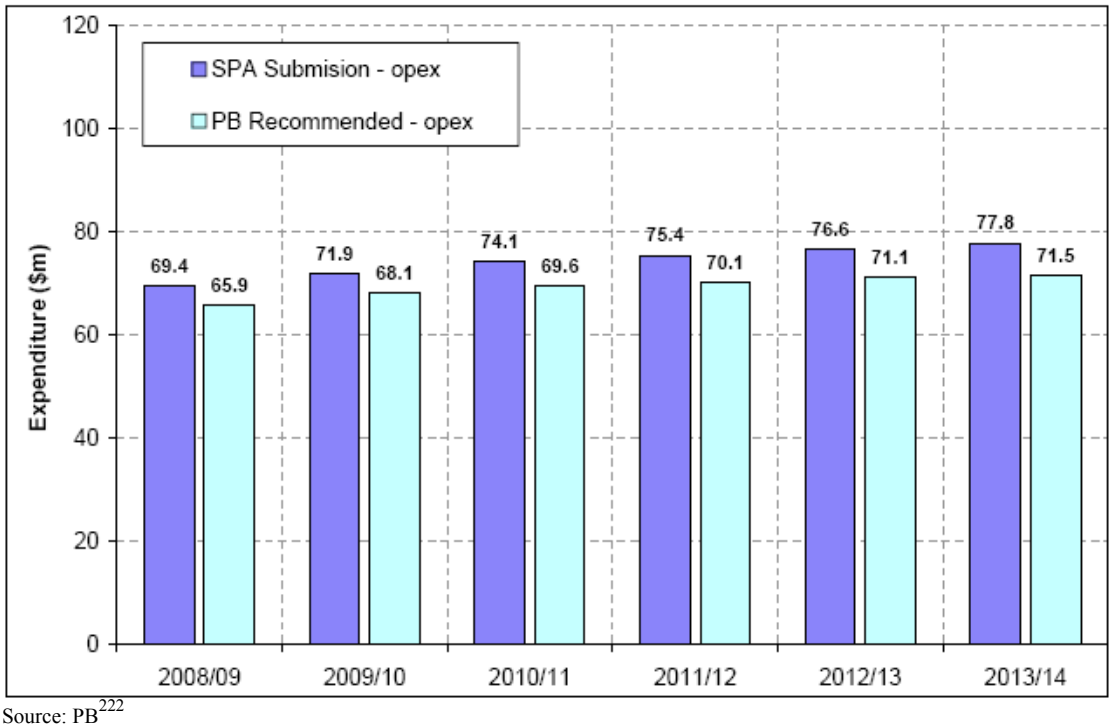
[221] PB Strategic Consulting, SP AusNet Revenue Reset – An Independent Review – Prepared for AER, 16 August 2007, pp.202-205.

- property damage to towers and lines
- the occurrence of catastrophic events, and
- the failure rate of power transformers and the risks of circuit breaker failures. ($6.9m reduction, $2007-08).

PB also recommend that SP AusNet's total opex be increased by $0.2m ($2007-08) to take into account a PB recommendation in relation to non-network capex. PB found that a small amount of expenditure that SP AusNet capitalises as inventory should instead be included as opex.

It should be noted that in PB's report, the dollar reduction shown for each individual recommendation is the dollar reduction that would result from making that reduction in isolation. As this is the approach taken in PB's report, the AER has replicated that approach in this chapter when describing PB's individual recommendations. However, the overall reductions shown in the table above and figure below, are the overall reductions that would result if the AER accepted all of PB's recommendations.

Figure 6.2 PB's recommendations ($2007-08, $m)



Source: PB[222]

6.6 Issues and the AER considerations – Controllable opex

This section analyses SP AusNet's proposed routine maintenance, asset works and corporate opex forecasts, as well its opex forecasts relating to assets SP AusNet proposes to roll into its RAB at the start of the forthcoming regulatory control period

[222] ibid., p.241.

to provide prescribed services. As SP AusNet's proposed real labour escalator of 2.8% effects several areas of its controllable opex proposal, this issue is analysed first.

6.6.1 Labour cost escalator

SP AusNet's proposal

In support of its proposal, SP AusNet submitted a report by BIS Shrapnel.[223] In proposing its forecast of opex required for the forthcoming regulatory control period, SP AusNet has adopted BIS Shrapnel's forecast annual real labour cost growth rate of 2.8% for the forthcoming regulatory control period.[224] SP AusNet has proposed different labour escalation figures for its capex proposal, supported by analysis in a report prepared by Sinclair Knight Merz (SKM).[225] The AER's analysis of these capex labour escalations is discussed separately in chapter 4.

In its proposal SP AusNet comments on difficulties recruiting staff in the current regulatory control period due to the economic boom in the mining and construction industries. SP AusNet also submits that an ageing workforce in the utilities industry is causing further difficulties as utility companies are recruiting from a shrinking pool of appropriately trained people.[226]

SP AusNet considers that a 2.8% real annual increase over the regulatory control period is a realistic forecast of labour growth rates given the historical movements over the past 15 years.[227]

Consultants' review

PB Strategic Consulting

PB examined the employment situation in Victoria generally, and more specifically at SP AusNet. PB believes the labour market will be tight for the next three years, but does not see this trend extending out across the entire regulatory control period. PB notes skilled migration programs used by large companies to reduce their individual skills shortages, suggesting this will reduce the tightness in the labour market in the next two to three years.

PB notes that SP AusNet is currently negotiating the terms and conditions of an Enterprise Bargaining Agreement (EBA) that will apply for the next three years with

[223] BIS Shrapnel, Outlook for wages to 2012/13: Electricity, Gas and Water Sector – Australia and Victoria, March 2007.

[224] The AER notes that SP AusNet's revenue proposal includes a real labour escalator of 2.83 per cent. This figure was based on a draft report submitted by BIS Shrapnel to SP AusNet. The final BIS Shrapnel report included a real labour cost escalator of 2.8 per cent. BIS Shrapnel's final report was not provided to SP AusNet in time for it to amend its proposal. The AER's analysis is based on the final BIS Shrapnel report and corresponding real labour escalator of 2.8.

[225] SKM, Escalation Factors Affecting Capital Expenditure Forecasts, 2007.

[226] SP AusNet, op. cit., p. 82.

[227] ibid., p.83.

the Communication Electrical & Plumbing Union (CEPU). PB considers the likely outcome of the EBA to be in the vicinity of a 5.5% nominal increase per annum, and recommends using this figure as the labour escalator for the first two years of the regulatory control period.

In assessing SP AusNet's proposal, PB had regard to the '*Average Weekly Earning, Industry, Australian (Dollars), Full Time Adult Males, Females and Persons for Electricity, Gas and Water Supply workers in Victoria*' (AWE) from November 1986 to November 2006, compiled by the Australian Bureau of Statistics (ABS). From this data PB derived a long term average growth rate of 4.94% over the 20 year period from 1986 to 2006. PB recommends using this figure as the labour escalator for the final four years of the regulatory control period.

An annual increase of 5.5% for the first two years of the regulatory control period and 4.94% for the final four years gives an overall average labour escalator of 5.13% over the regulatory control period. PB recommends using the nominal figure of 5.13% and removing SP AusNet's indicative inflation rate of 3.02%, to give a real labour escalator of 2.11% per annum. This represents a reduction of $6.42 m over the regulatory control period.[228]

Econtech

The AER engaged Econtech to review the annual labour cost growth forecasts submitted by SP AusNet. This draft decision should be read in conjunction with Econtech's report to the AER.

Econtech provided labour cost growth rates in Victoria from 1995-96 to 2015-16. These forecasts are consistent with Econtech's national forecasts. Table 6.3 provides annul labour cost growth rates in Victoria for the electricity, gas & water sector specifically, and for Victoria as a whole.

[228] PB Strategic Consulting, op. cit., p. 194.

Table 6.3 Econtech – Labour cost growth rates in Victoria, 1995-96 – 2015-16 (%)

	Electricity, gas and water	Victoria
1995-96	3.90%	3.70%
1996-97	3.40%	1.70%
1997-98	9.00%	4.80%
1998-99	0.20%	1.40%
1999-2000	11.80%	1.60%
2000-01	6.60%	4.60%
2001-02	7.50%	4.90%
2002-03	1.00%	7.70%
2003-04	-2.00%	4.60%
2004-05	2.80%	2.70%
2005-06	4.10%	4.40%
2006-07	1.80%	2.90%
2007-08	5.90%	5.50%
2008-09	**6.00%**	**5.10%**
2009-10	**7.60%**	**5.40%**
2010-11	**7.00%**	**5.20%**
2011-12	**6.20%**	**5.10%**
2012-13	**5.90%**	**5.00%**
2013-14	**5.60%**	**4.50%**
2014-15	5.00%	3.50%
2015-16	4.70%	3.50%

Source: Econtech[229]

Econtech makes the following observations in relation to the electricity industry generally, and in Victoria:

- The electricity, gas and water industry has exhibited above average wage growth over the last 20 years when compared to wage growth over the economy as a whole.
- Productivity movements in the electricity, gas and water industry have not been conducive to wage increases in recent times, and have in fact been negative since 2000-01 whilst wage growth has been relatively strong. The drive for increases in productivity in the industry is expected to lead to a fall in the number of lower-skilled workers, and a higher average wage.
- The utilities sector has been particularly hard hit by the skills shortage, given the demand for its output and competition for labour with the mining and construction industries. This has had an inflationary effect on wages as employers are forced to offer higher wages in order to retain staff.

[229] Econtech, *Labour Cost Growth Forecasts*, 2007, p.40. Annual labour growth rates that correspond with SP AusNet's forthcoming regulatory period are in bold.

- While skilled migration has been used to ease the supply shortage of engineers, the increase in skilled migrants has been insufficient to meet rising demand.
- The fact that electricity, gas and water are essential services means that businesses have a greater imperative to attract and maintain skilled workers, and are more likely to absorb wage increases in order to maintain labour supply.

Over the next regulatory control period, Econtech has forecast a compound average growth rate of 6.38% (nominal) for the Victorian utilities sector.

Issues and the AER's consideration

The AER has examined the forecasts of nominal wage growth put forward by BIS Shrapnel and Econtech and the analysis of historical data provided by PB. All three forecasts are specific to the electricity, gas and water industry, thus providing an appropriate benchmark against which to measure the expenditure likely to be incurred by an efficient TNSP over SP AusNet's regulatory control period. However, only Econtech and PB have provided forecast labour growth rates for the electricity, gas and water industry in Victoria. BIS Shrapnel has provided a national forecast of labour growth rates for the electricity, gas and water industry, and does not expect the forecasts in Victoria to be significantly different to the national forecasts.[230] The AER therefore considers a comparative analysis of the three forecasts is suitable for the purposes of cl. 6A.6.6(e)(4). Table 6.4 shows averages of the forecast labour cost growth rates provided by Econtech, BIS Shrapnel, and PB.

Table 6.4 Comparison of nominal wage growth forecasts (%)

	Econtech	BIS Shrapnel	PB
2008-09	6.00%	6.20%	5.50%
2009-10	7.60%	5.40%	5.50%
2010-11	7.00%	5.10%	4.94%
2011-12	6.20%	6.10%	4.94%
2012-13	5.90%	5.90%	4.94%
2013-14	5.60%	5.80%	4.94%
Average	**6.38%**	**5.70%**	**5.13%**

Source: Econtech, BIS Shrapnel, PB

[230] BIS Shrapnel op. cit., p. 29. BIS Shrapnel's analysis relies on AWOTE, which is not published at the state and industry level

On current economic circumstances, Econtech notes that:

> The electricity, gas and water industry employ a large proportion of electricians, electrical engineers and engineers. As such, it faces competition from industries such as the construction industry and the mining industry for the same type of skilled workers.[231]

The AER does not consider that the long-term (20 year) historical average relied upon by PB adequately takes account of the current economic circumstances, and therefore considers it a less reliable indicator of wage growth in the later years of the SP AusNet's forthcoming regulatory control period.

While the forecasts provided by BIS Shrapnel and Econtech relate to national and Victoria specific forecasts respectively, averages of the wage growth forecasts do not reveal significant differences between the two. Noting that three of the main drivers of wage growth are inflation, productivity growth and the tightness of the labour market, a closer examination of the assumptions supporting the forecasts adds further weight to this observation:

- BIS Shrapnel and Econtech both expect inflation to be higher on average in the future, and generally in the upper half of the RBA's target inflation zone of 2-3% over the regulatory control period.[232]
- BIS Shrapnel and Econtech are forecasting comparable levels of productivity (1.5% and 1.9% respectively) over the period 2008-14.[233] High productivity forecasts across the economy reduce wage inflation as businesses are able to absorb the above-inflation growth in wages. At a microeconomic level, if SP AusNet expects productivity savings in the future it will be able to absorb higher increases in wages due to productivity savings. In assessing SP AusNet's proposed labour escalation for the forthcoming period, the AER sought information from SP AusNet on expected productivity gains. SP AusNet advised that it was not expecting any significant productivity savings over the next regulatory control period.
- Based on CPI inflation and productivity alone, BIS Shrapnel and Econtech both forecast wages growth to be above the consumer price index and the long term average provided by PB. This is supported by similar assumptions regarding tightness in the labour market and the associated skills shortage.[234]
- BIS Shrapnel and Econtech both forecast wage growth in the utilities sector above the national average across all industries. This is consistent with historical experience which shows that, on average, wages in the utilities sector grow faster than the national average. The higher wage growth forecasts are also consistent with the current skills shortage being experienced in the utilities industry and across Australia more generally.[235]

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[231] Econtech, op. cit., p. 41.

[232] ibid.

[233] ibid., p 44.

[234] ibid., p. 45.

[235] ibid., p. 40.

Econtech also comments on the use of skilled migration to ease the skills shortage in engineering. In contrast to PB, Econtech does not expect skilled migration programs to have a significant impact on skills shortages in the utilities industry. While each notes that skilled migration will have some impact on the duration of the skills shortage, the AER considers that the more conservative view presented by Econtech is an appropriate assumption for the purposes of this review.

Table 6.5 compares the forecasts of nominal wages, inflation and real wages from BIS Shrapnel and Econtech.

Table 6.5 Comparison of nominal wage growth, inflation and real wage growth forecasts (%)

	Nominal wages		Inflation		Real wages	
	BIS	Econtech	BIS	Econtech	BIS	Econtech
2008-09	6.20%	6.00%	3.00%	2.90%	3.20%	3.01%
2009-10	5.40%	7.60%	2.90%	3.00%	2.50%	4.47%
2010-11	5.10%	7.00%	2.30%	2.50%	2.80%	4.39%
2011-12	6.10%	6.20%	2.90%	2.20%	3.20%	3.91%
2012-13	5.90%	5.90%	3.20%	2.30%	2.70%	3.52%
2013-14	5.80%	5.60%	3.20%	2.30%	2.70%	3.23%
Average	**5.70%**	**6.38%**	**2.90%**	**2.53%**	**2.80%**	**3.75%**

Source: BIS Shrapnel, Econtech

While there is some difference between the two, the independent forecasts provided by Econtech suggest that the forecasts provided by BIS Shrapnel, and relied on by SP AusNet, are not excessive.

Overall the AER does not consider there to be a significant difference between the forecasts for labour cost growth rates provided by BIS Shrapnel and Econtech for the forthcoming regulatory control period. Econtech itself notes that:

> … while BIS does not provide a wage forecast for the Victorian utility sector, its national and overall utility wage profile are fairly inline with Econtech.[236]

AER's conclusion

On the basis of the independent advice provided by Econtech and the BIS Shrapnel report provided by SP AusNet, the AER accepts that SP AusNet's proposed real labour growth escalator of 2.8%, based on the nominal rate of 5.7%, is a realistic expectation of increases in the cost of labour in SP AusNet's forthcoming regulatory control period. As noted above, SP AusNet has proposed a different labour escalator for the purposes of its capex forecasts. The AER accepts that the prices of operating and capital inputs may differ, as contemplated by cl. 6A.6.6(e)(6), and has considered the proposed capex labour escalator separately in chapter 4.

As required by cl. 6A.6.6(e)(8), the AER has considered whether the labour costs included in SP AusNet's opex forecast for the regulatory control period are consistent

[236] ibid., p.46.

with the incentives provided by the AER's service target performance incentive scheme (see chapter 7). No inconsistency has been identified.

6.6.2 Asset works opex

SP AusNet's proposal

SP AusNet refers to its system non-recurrent costs as its asset works opex. Unlike routine maintenance, asset works expenditure is directed at addressing specific problems on the transmission system. Over the forthcoming regulatory control period, SP AusNet states that the key areas of focus for its asset works program are:

- repair and prevention of tower corrosion;
- significant repair or refurbishment projects to mitigate asset failure risk;
- reduction in OH&S and environmental risk; and
- condition monitoring.[237]

SP AusNet also states that:

> The majority of SP AusNet's asset work program is driven by asset failure. The asset works program is preventative in nature and can significantly contribute to reducing total life cycle costs associated with asset failure and increased monitoring and maintenance needs.[238]

Table 6.6 below outlines SP AusNet's proposed asset works expenditure over the forthcoming regulatory control period.

Table 6.6 SP AusNet's proposal - Asset works opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
External contractor costs	9.9	10.9	11.8	11.8	11.8	11.8	**67.9**
Internal SP AusNet costs	2.2	2.2	2.2	2.2	2.2	2.2	**13.5**
Increased labour costs (external contractor and internal SP AusNet costs)	0.1	0.1	0.1	0.1	0.1	0.1	**0.6**
Support SNR	1.4	1.4	1.4	1.4	1.4	1.4	**8.3**
Total asset works	**13.6**	**14.6**	**15.5**	**15.5**	**15.5**	**15.5**	**90.3**

Source: SP AusNet (opex model)[239]

External contractor costs comprise the majority (75.27%) of SP AusNet's proposed asset works expenditure. SP AusNet's external contractor costs relate to 17 discrete projects, which have been individually scoped and costed. In contrast, the internal costs and support system non-recurrent (support SNR) costs associated with these projects have been calculated from a 2006-07 base year, using nine months of

[237] SP AusNet, op. cit., p.90.

[238] SP AusNet, Response to Cl. 6A.11.1 Information Request 2008/09 – 2013/14, p.15.

[239] Incorporates real annual labour cost escalator of 2.8%

unaudited data and three months of forecasts. A real annual labour escalator of 2.8% has been added to each of the external contractor costs, internal SP AusNet costs and support SNR costs. Whilst support SNR costs have been modelled to include the increased labour costs, SP AusNet's opex model assumes that the external contractor and internal SP AusNet costs have been inputted assuming constant real labour costs, and hence the increased labour costs for these two categories appears as a separate line item.

Each of SP AusNet's 17 asset works programs are listed in table 6.7 below, along with the corresponding expected external contractor costs. Most of these programs commenced in the current regulatory control period, and programs identified in the revenue proposal represent the continuation of an existing program. Many are also forecast to extend into the next regulatory control period (i.e. beyond 2013-14). Of these programs the costs listed in table 6.7 relate only to the costs of the program expected to be incurred over the forthcoming regulatory control period.

As can be seen in the following table, the major asset repair or refurbishment programs comprise over 40% of the total forecast external contractor costs. The largest single program is the SF_6 circuit breaker refurbishment program, which SP AusNet states is expected to cost $10.1m ($2006-07) over the forthcoming regulatory control period, excluding increased labour costs. SP AusNet states that these circuit breakers were purchased with the knowledge that a 'half-life' refurbishment would be necessary, and these circuit breakers are now reaching the age where the half-life refurbishment is required.[240]

[240] SP AusNet, SF_6 Circuit Breaker Refurbishment Program, pp.5-8.

Table 6.7 SP AusNet's proposal - External contactor costs (2006-07 $m)

	Cost over forthcoming regulatory control period ($2006-07)
Tower corrosion programs	*27% of total*
Tower foundation corrosion	4.2
Tower ground level corrosion	8.2
Tower painting	4.8
Tower bolt replacement	0.6
Major asset repair or refurbishment programs	*42% of total*
Replacement of tower steelwork	1.2
Replacement of transmission line hardware	1.8
SF_6 circuit breaker refurbishments	10.1
Gas insulated switchgear refurbishment	5.2
Power cable repairs[241]	7.5
Power and instrument transformer repairs	2.3
Occupational health & safety risk and environmental risk programs	*15% of total*
Asbestos removal	2.7
Switchyard resurfacing	2.5
Lead contamination	0.5
Transformer leaks and oil treatment	4.3
Other programs	*16% of total*
Condition monitoring	1.0
Facilities maintenance	2.8
Miscellaneous works	6.5
Total external contractor costs ($2006-07)	**66.2**
Total external contractor costs ($2007-08)	**67.9**

Source: SP AusNet (opex model)

Consultant's review

PB conducted a detailed review of 6 out of the 17 asset works programs. For each of these 6 programs, PB assessed the prudency and efficiency of the program by assessing the need for the work, the proposed timing of the works and the efficiency of the forecast external contractor costs. PB also reviewed the internal SP AusNet costs and conducted a high-level review of the remaining asset works programs.

The six asset works programs assessed in detail were:

- Tower foundation corrosion ($4.2m);

[241] In SP AusNet's proposal this figure is mistakenly represented as $7.0m. However the total external contractor costs in SP AusNet's proposal were calculated correctly (i.e. on the basis of $7.5m) and so require no correction. [SP AusNet, *Response to Cl. 6A.11.1 Information Request 2008/09 – 2013/14*, p. 16.]

- Tower ground level corrosion ($8.2m);
- Tower painting ($4.8m);
- SF_6 circuit breaker refurbishments ($10.1m);
- Power cable repairs ($7.5m); and
- Miscellaneous works ($6.5m).

With the exception of the power cable repairs project, which is discussed below, PB formed the view that sufficient evidence exists to justify the scope and timing of the projects reviewed. With the exception of the miscellaneous works project, PB also concluded that the estimated external contractor costs appear reasonable.

PB's recommendation – Double inflation escalation

PB's notes that it appears that the external contractor costs associated with several of these programs are specified in the project reports in 2007-08 dollars:

> PB notes, however, that in the opex model these 2007/08 contractor costs are again increased purportedly to escalate the costs to 2007/08 dollars. PB believes that this has resulted in incorrect annual amounts being included in the SP AusNet opex model for the contractor cost component of asset works.[242]

When questioned on this apparent error, PB notes that SP AusNet claimed that four of the asset works projects were expressed in $2006-07 in the project specifications, but conceded an error had been made to the remaining projects. To reverse this error in the remaining projects, PB recommends the reduction shown in table 6.8.

Table 6.8 PB's recommendation – External contractor costs (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
External contractor costs	67.9	-1.1	66.8

Source: PB[243]

PB's recommendation – Power cable repairs

The power cable repairs program relates to repairs on the Brunswick to Richmond (BTS – RTS) 220kV cable, which was installed in 1992. The cable joints used during construction were of a unique design that does not exist anywhere else in the world. PB notes that:

> The joints have been failing due to seal failure allowing moisture to ingress, breakdown of the epoxy insulator and breakdown of the insulating oil. Sheath testing has identified moisture ingress at all joints. To date one joint has failed explosively, one joint has been replaced due to a zero earth sheath reading, and one further joint is scheduled for replacement due to an oil leak.[244]

[242] PB Strategic Consulting, op. cit., p. 173.

[243] ibid., p. 174.

[244] ibid., p. 179.

SP AusNet plans to replace six joints per annum over the regulatory control period, resulting in all joints being replaced by the end of the forthcoming regulatory control period.

Among the information PB requested from SP AusNet in assessing this project were cable earth sheath readings. In relation to this data, PB states that:

> This data confirms the progressive ingress of moisture into the joints and is the most compelling evidence justifying the commencement of a comprehensive joint replacement program.[245]

PB notes that despite the compelling evidence to replace all of the joints, SP AusNet has included an allowance of $0.4m, as part of its cost estimates, to forensically investigate each of the joints as they are removed during the replacement program. PB also notes that there is a $0.1m discrepancy between the cost estimates in the detailed project specifications and the cost estimates in SP AusNet's proposal. PB considers that if the decision to replace the joints is made then it is of little value to keep investigating the failure modes of the original joints. PB states that:

> We therefore recommend that this allowance, as well as the variation in the project estimate, be removed from the total external contractor estimates for this project.[246]

PB's recommends a reduction of $0.5m ($2007-08) as is shown in the table below.

Table 6.9 PB's recommendation – Power cable repairs (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Power cable repairs	7.5	-0.5	7.0

Source: PB[247]

PB's recommendation – Miscellaneous works

SP AusNet's proposal included no information on its miscellaneous works program. Accordingly, PB requested SP AusNet to provide details of the works covered by the miscellaneous works program. The information provided by SP AusNet listed almost 50 different activities that the miscellaneous works program may include but was not limited to.

PB reviewed the information provided by SP AusNet, and notes that, with the exception of radio licensing, "it is of a very general nature" and some of the works appear to be of a capital nature.[248] PB also found that:

> Other works included in Miscellaneous Works appear as if they should be covered by recurrent expenditure such as some testing programs detailed in the Minor Works Programs Primary and Secondary, radio maintenance and license fees.[249]

[245] ibid., p. 181.

[246] ibid., p. 182.

[247] ibid.

[248] ibid., p. 192.

PB notes that whilst the estimated cost of this program is less than that in the current regulatory control period, this reduction is due to:

> …a number of asset works jobs that were previously included in the Miscellaneous Works [but] have now been included as separate asset works programs e.g. Condition Monitoring Development, Line Hardware Maintenance, Tower Bolt Replacement, and Tower Steelwork Replacement.[250]

PB acknowledges the need for an allowance for miscellaneous works but finds that SP AusNet has not provided sufficient evidence or cost data to justify the allowance requested. PB finds that:

> On the information available, and drawing on experience and professional judgement, PB recommends that the external contractor allowance for the [forthcoming] regulatory period is set at 1.0% of the real controllable opex.[251]

Based on the controllable opex forecast in SP AusNet's proposal, PB's recommended reduction is set out in table 6.10 below.

Table 6.10 PB's recommendation – Miscellaneous works (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Miscellaneous works	6.5	-2.0	4.5

Source: PB[252]

PB's recommendation – Internal SP AusNet costs

SP AusNet's opex model includes an annual estimate of internal SP AusNet engineering and supervisory costs of $2.3m. PB requested additional information on SP AusNet's approach to forecasting this cost. PB notes that:

> The additional information provided by SP AusNet indicates that it conducted a bottom-up build to determine the internal estimate costs for each specific asset works project. The internal estimated cost of Internal SPA Costs for all projects scheduled for the next regulatory control period was $12.72m (2007/08) dollars which translates into $2.12m per annum. However, SP AusNet did not use this figure when forecasting its costs for the next regulatory period. Instead, it adopted the estimate for the 2006/07 financial year of $2.25m as the benchmark figure for the model.
>
> PB has formed the view that as SP AusNet has used a bottom-up approach to estimate the Internal SPA Costs for each specific asset works project then this is the figure that should be included in the opex model. This is the same approach that SP AusNet has used in determining the external contractor costs for each specific asset works project.[253]

Adopting PB's recommendation results in the following reduction to internal SP AusNet costs.

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[249] ibid.

[250] ibid.

[251] ibid.

[252] ibid., p.193.

[253] ibid., p.195.

Table 6.11 PB's recommendation – Internal SP AusNet costs (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Internal SP AusNet costs	13.5	-0.8	12.7

Source: PB[254]

Issues and the AER's considerations

The AER agrees with each of PB's recommendations on SP AusNet's asset works program. In addition, in regards to the tower foundation corrosion program, the AER found that a variation exists between the costs outlined in the detailed project specifications and the costs in SP AusNet's proposal. As no justification for this variation exists, consistent with PB's recommendation on the power cable repairs program, the AER has removed this variation.

AER's considerations – Double inflation escalation

The AER concurs with PB's finding that at least several of the external contractor costs have been erroneously double inflated by SP AusNet. It is evident, from those project specification booklets where a cost breakdown in shown, that these costs are expressed in $2007-08. Yet the opex model assumes these costs are expressed in $2006-07, and hence inflates these by an inflation rate of 2.6%. SP AusNet has acknowledged this error in 13 of the total 17 asset works projects, but not the remaining 4. As this is clear double counting in the case of the 13 projects that SP AusNet has acknowledged, the amount that the costs are escalated by overstates the benchmark opex that would be incurred by an efficient TNSP over the regulatory control period, and are neither efficient nor prudent.

AER's considerations – Power cable repairs

In relation to the power cable repairs program, PB considers that as the condition of each of the joints necessitates the replacement of all the joints, testing each joint as it is removed is unnecessary. PB also recommends the removal of the $0.1m variation between the costings in the detailed project specifications and the total project cost in SP AusNet's proposal. The AER concurs with both of PB's recommendations, and considers that SP AusNet's proposed allowance to test each of the cable repair joints does not represent the cost a prudent TNSP in the circumstances of SP AusNet would incur, or require to achieve the opex objectives. The AER also considers that there is no justification for the variance between the detailed project costings and the cost specified in the revenue proposal and is not satisfied that the amount of this variance ($0.1m) is efficient.

AER's considerations – Tower foundation corrosion

Similarly, the AER notes that the detailed project costings for the tower foundation corrosion program show a total cost of $4.16m for the project, whereas in the opex model the total project cost is $4.22m. Most of this variance appears to be caused by

[254] ibid.

an error in the opex model for the 2008-09 costs for this project. As there is no justification for the variance between the detailed project costings and the cost specified in the opex model, the AER considers that the amount of the variance is above that which would be incurred by an efficient TNSP.

AER's considerations – Miscellaneous works

The AER considers that whilst there is some justification for a miscellaneous works program, the allowance sought by SP AusNet for miscellaneous works has not been justified. Further, some expenditure already appears to be compensated for via the routine maintenance allowance. PB's recommendation to set a miscellaneous works allowance at 1 % of total controllable opex is based on PB's experience and professional judgement The AER is therefore satisfied that this recommendation reasonably reflects the costs that a prudent operator in circumstances of SP AusNet would require to achieve the opex objectives. Accordingly, the AER has calculated the miscellaneous works allowance to be 1% of the controllable opex allowance in this decision.[255]

AER's considerations – Internal SP AusNet costs

PB notes that whilst SP AusNet has performed a bottom up estimate of the internal costs associated with its asset works program, it has instead sought an allowance based on nine months of unaudited data and three months of forecast data from 2006-07. PB recommends that, as SP AusNet has performed a bottom up cost estimate, this is the cost which should be used. On the basis of PB's recommendation, the AER is not satisfied that SP AusNet's proposed internal asset works costs reasonably reflect a realistic expectation of the cost inputs SP AusNet requires to achieve the opex objectives. On the other hand, the AER considers that SP AusNet's detailed bottom up assessment of its internal costs do reasonably reflect a realistic expectation of it cost inputs in the forthcoming regulatory control period. Given the variability in the asset works support costs in previous years, using a benchmark from one year seems even less reasonable, hence further justifying using the bottom up approach calculation for the forthcoming regulatory control period.

AER's conclusion

The AER considers that the $90.3m proposed by SP AusNet relating to its asset works program exceeds the benchmark opex that would be incurred by an efficient TNSP over the regulatory control period, and does not reflect the efficient costs required to achieve the opex objectives.

Having reviewed SP AusNet's proposal in light of the analysis undertaken by PB, the AER considers an estimate that reasonably reflects the costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives to be $85.6m for asset works over the forthcoming period, this represents a reduction to SP AusNet's proposal of $4.7m.

[255] To avoid the problem of circularity, this allowance has been set at 1% of controllable opex (excluding miscellaneous works).

Table 6.12 AER's draft decision – Asset works program (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
External contractor costs	9.9	10.9	11.8	11.8	11.8	11.8	**67.9**
Internal SP AusNet costs	2.2	2.2	2.2	2.2	2.2	2.2	**13.5**
Increased labour costs (external contractor and internal SP AusNet costs)	0.1	0.1	0.1	0.1	0.1	0.1	**0.6**
Support SNR	1.4	1.4	1.4	1.4	1.4	1.4	**8.3**
SP AusNet's proposal	**13.6**	**14.6**	**15.5**	**15.5**	**15.5**	**15.5**	**90.3**
External contractor costs	10.2	10.3	11.0	10.7	11.0	10.7	**64.0**
Internal SP AusNet costs	2.1	2.1	2.1	2.1	2.1	2.1	**12.7**
Increased labour costs (external contractor and internal SP AusNet costs)	0.1	0.1	0.1	0.1	0.1	0.1	**0.6**
Support SNR	1.4	1.4	1.4	1.4	1.4	1.4	**8.3**
AER's decision	**13.8**	**13.9**	**14.6**	**14.3**	**14.6**	**14.3**	**85.6**

Source: SP AusNet, AER analysis

Of the AER's $4.7m reduction, $3.9m relates to external contractor costs and $0.8m relates to internal SP AusNet costs. The annual reductions are set out in table 6.13 below.

Table 6.13 AER's draft decision – Asset works program (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet proposal	13.6	14.6	15.5	15.5	15.5	15.5	90.3
AER reduction	+0.2	-0.7	-0.9	-1.2	-0.9	-1.2	-4.7
AER decision	**13.8**	**13.9**	**14.6**	**14.3**	**14.6**	**14.3**	**85.6**

Source: SP AusNet, AER analysis

6.6.3 Routine maintenance opex

SP AusNet's proposal

For the maintenance, system operation, OH&S and support system recurrent (support SR) categories, SP AusNet has applied an annual real cost escalator to the level of expenditure in a base year from the current regulatory control period (2006-07).

SP AusNet has not made any adjustments to its base year expenditure. At the time SP AusNet lodged its proposal, actual expenditure for the full 2006-07 year was not available. As a result SP AusNet has calculated its 2006-07 base year expenditure on nine months of unaudited actual expenditure and three months of forecast expenditure.

From the base year expenditure, SP AusNet escalated the labour component of the maintenance, system operation, OH&S and support SR categories by 2.8% (real). The labour component was calculated as the average percentage of labour costs to total costs in each category over the three years between 2004-05 to 2006-07. SP AusNet did not apply a real escalator to its materials costs in these categories, though these costs (along with the increased real labour costs) are escalated by forecast inflation in the PTRM.

For the taxes category (which comprises of individual forecasts for non-easement land tax, council rates and water rates), SP AusNet also used an escalated base year approach. The base year (non-easement) land tax was based on SP AusNet's 2006 (non-easement) land valuation, whereas the base year for its council and water rates was based on its 2006-07 forecast expenditure for these categories. For (non-easement) land tax, SP AusNet forecast its expenditure by applying an annual real escalator to its 2006 land valuation, and then applying the tax rates found in the *Land Tax Act 2005* to these land value forecasts. For council and water rates, the escalator was applied directly to the base year expenditure. In each case, the same annual real escalator was used, being the real 20 year (June 1987 to June 2006) arithmetic average annual increase in Melbourne house prices, which SP AusNet calculates as 4.00%.

For the insurance category, SP AusNet used a bottom-up approach, based on insurance broker estimates.

In SP AusNet's proposal, submitted on 28 February 2007, the taxes forecast was $24.6m ($2007-08) over the regulatory control period. On 30 May 2007, SP AusNet advised the AER that in the 2007-08 budget the Victorian Government announced a reduction in (non-easement) land tax, from a top rate of 3.0% to 2.5%. Accordingly, SP AusNet submitted a revised tax forecast. The revision decreased SP AusNet's total land tax forecast by $3.8m ($2007-08). Table 6.14 below incorporates the change in forecast land tax into SP AusNet's total routine maintenance forecast.[256] For the purposes of assessing SP AusNet's proposal under the NER, the AER accepts SP AusNet's proposal as incorporating its revised land tax forecast submitted to the AER on 30 May 2007.

[256] In SP AusNet's proposal (submitted 28 February 2007), the total tax forecast ($24.6m, $2007-08) was slightly higher than that specified in the tax model submitted by SP AusNet ($24.0m, $2007-08). The AER has taken this to be an error in SP AusNet's proposal rather than an error in the tax model, on which the proposal is based. Accordingly, the reduction of $3.8m accounts for the reduction in the land tax forecast ($3.2m) and the error in the proposal ($0.6m).

Table 6.14 SP AusNet's (revised) proposal - Routine maintenance opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Maintenance	18.1	18.4	18.8	19.1	19.5	19.9	**113.8**
System operation	2.7	2.7	2.8	2.8	2.9	3.0	**16.9**
OHS	0.6	0.6	0.6	0.6	0.6	0.6	**3.7**
Support SR	4.9	5.1	5.2	5.3	5.4	5.5	**31.4**
Subtotal	**26.3**	**26.8**	**27.3**	**27.9**	**28.5**	**29.1**	**165.8**
Taxes	3.1	3.3	3.4	3.5	3.7	3.8	**20.9**
Insurance	2.9	3.2	3.4	3.5	3.5	3.5	**20.0**
Subtotal	**6.0**	**6.4**	**6.8**	**7.0**	**7.2**	**7.3**	**40.8**
Total	**32.3**	**33.2**	**34.1**	**34.9**	**35.7**	**36.4**	**206.6**

Source: SP AusNet (opex model, revised tax model)

Submissions

Energy Users Association of Australia

The EUAA questions why SP AusNet's proposed maintenance expenditure is increasing in real terms, given SP AusNet's significant capex program. Specifically, the EUAA states:

> In an environment where there is significant non-augmentation expenditure on new assets that require less maintenance in the next regulatory period, the EUAA would expect that asset maintenance expenditure might be expected to remain stable, or even fall in the next period, yet this does not seem to be the case here.[257]

Energy Users Coalition of Victoria

The EUCV states that there is a relationship between capex and opex, as the reduction in opex is what justifies the capex spend. The EUCV states that the AER must recognise this relationship in assessing SP AusNet's proposal.[258]

Consultant's review

PB states that whilst it is "generally satisfied" with the methodology used by SP AusNet to forecast its recurrent opex, which includes routine maintenance, it has identified several issues in relation to the opex modelling used by SP AusNet.[259] These issues relate to SP AusNet's insurance and maintenance forecasts.

PB's recommendations are discussed in further detail below. PB notes that SP AusNet's audited results for the base year from which SP AusNet forecast much of its routine maintenance forecasts were not available at the time of PB's review.

[257] EUAA, op. cit., p.15.

[258] EUCV, op. cit., p.40.

[259] PB Strategic Consulting, op. cit., p.168.

PB's recommendation - insurance

PB reviewed the basis underlying the future insurance premiums advised by SP AusNet's broker, as well as the prudency of the share of insurance costs SP AusNet has allocated to transmission.

On the insurance premium forecasts, PB found that, in general, the broker had used current risk profiles, with the exception of property cover where the forecast premiums assume an improving risk profile.

PB considers that SP AusNet's allocation of 60 % of the insurance forecasts to the transmission business, based on the actual insurance premiums paid in 2006-07, is reasonable. However, PB found that:

> …it appears that the total transmission premium has been allocated to the regulated business, instead of just that proportion applicable to the regulated assets.[260]

PB notes that, if the AER accepts SP AusNet's proposal to roll $118.7m worth of non-contestable assets into the regulated asset base, the split between regulated and unregulated assets in the forthcoming regulatory control period will be 93.21% to 6.79%. On this basis:

> PB recommends, therefore, that the insurance premiums in the SP AusNet opex model be reduced by 6.79% to reflect the percentage of unregulated assets covered by these premiums in the next regulatory period.[261]

This reduction is shown in table 6.15 below. PB notes that:

> If the roll-in amount changes then the percentage split between regulated and non-regulated assets will change and the impact of this recommendation will also have to be re-calculated.[262]

Table 6.15 PB's recommendation – Insurance (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Insurance	20.0	-1.4	18.6

Source: PB[263]

PB's recommendation – NW contract

PB found that prior to 31 March 2007 SP AusNet contracted out the provision of operation and maintenance services in northern and western Victoria to Transfield. At the expiry of this contract, SP AusNet conducted an open tender process receiving compliant tenders from both Transfield and Powercor, and awarded the contract to Powercor.

[260] ibid., p.169.

[261] ibid.

[262] ibid.

[263] ibid.

PB found that the north-west area covers essentially two-thirds of SP AusNet's asset base, and accounts for approximately half of the total operational and maintenance effort.

The new contract is based on a new contract model which encompasses a contribution of fixed unit rates for planned works, a reimbursable 'target cost' for unplanned works and a fixed cost associated with corporate overhead and support functions.

PB found that this new contract, in present value terms (over 5 years) was $1.82m ($2006-07) less than the Transfield tender. PB found that:

> This new contract commenced during the current regulatory period and therefore, in our view, has an impact on the adoption of 2006/07 as an efficient base year to forecast future operational expenditures. PB recommends that as this new maintenance and operation contract will result in efficiency gains being achieved during this current regulatory period, the impact of this contract should be factored into the forecast for operational expenditures.[264]

Using a real discount rate of 5.66%, a 5 year period and the NPV of $1.82m ($2006-07), PB calculated the annual savings expected from the new NW contract, and assumed the same savings would occur in the final two years of the forthcoming period, which are not covered by the contract. Based on these assumptions, PB recommends a reduction to the base year routine maintenance figure of $0.439m ($2007-08), leading to an overall reduction of $2.8m.

Table 6.16 PB's recommendation – Adjustment for NW contract (2007-08 $m)

	SP AusNet's proposal	PB's reduction	PB's recommendation
Maintenance	113.9	-2.8	111.1

Source: PB[265]

PB's recommendation – capex/opex tradeoff

PB reviewed the prudency of SP AusNet's opex model to produce efficient routine maintenance forecasts in light of SP AusNet's capex and asset works programs over the forthcoming regulatory control period.

PB found that:

> The [SP AusNet] opex model is based on the assumption that the maintenance effort remains constant from the base year… This assumption ignores the impact of the asset refurbishment/replacement capital programs and also the asset works opex programs on the routine maintenance effort required to keep the asset in service. Essentially the model assumes that the refurbished and replaced assets require the same amount of routine inspection and rectification maintenance as the older assets they replace.[266]

Based on experience in other jurisdictions, PB considers that the replacement of aged substations results in a reduction of approximately 30% in routine maintenance effort

[264] ibid., pp. 169-170.

[265] ibid., p.170.

[266] ibid., p.199.

over the medium term, and that SP AusNet's routine maintenance forecasts should incorporate these savings.

PB's approach to forecast the resultant opex savings was to:

- re-cast forecast annual asset replacement/refurbishment capital expenditures in real 2007/08 dollars
- determine a surrogate for [SP AusNet's] asset replacement costs as at 2006/07 and recast into 2007/08 dollars. This was done by increasing the 2006/07 closing RAB value in proportion to the ratio of the weighted average remaining life of the assets to the weighted life of all the [SP AusNet] assets in 2006/07
- calculate the percentage of forecast annual capital expenditure relative to the base year [SP AusNet] asset replacement cost
- reduce the percentage of annual capital expenditure relative to the [SP AusNet] base year asset replacement cost by 30%
- use the [SP AusNet] opex model to calculate the annual reduction in recurrent maintenance expenditures using the ratios determined by this methodology[267]

Following this approach, PB forecast opex savings of $4.8m ($2007-08) resulting from SP AusNet's proposed capex and asset works programs, which have not been incorporated into the opex model.

In making this recommendation, PB assumed that SP AusNet's total proposed capital works program will be implemented. PB notes that if this program is substantially altered, the input data for these calculations will need to be adjusted, and the dollar reduction recalculated.

Table 6.17 PB's recommendation – Adjustment for forward capex programs (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Maintenance	113.9	-4.8	109.1

Source: PB[268]

Issues and the AER's considerations

AER's considerations – insurance

The AER concurs with PB's finding that all of the transmission business's insurance premiums have been allocated to the regulated side of the business, and accordingly SP AusNet effectively proposes that the regulated side incur the insurance costs of the unregulated assets. The costs of insuring the unregulated assets are not directly involved in the provision of prescribed transmission services, and accordingly should not be included in SP AusNet's opex forecast. In determining the percentage split to the regulated side of the business, the AER has incorporated the revised value of the assets that are to be rolled in the RAB, as discussed in chapter 3. This resulted in a regulated / unregulated split of 93.10% / 6.90%.

[267] ibid., p.201.

[268] ibid.

AER's considerations – NW contract

The AER agrees with PB that the effect of the new NW contract should be incorporated into SP AusNet's maintenance forecasts. As the new contract commenced on 1 April 2007, the day after the end of the base year SP AusNet has used to forecast its expenditure, the effect of this new contract is not captured in the maintenance forecasts. On this matter SP AusNet states:

> However, SPA's treatment (that is ignoring these savings) is consistent with the regulatory regime where any further savings in the final year of the current period will in effect receive a five year glidepath during the next period as they will not be included in the base opex numbers.
>
> …
>
> SPA would expect that any efficiency savings achieved in the final year receive a five year glidepath.[269]

SP AusNet is correct in that efficiency savings achieved in the final year of the current regulatory control period will receive a five year glide path. In calculating the glide path amount, SP AusNet has averaged its actual and expected underspends in each year of the current regulatory control period, including the final year 2007-08. As a result, the expected 2007-08 efficiency gains resulting from the introduction of the new NW contract appear in SP AusNet's glide path calculation and subsequent glide path allowance. For SP AusNet to ignore these savings in forecasting its opex requirements means that SP AusNet would be rewarded for these savings twice; once through the glide path allowance, and again through its opex allowance.

Accordingly, as the 2007-08 efficiency savings from the NW contract are already included in the glide path calculation, the AER does not consider that ignoring these savings, in forecasting opex for the forthcoming regulatory control period, is consistent with the regulatory regime.

Under the NER, SP AusNet's opex forecasts must reasonably reflect a realistic expectation of the cost inputs required to achieve the opex objectives, among other criteria. The introduction of the new NW contract has an identifiable impact on SP AusNet's expected opex requirements in the forthcoming regulatory control period. Ignoring these expected savings would be inconsistent with the requirement that SP AusNet's forecasts reflect a realistic expectation of its opex cost inputs.

In calculating the opex savings from this new contract, PB has made the assumption that the costs from Transfield's revised tender for the new contract are the same as the costs from Transfield's old contract. The AER considers that as SP AusNet has provided the contract charges for the new contract, the maintenance savings from the new contract can be calculated more directly by using the contract charges from the new contract.

[CONFIDENTIAL TEXT OMITTED]

[269] SP AusNet, *SPA Comments on Opex in PB Report*, 26 July 2007, p.1.

With reference to the total contract costs, and assuming the costs for the NW area in the final two years of the forthcoming period equal the average annual cost over the life of the contract, the AER has calculated that the maintenance savings from the new contract are likely to result in a reduction of $6.8m ($2007-08), compared to SP AusNet's maintenance forecasts, over the forthcoming regulatory control period. These savings are not included in SP AusNet's opex model. The AER therefore considers that SP AusNet's forecast costs do not reflect a realistic expectation of the cost inputs required by SP AusNet to meet the opex objectives, and has made a corresponding adjustment of $6.8m ($2007-08) to SP AusNet's forecast to give a revised estimate that the AER is satisfied reasonably reflects those costs.

The AER considers that $6.8m ($2007-08) is a conservative estimate of the expected reduction from SP AusNet's maintenance forecasts resulting from the new contract as in determining this amount the AER:

- assumes no materials costs are already included in the contract charges. [CONFIDENTIAL TEXT OMITTED]
- [CONFIDENTIAL TEXT OMITTED]
- has included a [CONIFIDENTIAL TEXT OMITTED] annual contingency for the minimal price variation risk of the expected contract charges
- assumes no "admin", "other operating" or "minor equipment" costs are already included in the contract charges

Table 6.19 AER's draft decision – Adjustment for NW contract (2007-08 $m)

	SP AusNet's proposal	AER's adjustment	AER's decision
Maintenance	113.8	-6.8	107.0

Source: AER analysis

AER's considerations – capex/opex tradeoff

The AER considers that SP AusNet's capex and asset works programs would be expected to lead to a reduction in operating, particularly routine maintenance, expenditure. The AER also considers that this reduction has not been captured in SP AusNet's opex modelling.

PB has determined that the expected opex savings resulting from SP AusNet's proposed capex and asset works programs is $4.8m ($2007-08). This reduction has been made by calculating the annual capex spend as a proportion of the RAB replacement cost, reducing this by 30%, then using this ratio in SP AusNet's opex model to calculate the maintenance forecasts.

The AER accepts PB's recommendation, based on PB's experience in other jurisdictions and professional judgment, that the replacement of substation and other assets generally leads to a 30% reduction in maintenance requirements. As noted above, PB's recommended reduction in maintenance due to the capex/opex trade-off is based on the assumption that all of SP AusNet's forward capex program proceeds as set out in SP AusNet's proposal. The AER has recalculated this figure to account for the reductions the AER has determined in relation to SP AusNet's capex program.

As the AER determined that a bottom-up build should be used to forecast the maintenance expenditure for the northwest area, the AER has only applied PB's recommendation on the capex/opex tradeoff to maintenance not related to the northwest area. Accordingly the AER considers the appropriate reduction in (non-northwest) maintenance to account for SP AusNet's capex program is $2.4m ($2007-08).

AER's considerations - taxes

For (non-easement) land tax, council rates and water rates (termed the "taxes" category) SP AusNet has forecast this expenditure using an escalated base year approach. The base year (non-easement) land tax was based on SP AusNet's 2006 (non-easement) land valuation, whereas the base year for its council and water rates was based on its 2006-07 forecast expenditure for these categories. In each case, the same annual real escalator was used, being the real 20 year (June 1987 to June 2006) simple average annual increase in Melbourne house prices, which SP AusNet calculates as 4.00%.

Whilst the AER considers that using a long term (20 year) average is reasonable in this matter, the AER does not consider that the choice of average applied by SP AusNet is reasonable. The AER considers that, in this case, it is not reasonable to base future growth on a simple arithmetic average of historical growth, as it does not account for the historical timing of growth to the same extent as a compound average does. For that reason, an arithmetic average can not be relied upon to form a realistic expectation of the costs likely to be incurred in the next regulatory control period. Based on the same data and over the same time, though using a compound average rather than an arithmetic average, the AER calculates an annual real escalator of 3.63%, instead of the 4.00% derived by SP AusNet. The AER notes that in averaging historical growth rates, PB and Econtech also use compound averages instead of arithmetic averages.

Substituting SP AusNet's real escalator of 4.00% with 3.63% results in the following reduction.

Table 6.20 AER's draft decision – Taxes (2007-08 $m)

	SP AusNet's (revised) proposal	AER's adjustment	AER's decision
Taxes	20.9	-1.1	19.8

Source: AER analysis

AER's conclusion

The AER is not satisfied that the $206.8m proposed by SP AusNet relating to its routine maintenance forecasts reasonably reflect the efficient routine maintenance costs SP AusNet requires to achieve the opex objectives over the forthcoming regulatory control period.

In reaching this conclusion the AER has considered a number of factors, including the substitution possibilities between operating and capital inputs, and the benchmark costs that would be incurred by a prudent TNSP over the regulatory control period, as

required by cl. 6A.6.6(e) of the NER. For the reasons outlined above, the AER considers that a downward adjustment of $11.7m ($2007-08) to SP AusNet's proposed forecast of the routine maintenance costs results in a revised estimate that reasonably reflects the efficient costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives.

Table 6.21 AER's draft decision – Routine maintenance (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Maintenance	18.1	18.4	18.8	19.1	19.5	19.9	**113.8**
System operation	2.7	2.7	2.8	2.8	2.9	3.0	**16.9**
OHS	0.6	0.6	0.6	0.6	0.6	0.6	**3.7**
Support SR	4.9	5.1	5.2	5.3	5.4	5.5	**31.4**
Taxes (revised)	3.1	3.3	3.4	3.5	3.7	3.8	**20.9**
Insurance	2.9	3.2	3.4	3.5	3.5	3.5	**20.0**
SP AusNet's proposal	**32.3**	**33.2**	**34.1**	**34.9**	**35.7**	**36.4**	**206.6**
Maintenance	16.9	17.3	17.9	17.1	17.6	17.7	**104.6**
System operation	2.7	2.7	2.8	2.8	2.9	3.0	**16.9**
OHS	0.6	0.6	0.6	0.6	0.6	0.6	**3.7**
Support SR	4.9	5.1	5.2	5.3	5.4	5.5	**31.4**
Taxes (revised)	3.0	3.1	3.2	3.4	3.5	3.6	**19.8**
Insurance	2.7	3.0	3.1	3.3	3.3	3.3	**18.6**
AER's decision	**30.9**	**31.8**	**32.8**	**32.5**	**33.3**	**33.7**	**195.0**

Source: SP AusNet, AER analysis

Table 6.22 AER's draft decision – Routine maintenance (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	32.3	33.2	34.1	34.9	35.7	36.4	**206.6**
AER's adjustment	-1.4	-1.5	-1.3	-2.5	-2.4	-2.7	**-11.7**
AER's decision	**30.9**	**31.8**	**32.8**	**32.5**	**33.3**	**33.7**	**195.0**

Source: SP AusNet, AER analysis

6.6.4 Corporate opex

SP AusNet's proposal

For each category of corporate opex, SP AusNet has forecast its opex requirement by applying a cost escalation factor to the level of expenditure in a base year from the current regulatory control period (i.e. 2006-07).

SP AusNet has not made any adjustments to its base year expenditure. At the time SP AusNet lodged its proposal, actual expenditure for the full 2006-07 year was not available. SP AusNet calculated its 2006-07 base year expenditure on nine months of unaudited actual expenditure and three months of forecast expenditure.

From the base year expenditure, SP AusNet escalated the labour component of each corporate opex category by 2.8% (real). The labour component was calculated on the average percentage of labour costs to total costs in each category over the three years between 2004-05 to 2006-07. The resulting corporate opex forecast is shown in table 6.23.

Table 6.23 SP AusNet's proposal - Corporate opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Management fees	7.8	8.0	8.3	8.5	8.7	9.0	**50.3**
Finance	3.0	3.1	3.1	3.2	3.2	3.3	**18.8**
HR	0.7	0.7	0.7	0.7	0.7	0.7	**4.3**
IT	4.0	4.0	4.0	4.1	4.1	4.2	**24.4**
Other corporate	3.2	3.3	3.3	3.3	3.4	3.4	**19.9**
Corporate opex	**18.7**	**19.0**	**19.4**	**19.8**	**20.2**	**20.6**	**117.7**

Source: SP AusNet (opex model)

Submissions

Energy Users Association of Australia

On SP AusNet's related party management company and the associated management costs, the EUAA states that it is:

> …concerned that implementation of this new management structure makes it increasing[ly] difficult to unravel the financial arrangements that exist between the regulated entities and the management company.[270]

The EUAA notes that the management contracts appear to incentivise the management company to reduce costs. However, the EUAA:

> …believes that cost savings that can be achieved by the regulated businesses should be shared between those business and end users, rather than shared between the regulated businesses and management companies, through this type of incentive arrangement.[271]

Also on the subject, the EUAA states that:

> …the 'management services charges' that are included within the management fee … appear to incorporate a component of fixed increases not related to incurred management costs (see pages 197 and 198 of the SP AusNet Prospectus and Product Disclosure Statement, …) and the EUAA questions whether it is appropriate to allow fees such as these to be included within the opex allowance for the regulated business.[272]

Consultant's review

[270] EUAA, op. cit., p.16.

[271] ibid., p.17.

[272] ibid.

PB reviewed the implementation of the management company, which was set up in 2005, and the allocation of management expenses to the transmission business.

PB considers that the introduction of the management company has not resulted in an overall increase in overheads, because the creation of the management company reallocated existing supervisory costs to the management company which are then charged back to SP AusNet.

PB is satisfied that the survey method used to allocate the management fees to the regulated transmission business results in a reasonable outcome.

Issues and the AER's considerations

This section analyses the reasonableness of SP AusNet's proposed management fees of $50.3m ($2007-08).

SP AusNet has entered into a management services agreement with a related party, SPI Management Services. Cl. 6A.6.6(e)(9) of the NER explicitly requires the AER, in assessing SP AusNet's forecast opex requirements, to have regard to the extent to which SP AusNet's forecast of required opex is referable to arrangements with a person other than SP AusNet that, in the opinion of the AER, do not reflect arm's length terms.

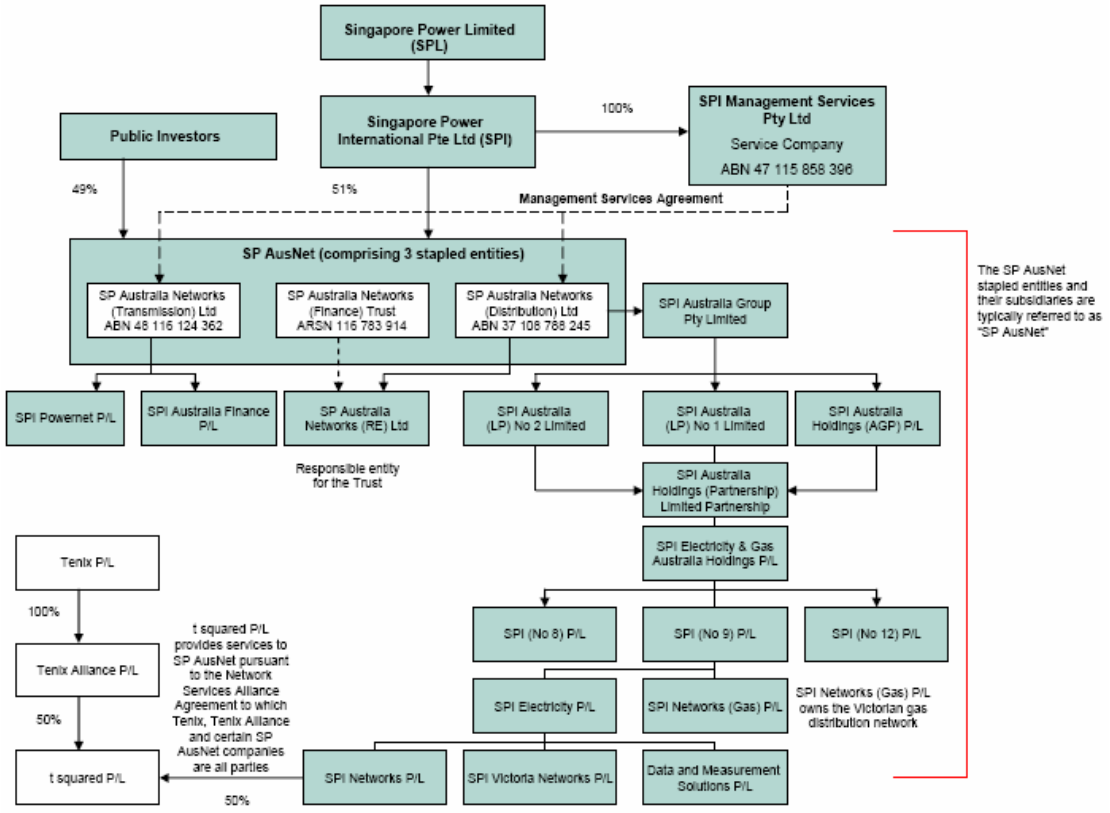
The management charges SP AusNet pays SPI Management Services are total contract charges, and is not broken down into components. To assess the reasonableness of these charges, the AER has modelled a bottom up analysis to estimate the expected level of management charges that would be incurred by a benchmark efficient TNSP in SP AusNet's circumstances, based on information from SP AusNet and other sources.

AER's considerations – management fees

SPI Management Services, is a fully owned subsidiary of Singapore Power International, and has entered into a long-term contract (initial term of 10 years) with SP AusNet Transmission and SP AusNet Distribution to provide management and corporate services. This relationship is illustrated in figure 6.3 below. SP AusNet concedes that the process of procuring this contract was not competitive.[273]

[273] SP AusNet, Letter to AER – SP AusNet Electricity Transmission Revenue Proposal, 30 April 2007, p.3.

Figure 6.3 SP AusNet's Corporate Structure



Source: ESCV[274]

The management company derives its revenues through three separate streams of income. One component of this is a fixed charge, $21.3m in 2006-07, increasing by 3% plus CPI per annum, intended to cover only remuneration expenses. These charges are set out in the table below.

Table 6.24 SP AusNet – Management Services Charges (MSC) ($m)[275]

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
MSC – total ($nominal)	23.8	25.3	26.8	28.4	30.1	31.9	166.3
MSC – total ($2007-08)	23.1	23.8	24.	25.2	26.0	26.7	149.4
MSC – regulated transmission ($2007-08)	**7.5**	**7.7**	**7.9**	**8.1**	**8.4**	**8.6**	**48.1**

Source: SP AusNet[276]

The management company also receives five different performance bonuses. The total of performance bonuses in any year is capped at 0.75 % of market capitalisation,

[274] ESCV, Gas Access Arrangement Review 2008-2012 – Consultation Paper No.2, October 2006, p.148.

[275] Assumes inflation forecast of 3%.

[276] SP AusNet, SP AusNet Prospectus and Product Disclosure Statement, p.198.

which at present would be approximately $22m per annum.[277] However, SP AusNet states that the performance bonuses are not allocated to the regulated business. The management company is also fully reimbursed by the businesses for any other expenses it incurs (estimated at $2.2m per annum), and receives a fixed annual charge ($0.1m) plus expenses (estimated at $0.1m per annum) from SP AusNet Finance Trust.[278]

Over the next six years the total management fees paid by SP AusNet Transmission and SP AusNet Distribution to the management company are expected to be in excess of $160m ($nominal) plus expenses (estimated $13.2m, $nominal) plus performance fees.

The expected total management services charges incurred by the regulated transmission business over SP AusNet's forthcoming regulatory control period is expected to be $48.1m ($2007-08). The AER notes that this figure is approximately but not exactly equivalent to SP AusNet's forecast management fees of $50.3m ($2007-08). As stated above, under cl. 6A.6.6(e)(9) of the NER the AER must have regard to the extent to which SP AusNet's forecast opex is referable to arrangements with a person other than SP AusNet that, in the opinion of the AER, do not reflect arm's length terms.

To form the AER's opinion on whether the management services agreement reflects arrangements on arm's length terms, the AER calculated the following bottom up estimate of the expected level of management costs that would be incurred by a benchmark efficient TNSP in SP AusNet's circumstances.

Table 6.25 illustrates the average salaries of SP AusNet's "key people", as identified in the SAHA International report submitted by SP AusNet in support of its self-insurance claim. The AER notes the nine general management positions in the table below refer to the nine members of SP AusNet's Executive Management Team (EMT) who also form the most senior members of the management company. The AER considers SP AusNet's other "key people" to be a good proxy for those other employees in the management company.

[277] $22m = 2,092,680,010 (outstanding securities) x $1.370 (current share price) x 0.75%. Outstanding securities from SP AusNet, *SP AusNet Annual Report 2007*, p.177. Share price as at 17 August 2007 (www.asx.gov.au).

[278] SP AusNet, SP AusNet Prospectus and Product Disclosure Statement, p.73.

Table 6.25 SAHA – Average Salaries and Numbers of SP AusNet's "Key people" ($2006-07)

Type of position	Average salary	Number of people
General management	$212,384	9
Team leader	$97,947	11
Manager	$178,906	16
Specialist engineer	$135,908	11
Lead engineer	$155,254	6
Other senior officers	$107,657	20
Total key people	**$142,891**	**73**

Source: SP AusNet[279]

Along with these average salaries, the AER added the on costs of compulsory employer contributed superannuation (9%), the statutory payroll tax rate (5.05%),[280] and the workcover rate for the electricity generation, transmission and distribution industry (0.924%).[281] The AER assumed that management wages increase by 2.8% plus CPI each year, in line with the BIS Shrapnel report submitted by SP AusNet, and has allocated the management costs to the regulated transmission business according to SP AusNet's cost allocation policy. Table 6.26 displays the results of this analysis.

Table 6.26 AER's draft decision – Management fees ($nominal $m)[282]

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Wages – EMT	2.4	2.5	2.7	2.8	3.0	3.2	**16.5**
Wages – non-EMT	12.8	13.5	14.3	15.2	16.0	17.0	**88.8**
Wages total	15.2	16.1	17.0	18.0	19.0	20.1	**105.3**
Superannuation	1.4	1.4	1.5	1.6	1.7	1.8	**9.5**
Wages and super total	16.5	17.5	18.5	19.6	20.7	21.9	**114.8**
Payroll tax	0.8	0.9	0.9	1.0	1.0	1.1	**5.8**
Workcover	0.2	0.2	0.2	0.2	0.2	0.2	**1.1**
Management fees ($nominal)	**17.5**	**18.5**	**19.6**	**20.8**	**22.0**	**23.2**	**121.6**
Management fees ($2007-08)	**17.0**	**17.5**	**18.0**	**18.4**	**18.9**	**19.5**	**109.3**
Management fees – regulated transmission ($2007-08)	**5.5**	**5.6**	**5.8**	**5.9**	**6.1**	**6.3**	**35.2**

Source: AER analysis

From this analysis the AER is not satisfied that SP AusNet's forecasts reasonably reflect the level of management costs that would be incurred by a benchmark efficient

[279] SAHA International, SP AusNet – Valuation of Self-Insurance Risks (Electricity Transmission), February 2007, p.67.

[280] State Revenue Office (Victoria), *Pay-roll tax – current rates*, January 2007.

[281] Victoria Government Gazette No S 211 – Workcover insurance premiums order (no.14) 2006/07, Victoria Government Printer, 18 August 2006, p.7.

[282] Assumes inflation forecast of 3%.

TNSP in SP AusNet's circumstances over the forthcoming regulatory control period. The AER has therefore made an adjustment of $15.2m ($2007-08), resulting in a revised estimate of $35.2m ($2007-08) which the AER is satisfied reflects the requirements of the NER.

The AER considers that $35.2m is a conservative estimate of the efficient level of management fees, as in determining this amount the AER:

- assumes the management company employs 90 staff (EMT 10 / non-EMT 80) instead of the 86 staff it currently employees (EMT 9 / non-EMT 77)[283]
- assumes non-executive management team staff all earn the average salary of "total key people" which is based on the salaries of all key people including general management
- assumes SP AusNet receives no payroll tax deduction (a business can claim a deduction of up to $550,000 per annum depending on its circumstances)[284]
- assumes the proportion of the management fee capitalised in SP AusNet's forecasts, and so the management fee costs sought by SP AusNet in addition to the $50.3m ($2007-08) explicitly sought in its proposal, does not exceed and so is offset by the non-remuneration management expenses estimated at $0.7m per annum,[285]
- does not account for the management fees being shared across Singapore Power's recent acquisition of Alinta or possible other future acquisitions of SP AusNet/Singapore Power.

The AER notes that PB's analysis of SP AusNet's corporate opex was based on SP AusNet's assertion that the introduction of the management company did not result in increased costs, as the management fees reflect equivalent reductions in other categories, namely routine maintenance (support SR) and corporate (finance, HR, other corporate). The AER considers it is unlikely that the introduction of the management company did not result in increased management costs as:

- the same cost reductions in the categories SP AusNet attributes to being management costs "stripped out", SP AusNet also attributes to being the on-going savings due to the merger of the transmission and distribution businesses.[286]
- at other times, SP AusNet attributes the 2006/07 decrease in HR, finance and other corporate costs of $5.6m, to be fully attributed to the 2005/06 permanent investment increase in IT costs (i.e. not attributed to the merger or the management costs being stripped out).[287]

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[283] SP AusNet, Issue 29 Management Structure @ Mgt Co Employees, Email, 13 April 2007.

[284] State Revenue Office (Victoria), op. cit.

[285] ($2.2m times 35% times 92%). SP AusNet, SP AusNet Prospectus and Product Disclosure Statement, p.73.

[286] SP AusNet, Opex – Merger/Restructure Effects.

[287] SP AusNet, *Issue 112 and 113*, Email, 21 May 2007.

Notwithstanding this statement, the AER considers the relevant issue is the reasonableness of SP AusNet's proposed management fees, rather than whether or not the introduction of the management company lead to increased management costs.

Based on the above analysis, the AER is of the opinion that it is unlikely the management services agreement between SP AusNet and SPI Management Services is referable to arrangements that reflect arm's length terms. The AER does not consider that SP AusNet's proposed allowance for management fees payable under the related-party contract with SPI Management Services reflects the benchmark expenditure that would be incurred by an efficient TNSP over the regulatory control period.

AER's conclusion

The AER considers that the $50.4m ($2007-08) allowance for management fees sought by SP AusNet is excessive, and does not reasonably reflect the costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives. On the basis of the assumptions outlined above, the AER has made a reduction of $15.2m ($2007-08) to SP AusNet's proposal to provide a management fee allowance of $35.2m ($2007-08), which the AER is satisfied reasonably reflects the costs that a prudent operator in SP AusNet's circumstances would require.

Table 6.27 AER's draft decision – Corporate opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	18.7	19.0	19.4	19.8	20.2	20.6	117.7
AER's adjustment	-2.3	-2.4	-2.5	-2.6	-2.6	-2.7	-15.2
AER's decision	**16.3**	**16.6**	**16.9**	**17.2**	**17.5**	**17.9**	**102.5**

Source: SP AusNet, AER analysis

6.6.5 Rolled in assets opex

Non-contestable shared network assets commissioned by VENCorp, and connection assets commissioned by other parties, during the current regulatory control period, presently sit outside the RAB. SP AusNet proposes to roll most of these assets into its RAB on 1 April 2008, and seeks an allowance to cover the opex relating to these assets.

SP AusNet's proposal

The opex allowance sought by SP AusNet to cover the assets it proposes to roll into its RAB is outlined in table 6.28 below.

Table 6.28 SP AusNet's proposal - Rolled-in assets opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Adjustment for reg/unreg split from 2007-08 onwards	1.8	1.8	1.9	1.9	2.0	2.0	**11.4**

Source: SP AusNet (Opex model)

It is evident from SP AusNet's opex model that the above figures have been calculated as 2.72 % of the total of routine maintenance, asset works and corporate opex in each year. In support of its escalation factor, SP AusNet submitted a spreadsheet calculating the change in the percentage split between SP AusNet's regulated and unregulated asset bases, from 1 March 2007 to 1 March 2008. However this spreadsheet actually calculates an escalation factor of 1.032, not 1.027, noting that the 2.72% figure was based on draft forecasts for the 2007-08 capex and asset roll-in amounts.

Consultant's review

PB considers that it is not appropriate to escalate the asset works costs, as these costs relate to specific maintenance projects. Nor does PB consider the escalation of the taxes and insurance categories of routine maintenance to be appropriate, as these costs have been estimated separately, and hence PB considers that these costs will already incorporate any impact resulting from the roll in of additional assets.[288]

For the remaining elements of routine maintenance, PB does not consider 1.032 to be a reasonable escalation factor. PB found that the assets being rolled into the RAB have a substantially higher remaining life than the assets presently in the RAB, and hence their routine maintenance requirements should be significantly lower.[289]

PB states that:

> Based on our experience in other jurisdictions maintenance escalation factors of approximately 30% have been experienced as a result of substation and line asset refurbishment/replacement programs, with higher efficiencies in the vicinity of 60%, resulting from secondary system programs. We therefore recommend reducing the routine maintenance effort by a factor of 30% resulting from the rolling in of new assets. This recommendation results in the calculated raw escalation factor of 1.032 being reduced by 30% resulting in a recommended escalation factor of 1.022.[290]

However, PB did consider that an escalation factor of 1.032 for corporate costs was appropriate, as corporate overhead costs are allocated on a RAB share basis.[291]

Applying these adjustments, PB recommends a total reduction of $4.0m ($2007-08) over the regulatory control period.

Table 6.29 PB's recommendation – Rolled-in assets opex (2007-08 $m)

	SP AusNet's proposal	PB's adjustment	PB's recommendation
Rolled-in assets opex	11.4	-4.0	7.4

Source: PB[292]

[288] PB Strategic Consulting, op. cit., p.196.

[289] ibid.

[290] ibid.

[291] ibid.

[292] ibid., p.197.

Issues and the AER's considerations

As noted above, SP AusNet's escalation factor is the change in the percentage split between SP AusNet's regulated and unregulated asset bases, from 1 March 2007 to 1 March 2008. In other words, as at 1 March 2007, SP AusNet's regulated to unregulated asset base split was 90.34% to 9.66%. As at 1 March 2008, SP AusNet expects its regulated to unregulated asset split will be 93.21% to 6.79%. SP AusNet's escalation factor of 1.032 is derived from the change in 90.34% to 93.21%, which is 3.2%.

The AER agrees with PB's recommendation that only corporate and routine maintenance (excluding taxes and insurance) should be escalated. The asset works, taxes and insurance opex forecasts have all been forecast separately and therefore the AER does not consider the escalation of these costs reasonable. The forecasts for these items implicitly should already cover assets that are to be rolled into the RAB.

PB has considerable experience and expertise to draw from in assessing the routine maintenance expenditure that would be expected from relatively new assets, such as those SP AusNet is proposing to roll into its RAB, and has had regard to this in considering the benchmark opex that would be incurred by an efficient TNSP over the regulatory control period. The AER considers that PB's recommended reduction in the routine maintenance escalator of 30% results in a reasonable benchmark escalation factor. Therefore the AER considers that SP AusNet's routine maintenance escalation factor of 1.032 does not reasonably reflect the costs that would be incurred by a prudent and efficient TNSP, or a realistic expectation of those costs.

The value of the assets SP AusNet is to roll into its RAB has been revised, as is discussed in chapter 3. Applying PB's recommended 30% reduction to SP AusNet's revised asset roll in figure leads to an escalation factor of 1.021 for routine maintenance. For corporate costs, SP AusNet's revised asset roll in figure leads to an escalation factor of 1.031.

AER's conclusion

The AER considers that it is only prudent for routine maintenance (excluding taxes and insurance) and corporate costs to be escalated to cover the efficient opex relating to the assets SP AusNet is rolling into its RAB at the start of the forthcoming regulatory control period. The escalation factors to be used for these categories are 1.021 and 1.031, respectively. Based on these findings, the AER considers the allowance sought by SP AusNet is overstated, and recommends an adjustment of $4.9m to provide a revised estimate which the AER is satisfied reasonably reflects the opex criteria.

Table 6.30 AER's draft decision – Rolled-in assets opex (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	1.8	1.8	1.9	1.9	2.0	2.0	**11.4**
PB's adjustment	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	**-4.0**
PB's recommendation	1.2	1.2	1.2	1.2	1.3	1.3	**7.4**
AER's adjustment	-0.7	-0.8	-0.8	-0.9	-0.9	-0.9	**-4.9**
AER's decision	**1.0**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**6.5**

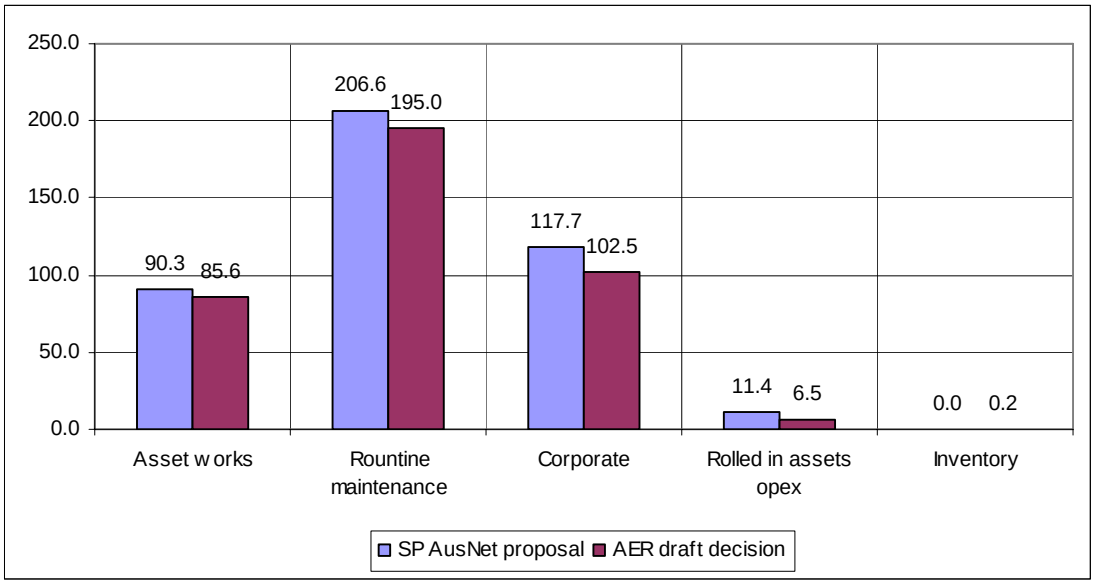
Source: SP AusNet, AER analysis

6.6.6 AER's conclusion – Controllable opex

For the reasons outlined above, the AER is not satisfied that SP AusNet's proposed forecast of controllable opex reasonably reflects the opex criteria, with regard to the opex factors. As required by cl. 6A.14.1(3)(ii) of the NER, the AER has therefore made adjustments to SP AusNet's proposed forecasts to determine a revised estimate which the AER is satisfied meets the requirements of the NER.

The AER's assessment of SP AusNet's controllable opex is summarised in the figure below.

Figure 6.4 AER's draft decision – Controllable opex (2007-08 $m)



Source: SP AusNet[293], AER analysis

6.7 Issues and the AER's considerations - Other opex

This section analyses SP AusNet's "other opex". Other opex consists of self-insurance, equity raising costs, debt raising costs, rebates and easement land tax.

[293] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, 28 February 2007 (as revised).

6.7.1 Self-insurance

SP AusNet's proposal

SP AusNet seeks an annual self-insurance allowance of $2.5m ($2007-08), a total of $15.2m over the forthcoming regulatory control period.[294]

SP AusNet submits that there are risks borne by SP AusNet in the conduct of its regulated business which are not compensated for through the WACC or other elements of its revenue determination, and which cannot be insured cost-effectively. SP AusNet seeks compensation in its revenue determination for the management of these risks.[295]

Furthermore, SP AusNet notes that in the current regulatory control period deductibles relating to an insurance event can be claimed via a pass-though mechanism. In the forthcoming regulatory control period deductibles will no longer be pass-though events due to the new materiality threshold for pass-though events established in the NER.[296]

SP AusNet engaged SAHA International (SAHA) to assess the expected value of deductibles over the forthcoming regulatory control period, and to update and reassess the risks outlined in the Trowbridge Self Insurance Report 2001 that formed the basis of the self insurance claim put forward in SPI PowerNet's revenue proposal for the current regulatory control period.

SAHA identifies ten key areas of risk across SP AusNet's transmission business. The annual risk premium for each identified area of risk, and the total premium over the forthcoming regulatory control period are set out in table 6.31.

[294] ibid., p. 94.

[295] ibid., p. 94.

[296] ibid., p. 94.

Table 6.31 SAHA – Self-insurance risk premiums (2007-08 $)

	Risk premium (annual)	Risk premium (6 years)
Risk of property damage to towers and lines	$305 851	$1 835 106
Bushfire liability risk	$2 023	$12 138
Risk of theft at remote stations	$125 000	$750 000
Risk of power and current transformer failure	$1 154 300	$6 925 800
Risk of circuit breaker failures	$847 440	$5 084 640
Risk of GIS failures	$27 155	$162 930
Risk of bomb threats, extortion and acts of terrorism	$11 600	$69 600
Key person risk	$63 425	$380 550
Insurer's credit risk	$1 652	$9 912
Risk of non-terrorist impact of planes and helicopters	$1 000	$6 000
Total self-insurance risk premiums	**$2 539 446**	**$15 236 676**

Source: SAHA[297]

Consultant's review

PB undertook a detailed review of SP AusNet's claims for self insurance risk premiums and the supporting documentation from SAHA, and recommends adjustments to the proposed premiums for four of the ten risk categories treated in the SAHA report. This results in a recommended adjustment of approximately 45% to SP AusNet's proposed annual allowance for self-insurance costs.[298]

The AER's consideration of each of PB's proposed reductions is discussed below.

Issues and the AER's consideration

The AER considers that SP AusNet has demonstrated that its proposal to self-insure in those areas of the shared transmission network that SP AusNet cannot efficiently insure in the open market is, in principle, prudent. Having reviewed the analysis by SAHA, and the assessment by PB, the AER is satisfied that SP AusNet's proposed allowances for self-insurance against the following risks reasonably reflect the prudent and efficient costs of self-insurance in the context of the opex objectives.

- Bushfire liability risk
- Risk of theft at remote stations
- Risk of GIS failures
- Risk of bomb threats, extortion and acts of terrorism
- Key person risk
- Insurer's credit risk, and

[297] SAHA International, op. cit., p. 9.

[298] PB Strategic Consulting, op. cit., pp. 197-199.

- Risk of non-terrorist impact of planes and helicopters

However, the AER does not consider that all of SP AusNet's proposed self-insurance premiums are prudent and efficient, and is concerned that in several areas they do not present a realistic expectation of the costs of self-insurance required in the forthcoming regulatory control period. These areas of concern are discussed further below.

The AER notes that there is a discrepancy between the WACC of 6 per cent used in the SAHA report and the WACC of 5.66 per cent used in SP AusNet's proposal. However financing costs have only been used in estimating self-insurance premiums, and the AER does not consider this discrepancy to make a material difference.

Risk of Property Damage to Towers and Lines

This category of risks is comprised of three distinct elements. While accepting the proposed premium for risk of conductor damage, PB's analysis raises concerns in relation to SP AusNet's proposed allowances for tower strain and catastrophic events.

Tower Strain

SP AusNet has not insured transmission towers against strain since 2000 due to difficulties in attaining economically acceptable insurance.

In its report, SAHA provides a detailed breakdown of its calculation of self insurance risk premiums for transmission tower and lines. Estimates of claim size are based on indirect and direct costs and SP AusNet's transmission tower age profile.[299]

PB notes that the incident frequency rate assumed for tower strain appears high when compared to the Victorian experience. PB suggests that based on the 36 tower failures to date, none of which were due to strain, an assumed incident frequency rate of 0.01 would be a more reasonable assumption for pre-1965 towers. This represents a reduction of $18 399 to the total annual self-insurance premium.[300]

The AER accepts PB's conclusion that the incident frequency rate on which SP AusNet's proposed costs are based results in an over-estimation of the costs that would be prudently and efficiently incurred in self-insuring against this risk. On that basis, the AER accepts PB's recommended incident frequency rate and the associated adjustment of $18 399.

Catastrophic events

The risk of catastrophic events has been calculated in the SAHA report as $122 114 per annum.[301] The probability of catastrophic events (1 in 150 years) has been

[299] SAHA International, op. cit., p.14. The AER notes that the allowance for post 1965 towers is based on historical experience in other jurisdictions as there have not been any tower failures in Victoria involving post-1965 towers.

[300] PB Strategic Consulting, op. cit., p. 197.

[301] SAHA International, op. cit., p. 21.

informed by analysis undertaken by the RMIT Seismology Research Centre and historical evidence from GeoScience Australia.[302]

PB notes that Victoria has not experienced an earthquake in the last 150 years that has resulted in a catastrophic event impacting on transmission assets. PB therefore suggests that an assumed incident rate of 1 in 200 years would be more appropriate. This would result in a risk premium of $91 586, a reduction of $30 528.[303]

The AER notes that SAHA's analysis is supported by independent information from RMIT and GeoScience Australia.[304] On that basis the AER accepts SAHA's assessment of probability, and makes no amendment to SP AusNet's proposed risk premium for catastrophic events.

Risk of Power and Current Transformer Failure

Power Transformers

SAHA assumes a failure rate of 1% for power transformers. PB notes that while this figure is often used by the power industry, SP AusNet's own transformer failure history provides a figure of 0.21% over the population of 238 transformers. An assumption that the failure rate was to double due to the aging transformer population, which is supported by local and international industry experience gives a failure rate of 0.42%. Based on a figure of 0.42%, PB recommends a transformer self insurance premium of $484 806.[305]

The AER agrees that the historic failure rates form a realistic basis for assessment of failure risk in this instance, but shares PB's concern that the limited sample of two years of historical data provides an unacceptable benchmark for future performance. The AER considers that PB's recommendation of an adjusted figure of 0.42% is appropriate, and has therefore reduced SP AusNet's proposed power transformer self-insurance premium to $484 806, a reduction of $669 494.

Current Transformers

The self-insurance premium for current transformers is calculated separately for 220kV and 500kV transformers.[306] SAHA assumes an incident rate of 1 in 6 years for both 220kV and 500kV transformers. The total risk premium proposed is $66 000, or $33 000 for both 220kV and 500kV current transformers.

SAHA identifies a self-insurance risk premium for current transformer failures of $66 667 per annum, but does not include this figure in its recommendation, instead claiming SP AusNet is adequately reimbursed due to the difference between the international benchmark of 1% and SP AusNet's historical figure of 0.21% for power

[302] ibid., p. 20.

[303] PB Strategic Consulting, op. cit., p. 198.

[304] SAHA International, op. cit., p. 20.

[305] PB Strategic Consulting, op. cit., p. 197.

[306] SAHA International, op. cit., p. 48.

transformers. Given PB's analysis of the risk to power transformers, PB considers it appropriate to include a self-insurance risk premium for current transformers of $61 679. PB has calculated this allowance based on information provided by SP AusNet, assuming an incident rate for current transformer failures of 1 in 6 years, and an average cost in 2007-08 dollars of $185 000.[307] This assumption results in a self-insurance premium of $30 840 for each of the 220kV and 500kV current transformers.

The AER considers that the increase of $61,679 is prudent in light of the reductions made to the premium for power transformers. The AER accepts the additional allowance proposed by PB of $61 679 as the appropriate self-insurance risk premium for current transformers.

The AER's reduction of $669 494 relating to power transformers and increase of $61 679 relating to current transformers leads to a net reduction of $607 815 per annum.

Risk of Circuit Breaker Failures

SAHA's calculation of the circuit breaker (CB) failure rate has been based on data from the International Council on Large Electric Systems (CIGRE), which indicated a rate of major failures of 0.72%'. PB notes that the last two years of historical data provided by SP AusNet[308] indicate a failure rate of 0.15%. Given the limited availability of data, PB again considers it appropriate to double the historical failure rate to take account of the absence of a longer, and more reliable, sample period. Using the resultant expected failure rate of 0.3%, and taking into consideration SP AusNet's expected work plan over the next regulatory control period, PB recommends a self-insurance risk premium of $353 100, or a reduction of $494 340.

As in the case of transformer failure, the AER agrees with PB's conclusion that, while it is realistic to base the risk premium on historical data and SP AusNet's forward work program, data from a two year period is insufficient to determine a failure rate for these purposes. The AER has therefore adopted the expected failure rate of 0.03%, and the proposed reduction of $494 340 to SP AusNet's circuit-breaker failure risk premium.

AER's conclusion

In considering SP AusNet's proposed allowance for self-insurance, the AER has had regard to historical data and the benchmark opex for self-insurance that would be incurred by an efficient TNSP over the regulatory control period, as required by cl. 6A.6.6(e)(4) and (5) of the NER. In a number of respects the AER is not satisfied that SP AusNet's proposed allowance represents the prudent and efficient costs required to meet the opex objectives, or a realistic expectation of those costs, and has made adjustments accordingly. The AER is satisfied that the resultant revised

[307] PB Strategic Consulting, op. cit., p. 198.

[308] There are only two years of historical data available.

estimate of self-insurance costs, set out in table 6.32, reasonably reflects the prudent and efficient costs of self-insurance in the context of the opex objectives.

Table 6.32 AER's draft decision – Self-insurance (2007-08 $)

	SP AusNet's proposal	AER's adjustment	AER's decision
Risk of property damage to towers and lines	$305 851	-$41 542	$264 309
Bushfire liability risk	$2 023	-	$2 023
Risk of theft at remote stations	$125 000	-	$125 000
Risk of power and current transformer failure	$1 154 300	-$607 815	$546 485
Risk of circuit breaker failures	$847 440	-$494 340	$353 100
Risk of GIS failures	$27 155	-	$27 155
Risk of bomb threats, extortion and acts of terrorism	$11 600	-	$11 600
Key person risk	$63 425	-	$63 425
Insurer's credit risk	$1 652	-	$1 652
Risk of non-terrorist impact of planes and helicopters	$1 000	-	$1 000
Annual allowance	**$2 539 446**	**$1 142 739**	**$1 396 707**

Source: SAHA[309]

Table 6.33 AER's draft decision – Self-insurance (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	2.5	2.5	2.5	2.5	2.5	2.5	**15.2**
AER's adjustment	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	**-6.9**
AER's decision	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**8.4**

Source: SP AusNet[310], AER analysis

6.7.2 Equity raising costs

In raising equity, a business may incur certain costs such as legal fees, brokerage fees, costs associated with issuing a prospectus if it is an initial public offering, and other expenses. Raising equity often incurs an upfront cost with little or no ongoing costs over the life of the equity. Whilst the bulk of the equity a firm will raise is typically at its inception, firms may also choose external equity funding, instead of debt or internal funding, post inception, hence incurring additional once-off costs associated with that equity.

SP AusNet's proposal

SP AusNet has claimed equity raising costs in each year of the forthcoming regulatory control period, based on 21.5 basis points per annum (bppa) of the benchmark equity share (40 %) of the opening RAB in each year.

[309] SAHA International, op. cit., p. 9.

[310] SP AusNet, op. cit., p.94.

SP AusNet justifies its claim based on the allowance given to SPI PowerNet in the ACCC's 2002 decision.

Table 6.34 SP AusNet's proposal - Equity raising costs (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Opening RAB value	2222.9	2254.7	2283.3	2307.1	2327.1	2342.7	**13,737.9**
Opening RAB value (equity share – 40%)	889.2	901.9	913.3	922.8	930.9	937.1	**5,495.1**
Equity raising costs	0.215%	0.215%	0.215%	0.215%	0.215%	0.215%	**0.215%**
Equity raising costs	**1.9**	**1.9**	**2.0**	**2.0**	**2.0**	**2.0**	**11.8**

Source: SP AusNet (PTRM)

On 30 May 2007, SP AusNet sent additional information to the AER further justifying its claim of 21.5bp. In it, SP AusNet discusses the Allen Consulting Group (ACG) report on debt and equity raising costs prepared for the ACCC, and claims that the key point that emerges is regarding whether a regulatory asset value (RAV) was established in Victoria before the 2002 decision. SP AusNet contends it was not, and accordingly seeks compensation for equity raising costs.

Consultant's review

In 2004, the ACCC commissioned ACG to undertake a review of issues associated with allowances for the transactions costs incurred in raising debt and equity finance for regulated utilities.[311]

ACG considered that where new stand alone assets are to be built, and the regulator is to determine the regulatory asset base "for the first time", the asset base should reflect all costs including an allowance for equity raising costs. For other cases, ACG considered that it was not necessarily appropriate to now include an allowance for the equity raising costs in the starting regulatory asset value, and rather, it is a matter for the regulator to consider on its merits.

ACG states that the relevant issue is whether a RAB has been established in a previous regulatory decision.[312] ACG states that:

> If [a] RAV has already been established for the regulated entity there is no case for now including an allowance for IPO costs. It must be assumed that such costs have already been included in the RAV, either explicitly or implicitly.
>
> …
>
> The issue is not whether the utility today is a publicly listed or privately owned, or a government owned business. A company representing the same group of physical assets could have moved through all three of these ownership categories. However, the transaction costs …

[311] Allen Consulting Group, Debt and Equity Raising Transaction Costs – Final Report, December 2004.

[312] The term RAV (regulatory asset value), used by ACG, is equivalent to the more commonly used term RAB (regulatory asset base).

> associated with each of these ownership structures are not relevant to the RAV. They cannot be added to the RAV, or customers would be subsidising what is the pursuit of private (or public) gain through the achievement of synergies or government policy objectives. Thus, the issue is whether [a] RAV has already been established.[313]

ACG also considered the issue of equity raising costs associated with capital expenditure after the establishment of the RAB. ACG noted the 'pecking order theory' that firms will seek to first finance projects through retained earnings, and next through debt before considering external equity. In most situations, ACG considered equity (and hence equity raising costs) would not be necessary based on benchmark capital structure assumptions.

Issues and the AER's considerations

SP AusNet is correct in noting that in the last Victorian decision, an allowance of 21.5 bp was granted by the ACCC. However, the ACCC stated this was a new area of analysis and that it intended to undertake further research on this issue for future regulatory decisions.[314] It was in this context that the ACG report outlined above was commissioned.

The AER considers that it is important to distinguish between the two different types of possible equity raising costs, being:

- equity raising costs associated with the initial asset base, and
- equity raising costs associated with subsequent capital expenditure.

SP AusNet's proposal to include equity raising costs as a proportion of the opening RAB in each year of the forthcoming regulatory control period implicitly seeks compensation for both the equity raising costs associated with the initial assets, and equity raising costs associated with subsequent capex. However, consistent with the recent Powerlink decision, the AER considers that allowances for these two different types of equity raising costs must be considered separately and on their merits.

In relation to equity raising costs associated with the initial assets, the AER does not consider that in SP AusNet's case there is an argument that equity raising costs should be allowed. Consistent with the ACG report and the recent Powerlink decision, the AER considers that the relevant issue is whether a RAB has been established in a previous regulatory decision. In this regard, the AER disagrees with SP AusNet, in that ACG's recommendation is not limited to whether or not an asset value was established in Victoria before the 2002 decision, but applies if a RAB has been established in a previous regulatory decision. As the ACCC had already determined SP AusNet's opening RAB, as at 1 January 2003, in the last Victorian decision, and that RAB is being rolled forward, there is no case to include an equity raising cost allowance in this revenue cap decision.

[313] ibid., pp. 54-55.

[314] ACCC, Decision – Victorian Transmission Network Revenue Caps 2003-2008, 11 December 2002, p.87.

In relation to equity raising costs associated with capex, the AER considers that this is a legitimate cost, if the case can be made that under benchmark financing arrangements, SP AusNet would be unable to fund its capital expenditure program over the forthcoming regulatory control period, without the need to raise additional equity.

The AER considers that under benchmark financing arrangements, SP AusNet would be able to fund its capital expenditure program over the forthcoming regulatory control period without requiring equity finance. On that basis the AER is not satisfied that the proposed allowance for equity raising costs associated with capital expenditure reflects prudent or efficient opex that would be incurred by an efficient TNSP over the regulatory control period, or that SP AusNet's proposed inclusion of this allowance reflects a realistic expectation of the cost inputs it will require to meet the opex objectives.

AER's conclusion

As SP AusNet's opening RAB was established at the commencement of the current regulatory control period and is being rolled forward, and after considering SP AusNet's capex program over the forthcoming regulatory control period, the AER is not satisfied that SP AusNet's proposed equity raising cost allowance reasonably reflects the opex criteria, with regard to the opex factors.

Table 6.35 AER's draft decision - Equity raising costs (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	1.9	1.9	2.0	2.0	2.0	2.0	**11.8**
AER's adjustment	-1.9	-1.9	-2.0	-2.0	-2.0	-2.0	**-11.8**
AER's decision	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: SP AusNet (PTRM), AER analysis

6.7.3 Debt raising costs

Unlike equity raising costs which are generally only incurred when capital is raised, debt raising costs are usually incurred when the debt is raised as well as each time the debt is rolled over. Debt raising costs may include underwriting fees, legal fees, company credit rating fees and other costs.

SP AusNet's proposal

SP AusNet has proposed an allowance for debt raising costs equal to 12.5 basis points per annum (bppa) of the benchmark debt share (60 %) of the opening RAB in each year.

SP AusNet justifies its claim of 12.5bppa on the principle that:

> This aligns with the latest precedent set in the 2005 *ESC Victorian Electricity Distribution Price Final Decision* and the emerging 'regulatory norm'…[315]

SP AusNet notes that in determining the prudent level of debt raising costs the AER currently relies on the ACG report prepared for the ACCC in 2004.[316] SP AusNet states that:

> More recently however, Allen Consulting Group has recommended that an allowance of 12.5 basis points be provided for the debt raising costs of the Queensland gas distribution businesses.[317]

The debt raising cost allowance sought by SP AusNet can be found in table 6.36 below.

Table 6.36 SP AusNet's proposal - Debt raising costs (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Opening RAB value	2222.9	2254.7	2283.3	2307.1	2327.1	2342.7	**13,737.9**
Opening RAB value (debt share – 60%)	1333.8	1352.8	1370.0	1384.3	1396.3	1405.6	**8247.7**
Debt raising costs	0.125%	0.125%	0.125%	0.125%	0.125%	0.125%	**0.125%**
Debt raising costs	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.8**	**10.3**

Source: SP AusNet (PTRM)

Consultant's review

As noted above, the ACCC commissioned ACG, in 2004, to undertake a review of issues associated with allowances for the transactions costs incurred in raising debt and equity finance for regulated utilities.[318]

ACG considered that debt raising costs are a legitimate expense that should be recovered through the revenues of the regulated entity. As these costs would continue to be incurred for the whole value of the investment, ACG considered that the most appropriate method to compensate the business was either through an addition to the WACC, or as a direct allowance to operating expenses.

ACG developed a benchmark methodology to calculate appropriate debt raising costs, compliant with the concept of a notional benchmark regulated entity. The benchmark approach developed by ACG was based on costs associated with Australian international bond issues and for Australian medium term notes (MTNs) sold jointly in Australia and overseas. In developing the benchmark, ACG calculated a gross underwriting fee benchmark of 5.5 bppa based on a 5 year term. The other costs being

[315] SP AusNet, op. cit., p.95.

[316] Allen Consulting Group, op. cit.

[317] Allen Consulting Group, *Cost of Capital for Queensland Gas Distribution*, December 2005. [SP AusNet incorrectly cites this report as – Allen Consulting Group, *Memorandum on Cost of Debt Margin*, July 2005.]

[318] Allen Consulting Group, Debt and Equity Raising Transaction Costs – Final Report, December 2004.

compensated for in the benchmark are legal and roadshow fees, company credit rating fees, issue credit rating fees, registry fees and paying fees. ACG determined the median Australian MTN issue to be $175m. ACG considered that benchmark debt raising costs decrease with the number of debt instruments issued, stemming from the fixed costs for a company credit rating being allocated over multiple issues.

Table 6.37 sets out ACG's benchmark methodology for determining the debt raising costs of a notional benchmark regulated entity.

Table 6.37 ACG – Benchmark debt raising cost methodology (bppa)

Fee	Explanation/ sources	1 Issue	2 Issues	4 Issues	6 Issues
Amount raised	Multiples of median MTN issue size	$175m	$350m	$700m	$1,050m
1) Gross Underwriting Fees	Bloomberg for Aust. Intl. issues, tenor adjusted.	5.50	5.50	5.50	5.50
2) Legal and Roadshow	$75K – $100K: Industry sources	1.14	1.14	1.14	1.14
3) Company credit rating	$30K – $50K: S&P Ratings	2.86	1.43	0.71	0.48
4) Issue credit rating	3.5 (2–5) bps up–front: S&P Ratings	0.70	0.70	0.70	0.70
5) Registry fees	3K per issue Osborne Assoc.	0.17	0.17	0.17	0.17
6) Paying fees	$1/$1m quarterly Osborne Assoc.	0.01	0.01	0.01	0.01
Totals	Basis points p.a.	10.4	9.0	8.2	8.0

Sources: Bloomberg, industry sources, S&P Ratings, Osborne Associates

Source: ACG[319]

In regards to whether or not this methodology was more or less likely to overcompensate the notional regulated entity for debt raising costs, ACG stated that:

> ACG believes that the estimates set out in [table 6.37] are conservative given that a 5 year tenor has been assumed rather than a 10 year tenor, which might be seen as consistent with the use of a 10 year debt margin. In addition, we have applied the top end of the range of expected legal and roadshow costs ($100,000).[320]

Issues and the AER's considerations

The AER considers that debt raising costs are a legitimate cost incurred by a TNSP in delivering prescribed transmission services. Hence the issue in this situation is not the legitimacy of the type of expenditure, but rather the reasonableness of the magnitude of the expenditure sought by SP AusNet.

[319] Allen Consulting Group, op. cit., p.xviii.

[320] ibid., p.xix.

In the last Victorian electricity transmission revenue cap decision[321], the ACCC permitted SPI PowerNet an allowance of 10.5 basis points, recovered via an adjustment to the debt margin in the WACC. This estimate was derived from discussions with industry analysts, such as Westpac Institutional Bank. In making its decision, the ACCC noted that, at the time, this was a new issue of analysis and it would give further consideration to this issue in future regulatory decisions.

As mentioned above, SP AusNet justifies its claim of 12.5bp by reference to emerging "regulatory precedent". The most recent example SP AusNet cites is the ESCV's 2005 electricity distribution final decision.[322]

However, whilst the ESCV granted the distribution businesses an allowance based on 12.5bp, the ESCV stated that this was more likely to overstate debt raising costs than understate them.[323] In reiterating its draft decision, the ESCV stated that:

> …the Commission considered that an allowance of 12.5 basis points was more likely to overstate these costs, for the following reasons.
>
> - First, the costs of 12.5 basis points included a 5 basis point allowance for a 'dealer swap', which is not a transaction cost, and in any event would not be incurred by an entity that issues fixed rate debt directly.
> - Second, a recent comprehensive study for the ACCC (ACG 2004b) concluded that the benchmark debt raising transaction cost based on one bond issue of $175 million would be around 10.4 basis points, while six issues totalling $1,050 million would cost about 8 basis points. These estimates were based upon debt maturity of 7 years, and so would overstate the transaction cost associated with 10 year debt…[324]

The ESCV stated:

> …the Commission considers that the ACCC (ACG 2004b) study provides more robust estimates of the transaction costs in raising debt, and has adopted its estimates of the likely cost of raising debt. While the Commission notes that its estimates of the cost of raising debt are slightly lower than the regulatory norm referred to above, the differences are not great, and so the Commission has again provided an allowance of 12.5 basis points.[325]

Whilst having regard to the ESCV's decision, the AER considers it is essential an issue be argued on its merits. SP AusNet has not provided supporting evidence that 12.5bp is a reasonable level of efficient debt raising costs, relying instead on the position taken by other regulators, some of whom have recognised that 12.5 bp is more likely to overestimate than underestimate the efficient level of debt raising costs.

In the recent Powerlink decision, and in accordance with the ACG methodology, the AER updated the gross underwriting fee and issue size benchmarks using recent publicly available data. This resulted in the gross underwriting fee increasing from 5.5

[321] ACCC, op. cit.

[322] ESCV, Electricity Distribution Price Review 2006-10 – Final Decision Volume 1 – Statement of Purpose and Reasons, October 2005.

[323] ibid., p. .373.

[324] ibid.

[325] ibid., p.374.

bppa to 6.0 bppa and the median bond issue size increasing from $175m to $200m. Table 6.38 displays the ACG benchmark debt raising cost methodology, adjusted for updated market data.

Table 6.38 AER – Revised ACG benchmark debt raising cost methodology (bppa)

Fee	Explanation/source	1 issue	2 issues	3 issues	6 issues	7 issues
Amount raised	Multiples of median bond issue size	$200m	$400m	$600m	$1,200m	$1,400m
Gross underwriting fees	Bloomberg for Australian internal issues, term adjusted	6.0	6.0	6.0	6.0	6.0
Legal and roadshow	$75k-$100k: Industry sources	1.0	1.0	1.0	1.0	1.0
Company credit rating	$30k-$50k (once-off): S&P Ratings	2.5	1.3	0.8	0.4	0.4
Issue credit rating	3.5 (2-5)bps up-front: S&P Ratings	0.7	0.7	0.7	0.7	0.7
Registry fees	$3k per issue: Osbourne Associates	0.2	0.2	0.2	0.2	0.2
Paying fees[326]	$1/$1m quarterly: Osbourne Associates	0.0	0.0	0.0	0.0	0.0
Total	**Basis points per annum**	**10.4**	**9.1**	**8.7**	**8.3**	**8.2**

Source: AGC, AER analysis

The next step in the ACG methodology is to calculate the benchmark value of SP AusNet's debt (i.e. 60 % of the opening RAB) for each year of the forthcoming regulatory control period. In each year this value is forecast to lie between $1,200m and $1,400 and using the benchmark issue size therefore requires between six and seven issues. As a conservative approach, and consistent with previous decisions, the AER has rounded down to the nearest issue multiple being six issues. According to the updated ACG methodology, the prudent level of debt raising costs over the forthcoming regulatory control period is 8.3 basis points.

As noted by SP AusNet, since 2004 ACG has advised regulators to apply the de facto benchmark, and, in separate advice to Powerlink, recommended the de facto benchmark be used by the AER in the Powerlink revenue decision.

The AER notes that ACG did not state that its previous advice to the ACCC was misguided, instead stating that:

> We note that 12.5 basis points exceeds the amount suggested by the ACG in a recent detailed study. The difference however is marginal and an allowance of 12.5 basis points provides for regulatory consistency and errs on the side of conservatism.[327]

The AER considers assessing the prudency between a de facto benchmark and a market-based estimate is a discretion for the AER, not the ACG, to exercise. This is the same conclusion reached by the AER in the Powerlink decision.

[326] Rounded to one decimal point

[327] Allen Consulting Group, Cost of Capital for Queensland Gas Distribution, December 2005, p.38.

The AER considers that following the market-based comprehensive methodology developed by the ACG is more likely to result in a level of prudent and efficient benchmark debt raising costs. The AER also considers that the spreading of company credit rating costs is a prudent approach to estimating efficient debt raising costs, and that this is not followed under the 12.5 basis point de facto benchmark approach.

AER's conclusion

The AER does not consider that 12.5 bp reflect the debt raising costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives. Rather the AER considers, following updated ACG methodology, that a reasonable benchmark of opex that would be incurred by an efficient TNSP in SP AusNet's circumstances, as contemplated by cl. 6A.6.6(e)(4) of the NER, is 8.3 bp.

Accordingly, the AER considers that the total of $10.3m proposed by SP AusNet is overstated, and on the basis of the analysis above has made a downward adjustment of $3.7m, giving a revised estimate of $6.6m which the AER is satisfied reflects the level of debt raising costs a prudent operator, in SP AusNet's circumstances, would require to achieve the opex objectives over SP AusNet's forthcoming regulatory control period.

Table 6.39 AER's draft decision - Debt raising costs (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	1.7	1.7	1.7	1.7	1.7	1.8	**10.3**
AER's adjustment	-0.6	-0.6	-0.6	-0.6	-0.6	-0.7	**-3.7**
AER's decision	**1.1**	**1.1**	**1.1**	**1.2**	**1.2**	**1.2**	**6.6**

Source: SP AusNet (PTRM), AER analysis

6.7.4 Rebates (Availability Incentive Scheme)

The network agreement between SP AusNet and VENCorp includes an Availability Incentive Scheme (AIS), whereby the network charges payable by VENCorp to SP AusNet are reduced (i.e. rebated) based on the level of network outages.

SP AusNet's proposal

SP AusNet has proposed an annual rebate allowance of $6.7m ($2007-08), totalling to $40.1m ($2007-08) over the forthcoming regulatory control period, to fund the expected value of the rebates payable to VENCorp under the AIS.[328] This is the same allowance granted to SPI PowerNet for the current regulatory control period.

[328] SP AusNet, op. cit., p.50.

Table 6.40 SP AusNet's proposal - Rebates (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Rebates	6.7	6.7	6.7	6.7	6.7	6.7	**40.1**

Source: SP AusNet[329]

The annual total rebates payable under the AIS are capped at $12m ($2003-04). $6.0m ($2003-04) represents half of this amount. $6.0m ($2003-04) is equivalent to $6.7m ($2007-08), which is proposed by SP AusNet

Issues and the AER's considerations

The actual rebates paid by SP AusNet over the current regulatory control period are shown in table 6.41 below. As can be seen, the maximum rebate has been $1.7m ($2007-08), observed in 2005-06.

Table 6.41 Actual rebates – Current regulatory control period (2007-08 $m)

	Stub 2003	2003-04	2004-05	2005-06	Average
Rebates	0.4	1.2	1.0	1.7	1.3 3 year average[330]
Rebates (annualised)	1.8	1.2	1.0	1.7	1.4 4 year average[331]

Source: SP AusNet (templates), AER analysis

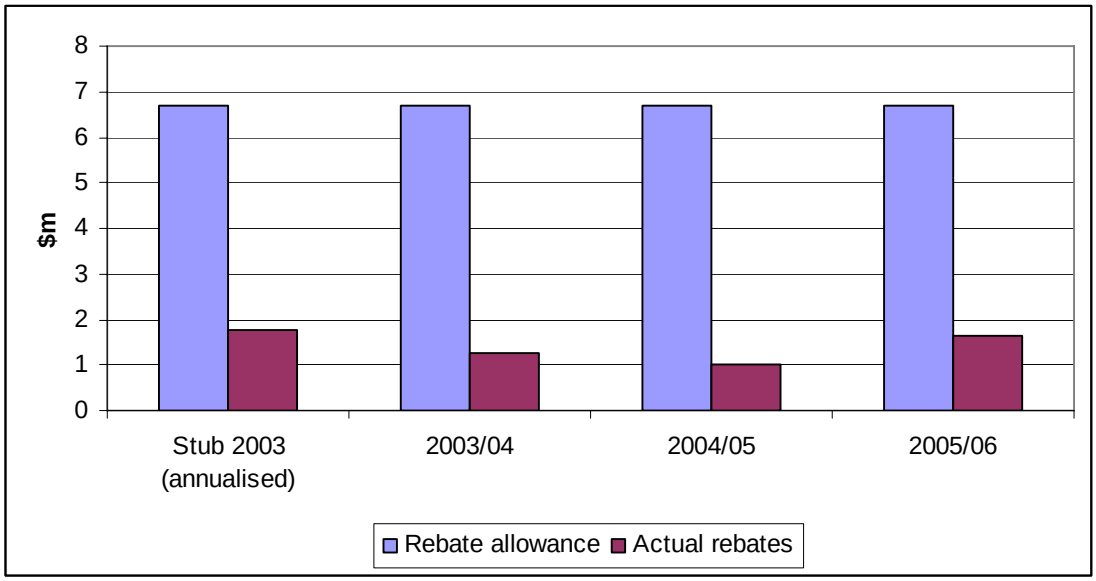
The AER notes that in the 2002 decision, the ACCC granted SPI PowerNet a $6.7m ($2007-08) annual rebate allowance. As can be seen in figure 6.5 below, the level of rebates actually paid by SP AusNet in the current regulatory control period is considerably lower.

[329] SP AusNet, Response to Cl. 6A.11.1 Information Request, 30 April 2007, p.23.

[330] Average of three years from 2003-04 to 2005-06

[331] Average of four years from stub 2003 (annualised) to 2005-06.

Figure 6.5 Rebate allowance and actual rebates – Current regulatory control period ($m, 2007-08)



Source: SP AusNet (Cost templates), AER analysis

The AER understands that a rebate scheme of some variation has existed since 1994. Around 2001, a more comprehensive AIS was proposed to be included as part of the upcoming renegotiation of the network agreement between SP AusNet and VENCorp. At the time, SP AusNet and VENCorp came to an understanding that the revenue at risk for this new scheme should be $6m ($2003-04). SP AusNet engaged Trowbridge Consulting to determine, based on the details of the proposed scheme, what adjustment would need to be made to the dollar value attached to each individual network element rebate, so that the expected value of the scheme in each year of the current (then forthcoming) regulatory control period would be $6m ($2003-04).

For most categories of outages (e.g. unplanned maintenance outage) Trowbridge forecast the expected annual volume of outages over the current regulatory control period to be equal to the annual average between 1996 and 2000. For construction outages, Trowbridge forecast the expected outages based on SP AusNet's five year capex program. Based on these forecasts Trowbridge recommended the proposed rebates be scaled by 31.36 % to achieve an expected level of rebates of $6m ($2003-04) p.a. over the current regulatory control period. In determining the scaling factor, Trowbridge stated that the scheme was only to apply for the current regulatory control period, and would then be subject to renegotiation for the forthcoming regulatory control period. No such renegotiation has occurred.

As $6m ($2003-04) was the expected annual rebate at the commencement of the current regulatory control period, the ACCC gave SPI PowerNet a $6m ($2003-04) allowance to cover the expected cost of the rebates in the current regulatory control period.

It should be noted that the $6m ($2003-04) expected annual rebate figure is based on the assumption that SP AusNet makes no improvements in outage management. As the scheme incentivises SP AusNet to minimise outages in general, and to move necessary outages to off-peak times, thereby incurring lower rebate penalties, it

should be expected that SP AusNet would not pay back the full $6m ($2003-04) if it improved outage management.

The AER considers that the five year forward capex program that the scheme was originally based on is no longer valid, and the average historical outages the scheme was also based on are now significantly outdated, and do not capture the considerable reduction in outages observed during the current regulatory control period.

On the basis of SP AusNet's historical performance, the AER considers that it is highly unlikely that the expected annual value of the rebates over the forthcoming regulatory control period will be $6.7m ($2007-08) per annum. Rather, the AER considers the average historical annual value of the rebates over the current regulatory control period (for years where actual data is available), being $1.4m ($2007-08), is a reasonable estimate of the expected value of the rebates over the forthcoming regulatory control period.

AER's conclusion

The AER is not satisfied that the $40.1m proposed by SP AusNet to cover the costs of expected AIS rebates reflects the prudent and efficient costs required by SP AusNet to achieve the opex objectives over the forthcoming regulatory control period, or a realistic expectation of those costs.

The AER has therefore adjusted SP AusNet's proposed rebate allowance to reflect costs actually incurred in the current regulatory control period, and is satisfied that the revised estimate of $8.5m reasonably reflects the opex criteria, with regard to the opex factors.

Table 6.42 AER's draft decision – Rebates (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's proposal	6.7	6.7	6.7	6.7	6.7	6.7	**40.1**
AER's adjustment	-5.3	-5.3	-5.3	-5.3	-5.3	-5.3	**-31.6**
AER's decision	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**8.5**

Source: SP AusNet, AER analysis

6.7.5 Easement land tax

In 2004, the Victorian Parliament passed the *Land Tax (Amendment) Act 2004* to extend Victoria's land tax regime to easements held by electricity transmission companies. The impact of the land tax on average end user costs was intended to be broadly neutral over time as the tax replaced the former Smelter Reduction Amount (SRA) levy on electricity spot market purchases.

In 2002, the ACCC set SP AusNet's revenue cap for the period 2003-2008.[332] As the extension of the land tax regime was not anticipated at the time of the ACCC's decision, no provision was made for the tax in SP AusNet's revenue allowance.

[332] ACCC, op. cit.

However, SP AusNet's revenue cap decision contained pass-through provisions which enabled it to apply to the ACCC/AER for pass-through of the effect of a "change in taxes event" and other events as specified in the revenue cap decision. For the regulatory years 2004-05, 2005-06, 2006-07 and 2007-08, SP AusNet applied for, and the ACCC/AER approved, the full pass-through of the easement land tax.

For the forthcoming regulatory control period the change in taxes pass-through provision will no longer apply (unless there is a change to the tax), as the tax was introduced prior to the commencement of the forthcoming regulatory control period. Accordingly SP AusNet has included a forecast of the tax, as part of its total opex forecast, in its revenue proposal. Whilst the change in taxes pass-through provision is no longer applicable, the NER does contain an "easement tax change" pass-through provision that applies to the variance between SP AusNet's easement land tax allowance in the decision and outturn easement land tax.

SP AusNet's proposal

In its proposal submitted on 28 February 2007, SP AusNet forecast its (real $2007-08) easement land tax liability by escalating its 2007 easement land tax assessment, $78.4m, by 4 % (real) for each year of its forthcoming regulatory control period.

The 4 % escalator is SP AusNet's calculation of the average annual increase in Melbourne house prices over the last 20 years. SP AusNet justifies this method as being an appropriate easement land tax escalator as it states:

> The value of the land tax is directly related to the value of the land underlying the easements, and as such, the land tax is expected to increase at the same rate as the underlying land value.[333]

On 30 April, SP AusNet informed the AER that:

> The proposal assumed the easement valuation underlying the tax assessment would be subject to a detailed revaluation by the Victorian Valuer-General every second year with the value subject to an indexation in the alternate years between the valuations.
>
> …
>
> Since the proposal was lodged the Victorian State Revenue Office has indicated to SP AusNet that the indexation in alternate years will no longer be performed due to changes in the *Land Tax Act 2005* and *Valuation of Land Act 1960*.[334]

Accordingly, SP AusNet provided a revised forecast which can be seen, along with the original forecast, in table 6.43 below.

For the purposes of assessing SP AusNet's proposal under the NER, the AER accepts SP AusNet's proposal as incorporating its revised easement land tax forecasts submitted to the AER on 30 April 2007.

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[333] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, 28 February 2007, p. 97.

[334] SP AusNet, Response to Cl. 6A.11.1 Information Request 2008/09 – 2013/14, p. 22.

Table 6.43 SP AusNet's original proposal / revised proposal - Easement Land Tax (2007-08 $m)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Easement land tax (Original profile)	81.6	84.8	88.2	91.8	95.4	99.2	**541.1**
Easement land tax (Revised profile)	78.4	84.8	84.8	91.8	91.8	99.2	**530.9**

Source: SP AusNet (Templates, Revised tax model)

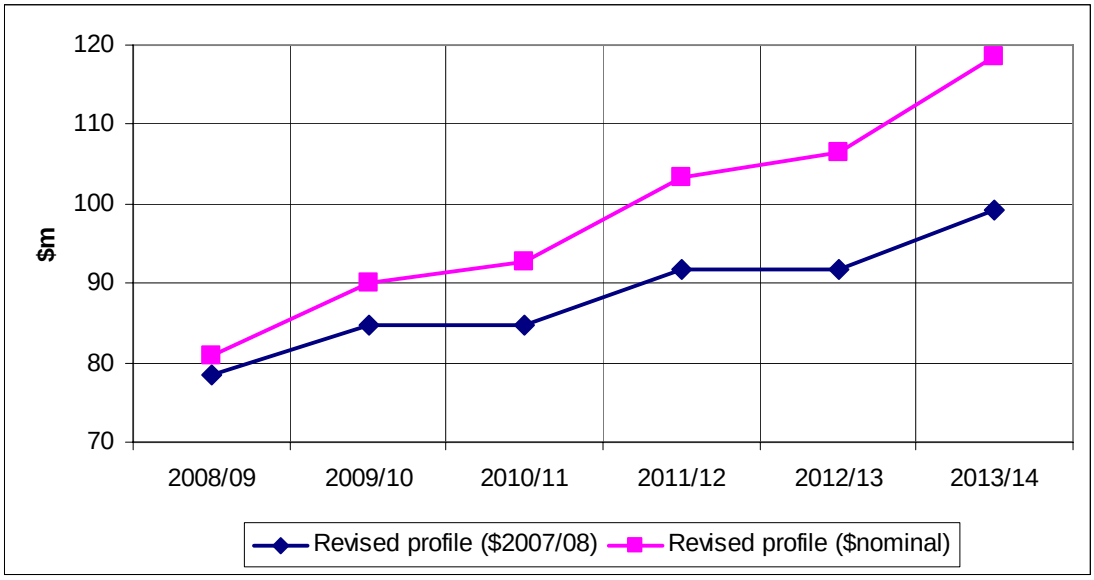
Issues and the AER's considerations

The AER has identified several issues with the methodology used by SP AusNet to forecast easement land tax.

Real vs. nominal liability

Amendments to the *Land Tax Act 2005* and *Valuation of Land Act 1960* mean that the Valuer-General will now revalue SP AusNet's easements only every second year. This means SP AusNet's easement land tax will change only every second year. Further, the AER considers that it is evident from the *Valuation of Land Act 1960* that it is SP AusNet's *nominal* easement land tax liability that will change every second year, not its *real* ($2007-08) easement land tax liability. By contrast, SP AusNet's forecast assumes that the amount of the tax changes every second year in real terms, not nominal terms. This is illustrated in figure 6.6 below. The AER considers it necessary to amend SP AusNet's forecast so that it changes every second year in nominal terms.

Figure 6.6 SP AusNet 's (revised) proposal - Easement Land Tax ($m) [335]



Source: SP AusNet (Revised tax model)

[335] Assumes inflation forecast of 3.00% (nominal profile).

Forecast easement value

SP AusNet has forecast the tax without reference to a forecast easement value in each year of the forthcoming regulatory control period. The "easement tax change event" provision in cl. 11.6.21 of the NER requires a forecast easement value to be specified for each year of the regulatory control period. Specifically, cl. 11.6.21 states:

> For these purposes the change in the amount of land tax that is payable by SPI PowerNet must be calculated by applying the relevant land tax rate to the difference between:
>
> - the value of the easements which is used for the purposes of assessing the land tax that is payable; and
> - the value of the easements which is assumed for the purposes of the revenue determination for the regulatory control period. [emphasis added]

Accordingly, the AER considers it necessary to forecast the tax by forecasting the value of the easements for each year of the forthcoming regulatory control period and subsequently applying the easement land tax rates specified in the *Land Tax Act 2005* (being $22,480 and 5% of the taxable value that exceeds $2,700,000) to the forecast value of the easements.

Escalation of land value

SP AusNet has determined its real land value escalator using a real 20 year simple average of Melbourne metropolitan house prices, despite the majority of SP AusNet's easements being located outside of Melbourne. According to SP AusNet:

> …SP AusNet records show approximately 25 percent of easements are urban and 75 percent rural.[336]

Accordingly, the AER considers it necessary to weight the historical average increase in Melbourne house prices (25 %) with the historic average increase in rural Victorian house prices (75 %). Information on historic rural Victorian house prices is recorded by the Office of the Valuer-General, and is available from the Victorian Department of Sustainability and Environment.[337]

Whilst the AER considers that using a long term (20 year) average in this instance is reasonable, the AER does not consider that the choice of average by SP AusNet is reasonable. SP AusNet has based its real land escalator on the simple arithmetic average nominal increase in Melbourne metropolitan house prices between June 1987 and June 2006. The AER considers that, in this case, an estimate of future growth based on a simple arithmetic average of historical growth does not provide a realistic expectation of the growth rate, as it does not adequately account for the historical timing of growth, and consequently does not provide a realistic expectation of costs.

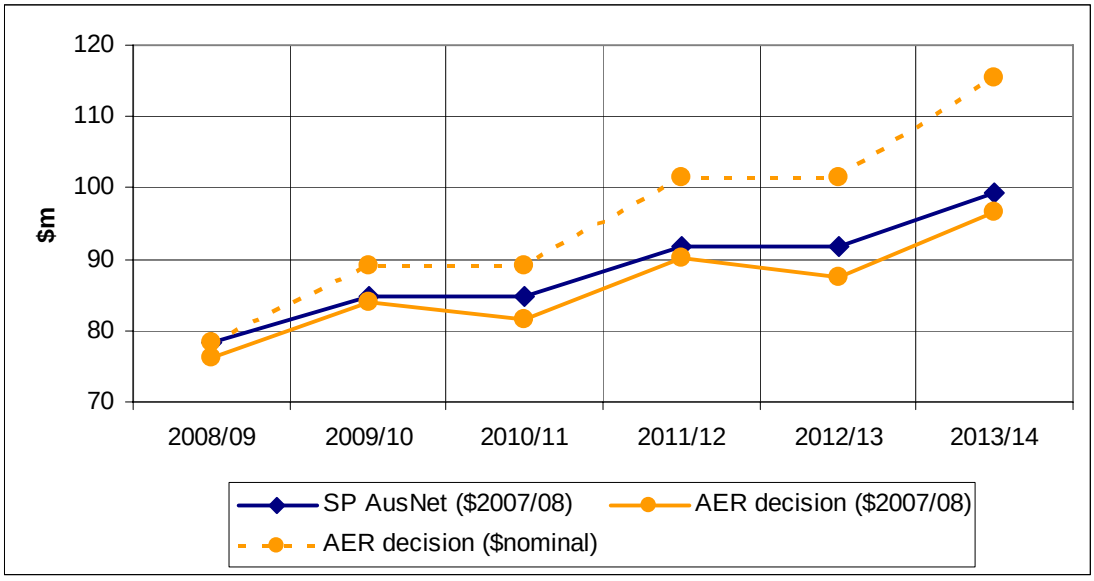
[336] SP AusNet, loc. cit.

[337] Department of Sustainability and Environment, *A Guide to Property Values*, 2006.

The compound 20 year average annual increase in Victorian house prices (weighted 75% rural / 25% urban) is 3.55%. The AER considers that this rate provides a reasonable basis to forecast future growth.

A comparison between SP AusNet's revised proposal and the profile adopting the above considerations is shown in figure 6.7 below.

Figure 6.7 AER's draft decision - Easement land tax ($m)



Source: SP AusNet (Revised tax model, AER analysis)[338]

AER's conclusion

The AER is not satisfied that SP AusNet's (revised) easement tax forecast reasonably reflects a realistic expectation of the easement land tax likely to be incurred in the forthcoming regulatory control period.

On the basis of the analysis above, the AER has adjusted SP AusNet's forecast easement land tax by $14.6m ($2007-08) to produce a revised estimate which the AER is satisfied reasonably reflects the opex criteria, taking into account the opex factors. In summary, SP AusNet's easement land tax forecast has been modified to ensure that the forecast:

- remains constant every second year, in nominal terms, instead of in real terms
- is based on a forecast easement value in each year, as necessary to implement the easement tax change event provision, and
- uses an escalator determined on a historical compound average basis, and weighted on the proportion of SP AusNet's urban and rural easements.

The AER considers that these adjustments result in a realistic expectation of SP AusNet's easement land tax over the forthcoming regulatory control period.

[338] Assumes inflation forecast of 3.00%.

Table 6.44 AER's draft decision – Easement land tax (2007-08 $m)

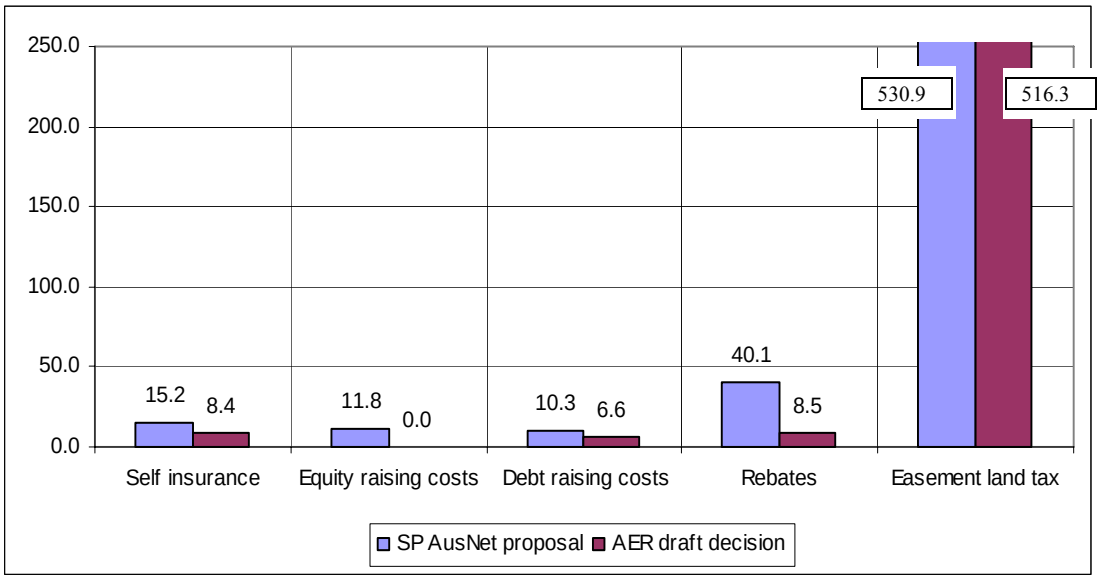
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's (revised) proposal	78.4	84.8	84.8	91.8	91.8	99.2	**530.9**
AER's adjustment	-2.3	-0.8	-3.2	-1.6	-4.2	-2.5	**-14.6**
AER's decision	**76.1**	**84.1**	**81.6**	**90.2**	**87.5**	**96.7**	**516.3**

Source: SP AusNet (revised tax model), AER analysis

6.7.6 AER's conclusion – Other opex

The AER's assessment of SP AusNet's proposed other opex is summarised in the figure below.

Figure 6.8 AER's draft decision – Other opex (2007-08 $m)



Source: SP AusNet[339], AER analysis

6.8 AER's conclusion

The AER has considered SP AusNet's forecast opex of $1034.3m ($2007-08), and for the reasons outlined in this chapter is not satisfied that the opex forecasts proposed by SP AusNet reasonably reflect:

- the efficient costs of achieving the opex objectives
- the costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives, and
- a realistic expectation of the demand forecast and cost inputs required to achieve the opex objectives.

[339] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, 28 February 2007 (as revised).

In drawing this conclusion the AER has had regard to the opex factors set out in cl. 6A.6.6(e) of the NER, and in particular:

(1) the information included in and accompanying SP AusNet's revenue proposal

(2) submissions received from Transend, the EUAA and the EUCV in the course of consulting on the revenue proposal

(3) analysis undertaken by the AER (as outlined above) and for the AER by its consultants Econtech and PB (reports from whom have been published, and should be read in conjunction with this draft decision)

(4) benchmark opex that would be incurred by an efficient TNSP over the regulatory control period, as informed by advice from the AER's independent consultants, and by the experience of the AER/ACCC in past electricity transmission revenue determinations

(5) the actual and expected opex incurred by SP AusNet in the current regulatory control period

(6) the relative prices of operating and capital inputs

(7) the substitution possibilities between operating and capital expenditure

(8) potential inconsistencies between the total labour costs in SP AusNet's opex forecasts with the incentives provided by the AER's service target performance incentive scheme

(9) the extent to which SP AusNet's forecast of required opex is referable to arrangements with other parties that do not reflect arm's length terms.

The AER notes that, as no projects included in SP AusNet's forecasts of capex for the forthcoming regulatory control period have been identified as more appropriately included as contingent projects under cl. 6A.8.1(b) of the NER, cl. 6A.6.6(e)(10) of the NER is not relevant to this consideration.

As the AER is not satisfied that SP AusNet's forecast opex reasonably reflects the opex criteria, pursuant to cl. 6A.6.6(d), the AER must not accept the forecast opex in SP AusNet's revenue proposal.

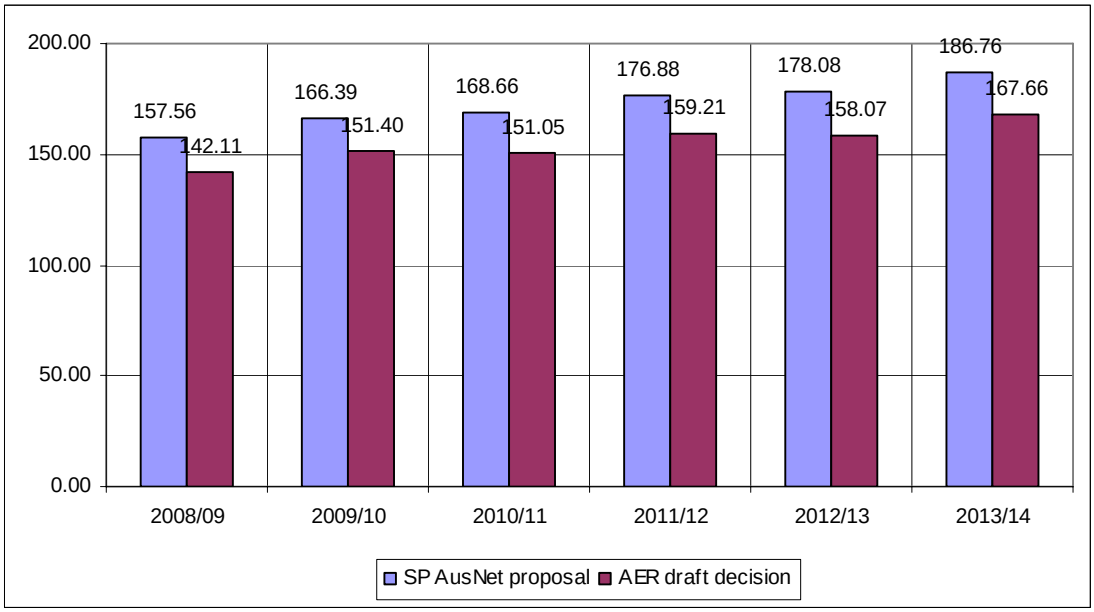
On the basis of its analysis of SP AusNet's proposed opex forecast, and the conclusions set out in this chapter, the AER has applied a reduction of $104.8m ($2007-08) (approximately 10%) to SP AusNet's proposed forecast to produce a revised estimate of the total opex costs that a prudent operator in the circumstances of SP AusNet would require to achieve the opex objectives. The AER is satisfied that the revised forecast of $929.5m ($2007-08) over the forthcoming period, reasonably reflects the opex criteria, taking into account the opex factors.

Table 6.45 AER's draft decision – Opex (2007-08 $m)

	SP AusNet's proposal	AER's adjustment	AER's decision
Asset works	90.26	-4.69	85.56
Routine maintenance	206.63	-11.67	194.96
Corporate	117.71	-15.19	102.52
Rolled in assets opex	11.40	-4.92	6.48
Inventory	-	+0.24	0.24
Controllable opex	**426.00**	**-36.24**	**389.76**
Self-insurance	15.24	-6.86	8.37
Equity raising costs	11.81	-11.81	0.0
Debt raising costs	10.30	-3.72	6.58
Rebates	40.13	-31.60	8.52
Easement land tax	530.85	-14.60	516.25
Other opex	**608.34**	**-68.60**	**539.73**
Total opex	**1 034.34**	**-104.84**	**929.49**

Source: SP AusNet[340], AER analysis

Figure 6.9 AER's draft decision – Opex (2007-08 $m)



Source: SP AusNet[341], AER analysis

[340] ibid.

[341] ibid.

7 Service target performance incentives

7.1 Introduction

The AER's Service target performance incentive scheme (STPIS) aims to balance the incentive for TNSPs to minimise expenditure with the need to maintain and improve reliability for customers. Under the current regulatory regime, the AER approves a maximum allowed revenue (MAR) that caps the amount of revenue that TNSPs can earn. The only way TNSPs can increase profits from regulated activities is by reducing costs below that provided in the transmission determination. Such cost reductions may result from either capex or opex efficiency gains, or by the inefficient deferral of either form of expenditure. As the latter may result in a decline in the level of service and impose costs on other market participants, the AER has developed a Service target performance incentive scheme in accordance with the NER that provides TNSPs with a financial incentive to maintain or improve service levels.

7.2 Regulatory requirements

NER requirements

Cl. 6A.7.4 of the NER requires the AER to publish a Service target performance incentive scheme (STPIS). The STPIS must comply with the following principles, which are prescribed at cl.6A.7.4(b) of the NER. The STPIS should:

1) provide incentives for each Transmission Network Service Provider to:
   (i) provide greater reliability of the transmission system that is owned, controlled or operated by it at all times when Transmission Network Users place greatest value on the reliability of the transmission system; and
   (ii) improve and maintain the reliability of those elements of the transmission system that are most important to determining spot prices;
2) result in a potential adjustment to the revenue that the Transmission Network Service Provider may earn, from the provision of prescribed transmission services, in each regulatory year in respect of which the service target performance incentive scheme applies;
3) ensure that the maximum revenue increment or decrement as a result of the operation of the service target performance incentive scheme will fall within a range that is between 1% and 5% of the maximum allowed revenue for the relevant regulatory year;
4) take into account the regulatory obligations with which the Transmission Network Service Providers must comply;
5) take into account any other incentives provided for in the Rules that Transmission Network Service Providers have to minimise capital or operating expenditure; and
6) take into account the age and ratings of the assets comprising the relevant transmission system.

The AER's final STPIS must be published by 30 September 2007, following the transmission consultation process set out in cl.11.6.17 of the NER. SP AusNet was required under the NER to submit its revenue proposal on 28 February 2007. Recognising that the AER's final STPIS would not be published until after that date, the transitional provisions in cl.11.6.18(b) of the NER provide that the first proposed

STPIS published by the AER on 31 January 2007 will apply to SP AusNet for the forthcoming regulatory control period.

Reference to the STPIS in this chapter should be read as a reference to the first proposed STPIS that applies to SP AusNet for the forthcoming regulatory control period.

The first proposed STPIS

The STPIS prescribes the parameters against which targets and the amount of revenue at risk are set for each TNSP. In each transmission determination, the AER will set the values, weightings and other elements that will apply to each parameter for the relevant regulatory control period. The maximum allowed revenue that the TNSP can earn in each year of the regulatory control period will be adjusted according to the TNSP's performance against the service performance targets, caps and collars included in its transmission determination.

Cl. 2.6 of the STPIS prescribes that the level of the revenue at risk for SP AusNet is one per cent of the maximum allowed revenue for the relevant calendar year.

Appendix B of the STPIS states that the following parameters (and sub-parameters) will apply to SP AusNet:

Circuit availability

- Total circuit availability
- Transmission circuit availability (peak critical)
- Transmission circuit availability (peak non-critical)
- Transmission circuit availability (intermediate critical)
- Transmission circuit availability (intermediate non-critical)

Loss of supply event frequency

- Number of events greater than 0.05 system minutes per annum
- Number of events greater than 0.3 system minutes per annum

Average outage duration

- Average outage duration – Transmission lines
- Average outage duration – Transmission transformers/plant

For each of these parameters, SP AusNet must submit proposed service performance targets, collars and caps and weightings (collectively, the proposed values) that will define the range of performance within which the TNSP will receive the maximum financial reward or penalty attributed to that parameter.[342]

[342] AER, First Proposed Electricity Transmission Network Service Providers Service Target Performance Incentive Scheme, Version No: 01, January 2007, section 2.5.

As noted in the explanatory statement to the STPIS, market impact parameters are still being developed by the AER and therefore have not been included in the STPIS that applies to SP AusNet in the forthcoming regulatory control period.[343]

In making its transmission determination, the AER must accept SP AusNet's proposed values if they comply with the requirements of the STPIS, and in particular cl.2.5 of the STPIS, which includes the following requirements:

- Data used to calculate the proposed values must be accurate and reliable
- The proposed caps and collars must be calculated by reference to the proposed performance targets, using a sound methodology
- Subject to the following, proposed service performance targets must be equal to the TNSP's average performance history over the most recent five years, and the data used to calculate those targets consistently recorded based on the parameter definitions that apply to the TNSP under the STPIS:
  - The AER may approve a service performance target based on a different period if satisfied that the use of a different period is consistent with the objectives of the STPIS
  - If the performance history information described is not available, the AER may accept a proposed service performance target if satisfied that the service performance target is based on an appropriate benchmark or methodology
  - Proposed service performance targets may be subject to reasonable adjustment to allow for statistical outliers, the expected effects on a TNSP's performance from any increases or decreases in the volume of capital works planned during the regulatory control period, and material changes to an applicable regulatory obligation.
- The AER must be satisfied that the proposed values are consistent with the objectives listed in cl.1.4 of the STPIS, in particular that it:
  - Contributes to the achievement of the national electricity market objective
  - Is consistent with the principles contained in cl.6A.7.4(b) of the NER
  - Promotes transparency in the information provided by a TNSP to the AER, and in the decisions made by the AER
  - Assists in the setting of efficient capital and operating expenditure allowances in its transmission determinations by balancing the incentive to reduce actual expenditure with the need to maintain and improve reliability for customers.[344]

[343] AER, *Explanatory Statement — First proposed service target performance incentive scheme,* January 2007, p. 4. See also AER issues paper on Developing incentives based on the market impact of transmission congestion, June 2007, available on the AER's website.

[344] ibid., p.1

SP AusNet must also propose weightings for each parameter prescribed in the STPIS, and demonstrate to the AER's satisfaction that the proposed weightings are consistent with the objectives of the STPIS. The weighting for a parameter can be set at zero, but the sum of the weightings for a TNSP's parameters must equal the level of revenue at risk under the STPIS, that is, one per cent of the maximum allowed revenue for the relevant calendar year.[345]

7.3 SP AusNet's proposal

In its revenue proposal, SP AusNet proposes weightings, targets, caps and collars to apply to each of its nine service performance parameters for the forthcoming regulatory control period. SP AusNet's historical performance against each sub-parameter over the period 2002-06, as well as its proposed values and weightings for the period 2008-14 is set out in Table 7.1.

Table 7.1: SP AusNet historical performance, proposed values and weightings[346]

Measures	Target 2002-07	Average 2002-06	Proposed values			
			Collar	Target	Cap	Weight
Availability measures	%	%	%	%	%	%MAR
Total circuit	99.20	99.28	98.38	98.68	98.84	0.20
Peak critical	99.90	99.73	98.51	99.28	99.67	0.20
Peak non-critical	99.85	99.63	98.87	99.36	99.60	0.05
Intermediate critical	99.85	99.42	97.11	98.49	99.19	0.025
Intermediate non-critical	99.75	99.04	97.25	98.62	99.30	0.025
Loss of supply events	No.			No.		%MAR
>0.05 min per annum	N/A	3.75	7	4	3	0.125
>0.3 min per annum	N/A	1.25	4	2	1	0.125
Average outage duration	hours			hours		%MAR
Lines	10	6.589*	12	7	4	0.125
Transformers	10	6.871	10	7	6	0.125

* Adjusted for proposed outage duration cap

SP AusNet proposes reductions in seven of its nine service performance targets for the forthcoming regulatory control period, citing two major reasons:

- the inclusion (at the AER's request) of augmentation and third party outages in the STPIS and

[345] ibid., cl.2.7

[346] SP AusNet, Electricity Transmission Revenue Proposal 2008-14, p.45; and SP AusNet, Calculation of Service Standards 2008/09 – 2013/14, p.9.

- an increase in the number of planned outages required to implement SP AusNet's proposed replacement capex program.[347]

The relative increase in replacement capex between regulatory control periods is the major factor SP AusNet has identified in support of its proposed lower service performance targets. The outage plans on which the proposed reductions to targets rely have been developed to align with SP AusNet's replacement capex forecasts.

SP AusNet has applied a uniform methodology to calculate caps and collars on each sub-parameter. Caps have been placed one standard deviation above the service performance target, while collars have been placed two standard deviations below the service performance target. In support of this methodology, SP AusNet states that:

> The asymmetry reflects the fact that performance is already high and therefore improvements are more difficult to achieve than performance reductions. [348]

SP AusNet states that its historical data for the two loss of supply parameters are reliable, and that it is therefore confident placing revenue-at-risk against these parameters for the first time.[349]

SP AusNet also proposes to introduce a seven-day (168 hour) outage duration cap on individual events, as well as a number of new exclusions unique to SP AusNet, including:

1) *Brunswick to Richmond 220kV underground cable outages*: planned maintenance outage times for this work are forecast to be substantially above the historical average, as the asset to be repaired is located under a major suburban road, requiring excavation and leading to lengthy outage times.
2) *Large and uncertain VENCorp and customer works*: as VENCorp has not yet formulated specific forecast works for a number of different augmentation programs, SP AusNet proposes to exclude any associated outages rather than include an allowance in its outage plans.[350]

7.4 Submissions

Energy Users Association of Australia

The EUAA considers that placing one per cent of MAR at risk under the STPIS is an inadequate financial incentive to place on regulated businesses.[351] The EUAA believes that service performance incentives would be more effective if applied uniformly across all TNSPs, and recommends that the AER align the timing of regulatory

[347] SP AusNet, Electricity Transmission Revenue Proposal 2008/09 – 2013/14, pp.45-47.

[348] ibid., p.46.

[349] ibid., p.47

[350] ibid., p.48-49.

[351] EUAA, *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p.24.

reviews and conduct them simultaneously. The EUAA identifies the following benefits from this alignment:

- enabling better benchmarking of cost and performance
- consistent service standards for all TNSPs
- consistency with the MCE's desire to have common regulatory standards across jurisdictions and
- avoid some of the costs of conducting individual reviews.[352]

The EUAA states that both planned and unplanned outages on the transmission network can have a significant impact on the wholesale price of electricity, and this effect should be taken into account when assessing the service performance of TNSPs. In particular, the EUAA states that the AER should examine how TNSPs schedule their outages, and the extent to which it is possible to have regard to spot prices when scheduling outages.[353]

Energy Users Coalition of Victoria

The EUCV observes in its submission on SP AusNet's proposal that the large increase in both opex and capex allowance proposed by SP AusNet should result in an improved level of service performance, whereas SP AusNet has proposed lower service performance targets, and increased the amount of revenue at risk. Specifically, the EUCV comments that:

> …the current levels of performance are being achieved with current levels of capex and opex. If capex and/or opex allowances increase, then this must be accompanied by higher performance targets. [354]

In conclusion, the EUCV submits that the AER must ensure that the service performance targets reflect the outcomes of the capex and opex programs built into the new reset.[355]

7.5 Consultant's review

The AER engaged PB Associates to provide an expert opinion on the values and exclusions proposed by SP AusNet for the STPIS, and particularly:

- to assess the consistency of SP AusNet's proposed definitions and exclusions with the STPIS
- to review SP AusNet's proposed targets (including any caps, collars or deadbands) and parameter weightings and consider their appropriateness and

[352] ibid., p.23.

[353] ibid., p.24.

[354] ECCV, *Response to AER review of Victorian electricity transmission,* June 2007, p.48.

[355] ibid, p.50.

- where SP AusNet's proposal does not meet the requirements of the STPIS, recommend appropriate, service performance targets and weightings to be applied to SP AusNet over the forthcoming regulatory control period based on the STPIS.

PB recommends that the AER accept the weightings proposed by SP AusNet, but recommends changes to SP AusNet's proposed service performance targets and exclusions. PB's recommended STPIS targets, caps, collars and weightings are listed in Table 7.2.

Table 7.2: PB's recommended performance incentive scheme values and weightings[356]

Measures	Collar	Target	Cap	Weighting
Availability measures	%	%	%	%MAR
Total circuit	98.41	98.73	99.05	20.0
Peak critical	98.76	99.53	99.92	20.0
Peak non-critical	98.95	99.53	99.81	5.0
Intermediate critical	97.71	99.09	99.78	2.5
Intermediate non-critical	97.94	99.10	99.68	2.5
Loss of supply events		No.		%MAR
>0.05 min per annum	9	6	3	12.5
>0.3 min per annum	4	1	0	12.5
Average outage duration		Minutes		%MAR
Lines	667	382	98	12.5
Transformers	556	412	268	12.5

Source: PB Analysis

7.6 Issues and the AER's considerations

7.6.1 Service performance parameter definitions

SP AusNet's parameters are defined in the STPIS. However, the STPIS does not specify operational definitions, including definitions of peak and intermediate periods, critical and non-critical circuits. Clarification of definitions is necessary to ensure consistency in the calculation of historical service performance data and the method for determining service performance targets.

SP AusNet's proposal

SP AusNet is required by the STPIS to have parameters based on the frequency of loss of supply events. Loss of supply is determined through examining incident

[356] PB Strategic Consulting, SP AusNet Revenue Reset: An independent review, p.225.

reports and counting events exceeding frequency thresholds. SP AusNet states that its thresholds are lower than other TNSPs as the Victorian network delivers higher levels of reliability.

For the purposes of SP AusNet's loss of supply parameters, it proposes that system minutes be calculated on the basis of events rather than connection point interruptions, that is, interruptions affecting multiple connection points are aggregated when determining the number of events.

SP AusNet proposes a seven-day cap on average outage duration to limit the effect of any one event on the associated parameters.

Consultant's review

PB reviewed the method applied by SP AusNet in defining, measuring and collecting data on the parameters. PB assessed whether SP AusNet's definitions are consistent with definitions in the STPIS.

PB notes that SP AusNet's definition for the circuit availability parameter is consistent with the STPIS and the proposed definition of system minutes is consistent with industry practice.

PB found that the average outage duration parameter is calculated in accordance with the STPIS and recommends that the proposed seven-day cap be applied to limit the impact of any one event on the average outage duration parameter.

AER's consideration

The STPIS does not include a definition for system minutes. PB reviewed SP AusNet's methodology for calculating system minutes and found it to be consistent with industry practice. The AER is satisfied that SP AusNet's approach is consistent with the STPIS and has included the methodology used by SP AusNet in the definitional section at appendix C.

Due to the limited opportunity for consultation when the STPIS was developed, the AER provided that certain elements of the TNSP specific parameter definitions could be finalised in the transmission determination.[357]

The AER considers that the definitions applied by SP AusNet in calculating its service performance, as documented by PB, are consistent with the definitions in appendix B of the STPIS. The definitions that apply to SP AusNet for the forthcoming regulatory control period are set out at appendix C of this draft decision.

[357] AER, Explanatory Statement — First proposed service target performance incentive scheme, January 2007.

7.6.2 Service performance targets

SP AusNet's proposal

SP AusNet has proposed targets for its circuit availability and average outage duration parameters based on historical data for the five years from 2002 to 2006. In allocating the capex outage hours to peak, intermediate and off-peak periods, SP AusNet relied on historical data including capex and opex outages. The targets for the loss of supply parameters are based on four years of data, from 2003 to 2006.[358]

In accordance with cl.2.5(j) of the STPIS, adjustments can be made for statistical outliers, changes in the capital works program and material changes in regulatory obligations. SP AusNet's proposed service performance targets for circuit availability and loss of supply parameters are adjusted to reflect the proposed increase in its capital works program and incorporate outages due to the expected volume of customer augmentation works requested by VENCorp and distribution businesses.

SP AusNet proposes a seven-day cap be introduced to the average outage parameter.

Submissions

The EUAA submits that "stretch factors" should be applied to ensure that TNSPs do not benefit from improvements in the network because of capex and opex expenditure to the detriment of consumers.[359]

Consultant's review

In forming recommendations on the appropriate service performance targets to be applied to SP AusNet for the forthcoming regulatory control period, PB examined the historical data relied on by SP AusNet for its proposed service performance targets. PB also examined the detailed outage plans upon which SP AusNet adjusted its targets to take into account the forward works program proposed for the forthcoming regulatory control period.

Circuit Availability

PB recommends making adjustments to SP AusNet's proposed circuit availability targets due to capex outages based on the following findings:

In allocating outage hours between peak, intermediate and off-peak periods, SP AusNet used a percentage split based on past capex and opex outages. PB considered that this allocation should have been based only on past capex outages and has adjusted the allocation accordingly.

[358] SP AusNet, op. cit., p.47.

[359] EUAA, op. cit., p.25.

As a substantial number of outage hours are associated with SP AusNet's proposed station rebuild projects, PB examined the number of hours assigned to each rebuild and considered it to be appropriate.

PB also examined SP AusNet's proposed adjustments resulting from the impact of customer works. Specifically, in forming its recommendations, PB has examined the planning reports produced by the Victorian distribution businesses and VENCorp's 2007 Electricity Annual Planning Report. PB recommends the following changes to SP AusNet's proposed adjustments due to customer works:

- SP AusNet has forecast the outages associated with its customer augmentation program in whole days (24 hours). PB considers that outage hours can be more accurately forecast, as some projects allow circuits to be returned to service overnight during a works program.
- Due to SP AusNet's proposal to exclude 'fault level mitigation' works (further considered at 7.6.7), PB recommends the removal of the forecast of 36 days allowed for unspecified fault level mitigation projects.

PB's recommended adjustments to the circuit availability service performance targets are set out in table 7.3.

Table 7.3: PB's recommended adjustments to the circuit availability service performance targets[360]

Parameter	SP AusNet's proposed adjustments			PB's recommended adjustments		
	Customer works	SP AusNet's capex	Total	Customer works	SP AusNet's capex	Total
Availability Measures	%	%	%	%	%	%
Total circuit	-0.049	-0.425	-0.474	0.002	-0.424	-0.421
Peak critical	-0.157	-0.183	-0.340	-0.079	-0.013	-0.092
Peak non-critical	-0.018	-0.188	-0.206	0.008	-0.043	-0.035
Intermediate critical	-0.072	-0.604	-0.676	0.020	-0.099	-0.079
Intermediate non-critical	-0.044	-0.359	-0.402	-0.021	0.073	0.052

Source: PB analysis

The overall impact of PB's detailed analysis and recommended circuit availability service performance targets is shown in table 7.4.

[360] PB Strategic Consulting, op. cit., p.215.

Table 7.4: Impact of PB's recommended adjustments to the circuit availability service performance targets[361]

Parameter	Historical average	Adjustment for SP AusNet and other capex	PB's recommended target
Availability Measures	%	%	%
Total circuit	99.15	-0.42	98.73
Peak critical	99.62	-0.09	99.53
Peak non-critical	99.56	-0.03	99.53
Intermediate critical	99.17	-0.08	99.09
Intermediate non-critical	99.05	0.05	99.10

Source: PB analysis

Loss of Supply

While PB considers that rounding the loss of supply service performance targets moves the target away from the long-term average of service performance and can create a material asymmetry in the STPIS, it accepts the AER's position in previous revenue determinations and has incorporated rounding into its recommended targets.

PB considers that SP AusNet's proposed change to the targets for the loss of supply parameter due to capital works over the forthcoming regulatory control period is reasonable.

Table 7.5: PB's recommended adjustments to the loss of supply service performance targets[362]

Parameter	Historical average	SP AusNet's proposed values		PB's recommended target	
		Customer works	SP AusNet's capex	unrounded	rounded
Loss of supply events	Number	Number	Number	Number	Number
>0.05 system minutes	3.75	0.00	1.89	5.64	6.00
>0.3 system minutes	1.00	0.00	0.32	1.32	1.00

Source: PB analysis

Average Outage Duration

PB recommends, that the unit of measure for the average outage duration parameter be changed from 'hours', as proposed by SP AusNet, to 'minutes', consistent with the STPIS. PB considers that the seven-day cap proposed by SP AusNet for this parameter is sufficiently low in value to limit the risk to SP AusNet of a single long event, and therefore recommends that it be applied.[363] PB adjusted the historical data, as presented in table 7.6.

[361] ibid.

[362] ibid., p.216.

[363] ibid.

Table 7.6: PB recommended adjustments to the average outage duration service performance targets[364]

Parameter	Historical average	Historical average with 7-day cap	PB's recommended target
Average outage duration	Minutes	Minutes	Minutes
Lines	718	382	382
Transformers	412	412	412

Source: PB analysis

Table 7: PB recommended service performance targets for SP AusNet[365]

Measures	Unit of measure	Target
Availability measures		
Total circuit	%	98.73
Peak critical	%	99.53
Peak non-critical	%	99.53
Intermediate critical	%	99.09
Intermediate non-critical	%	99.10
Loss of supply events		
>0.05 min per annum	No.	6
>0.3 min per annum	No.	1
Average outage duration		
Lines	Minutes	382
Transformers	Minutes	412

Source: PB analysis

AER's consideration

Circuit Availability

As required by cl.2.5(g) of the STPIS, the proposed service performance targets for the circuit availability and average outage duration parameters are based on historical data for the five years from 2002 to 2006.[366]

The AER agrees with PB's recommended adjustments to the circuit availability targets as they reflect the changes to the capital works program, based on a bottom up assessment of the outage hours associated with future projects. PB's analysis of the

[364] ibid., p.217.

[365] ibid.

[366] SP AusNet, op. cit., p.46.

outages and application of standard outage times provides an appropriate adjustment to the circuit availability parameter.

The AER notes that in reviewing SP AusNet's forecast capex proposal, PB recommends a reduction to capex by about 14% for the 2008–14 period. PB has examined the impact of this reduction on the expected number of outage hours over the forthcoming regulatory control period, and concluded that there would not be a material impact on the service performance targets for the circuit availability parameters, and therefore has not proposed any adjustments. The AER has made further adjustments to SP AusNet's proposed capex, the adjustments predominately apply to connection assets which are excluded from the STPIS. Therefore it is not necessary to amend the targets due to capex adjustments.

Loss of supply

In accordance with cl.2.5(g) of the STPIS, the service performance target must be equal to the TNSP's average performance over the most recent five years. Cl. 2.5(h) of the STPIS allows the AER to approve a service performance target based on a different period if it is consistent with the objectives of the STPIS. Consistent with PB's advice, the AER is satisfied that the four years of data available for the loss of supply parameter is sufficient to determine the service performance target and is consistent with the objectives of the STPIS.

The AER rejects SP AusNet's rounding of loss of supply service performance targets to the next highest integer. In accordance with previous transmission determinations, the AER will round loss of supply targets to the nearest whole number. This is an appropriate adjustment and recognises the achievable outcomes for these parameters in any one year. The AER considers that rounding to the nearest whole number will not substantially impact incentives provided to SP AusNet, and will maintain robust service performance targets.

Average Outage Duration

The AER accepts SP AusNet's proposal to cap the impact of an individual outage on the average outage duration parameters at seven days. This cap is sufficiently low to limit the risk to SP AusNet of a single long event while maintaining sufficient incentives. The average outage duration parameter has been set using historical data adjusted for consistency with the introduction of the seven-day cap.

In relation to the EUAA's request to apply stretch factors, the AER agrees that the STPIS should not reward improvements in service resulting from increased capex. The service performance targets recommended by PB and accepted by the AER are consistent with the STPIS and are based on historical performance. The AER considers that the capex program will not significantly increase reliability in the forthcoming regulatory control period, and therefore has not adjusted service performance targets for the forthcoming regulatory control period. SP AusNet's proposed level of capex is not intended to significantly reduce its relative asset failure risk levels over the forthcoming regulatory control period.

7.6.3 Caps and collars

Caps and collars around service performance targets determine the rate at which a TNSP receives an incentive bonus or penalty based on its annual service performance. The cap is the service performance value that results in the maximum positive financial reward for any one parameter. The collar is the service performance value that results in the maximum negative financial penalty.

SP AusNet's proposal

SP AusNet's proposed service performance caps and collars for each service performance target are set out in table 7.8. SP AusNet proposes that caps be placed one standard deviation above the historical average, and collars two standard deviations below the historical average. SP AusNet states that the asymmetry reflects the fact that performance is already high and therefore improvements are more difficult to achieve than performance reductions.[367]

Consultant's review

PB recommends that the difference between the cap and collar values should be significantly wider than the natural fluctuation in the parameter that might arise due to exogenous events. This prevents variations in performance resulting in significant revenue swings due to the cap/collar being exceeded. As a result, PB states that the cap and collar should ideally be two standard deviations from the target, resulting in the cap/collar being met approximately one in every 20 years.[368]

PB found that if SP AusNet was to set caps at two standard deviations it would result in all of the circuit availability parameters being above 100%, with the exception of the 'circuit availability – total' parameter. Therefore, for the circuit availability peak critical, peak non-critical, intermediate critical and intermediate non-critical parameters only, PB recommends that the cap be set at one standard deviation.[369]

[367] ibid. p. 46.

[368] PB Strategic Consulting, op. cit. p.217.

[369] ibid., p.218.

Table 7.8: PB recommended caps and collars for parameters[370]

	Actual performance		SP AusNet's proposed values			PB's recommended values		
	Range	Standard deviation	Collar	Target	Cap	Collar	Target	Cap
Availability measures								
Total circuit	0.42	0.16	98.36	98.67	98.83	98.41	98.73	99.05
Peak critical	1.00	0.39	98.51	99.28	99.67	98.76	99.53	99.92
Peak non-critical	0.73	0.29	98.78	99.35	99.64	98.95	99.53	99.81
Intermediate critical	1.73	0.69	97.12	98.50	99.19	97.71	99.09	99.78
Intermediate non-critical	1.41	0.58	97.49	98.64	99.22	97.94	99.10	99.68
Loss of supply events								
>0.05 min per annum	3	1.50	8.64	5.64	4.14	9	6	3
>0.3 min per annum	2	1.15	3.63	1.32	0.17	4	1	0
Average outage duration								
Lines	435	142	667	382	240	667	382	98
Transformers	170	72	556	412	340	556	412	268

Source: PB analysis

AER's consideration

The AER rejects SP AusNet's proposal to have caps at one standard deviation above the target as this creates asymmetry and provides a greater reward for exceeding the target than penalty for coming under the service performance target.

PB has recommended a sound and reasonable methodology to establish the caps and collars to determine the rate at which SP AusNet receives a reward or penalty. This methodology allows for natural variations in the performance that will balance incentives and encourage improvement without risking large losses or gains due to statistical outliers. The AER accepts PB's recommendations on the appropriate cap and collar values to be applied to SP AusNet's parameters.

7.6.4 Weightings

SP AusNet's proposal

The weightings proposed by SP AusNet for each parameter are set out at table 7.1. SP AusNet proposes that the weightings or the amount of revenue at risk for each parameter should reflect the reliability of data and the relative importance to customers.

SP AusNet states that it is appropriate that the highest weightings are placed on the parameters that have the highest potential impact on customers.[371]

[370] ibid.

SP AusNet proposes to place revenue at risk on the loss of supply parameters for the first time.

Consultant's review

PB considers SP AusNet's proposed weightings to be appropriate, noting that:

- Weightings provide material incentives. With the aggregate incentive set at one per cent of revenue, PB considers a parameter specific weighting of less than 10% of the total revenue at risk is too weak to provide an incentive.[372]
- The parameter 'loss of supply greater than 0.03 system minutes' should be allocated the highest weighting so as to match transmission customers' high expectations regarding reliability of supply. However, in recognition of the fact that SP AusNet only has access to four years of reliable data, which may not include a year of performance significantly below the average, SP AusNet has proposed to give the target a lower weighting than circuit availability. PB considers this an appropriate approach.[373]
- Circuit availability on critical feeders should be weighted higher than for non-critical feeders in keeping with the principle of the NER that the STPIS provide incentives for TNSPs to improve and maintain reliability on those elements of the transmission system that are most important to determining spot prices.
- Circuit availability on feeders at peak times should be weighted higher than at off-peak times in keeping with the principle of the NER that the STPIS provide incentives to provide greater reliability at times of greatest value to users.[374]

AER's consideration

The weightings proposed by SP AusNet are reasonable and appropriate to apply to its service targets in the forthcoming regulatory control period. The weightings place half of the revenue at risk for parameters related to security of supply and allocate the remainder equally to parameters related to reliability of supply and operational response. This is consistent with the services more highly valued by SP AusNet's customers and the objectives of the STPIS.

The AER considers PB's assessment of the factors set out above, particularly the importance of the critical circuit availability parameter, to be accurate. The reliability of data available for 'loss of supply greater than 0.03 system minutes' parameter is appropriately reflected in a reduction of the weighting for that parameter.

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[371] SP AusNet, op. cit., p.48.

[372] PB notes that where the parameters are not independent, weightings for a sub-parameter can be less than 10%. For instance, a circuit availability parameter for feeders may be set at 5% and a circuit availability parameter total (including all equipment) may be set at 25%.

[373] PB Strategic Consulting, op. cit., p.219.

[374] ibid.

The AER is satisfied that the proposed weightings will provide incentives for SP AusNet to plan and minimise outages to assets highly valued by SP AusNet customers, at times highly valued to customers. This is consistent with the objectives of the STPIS.

7.6.5 Data collection and reporting

Consultant's review

SP AusNet's data collection has been subject to the AER's annual review process. PB examined the data collection and reporting system and found the process relied on the manual collection of data from internally produced system incident reports and reports to VENCorp about loss of supply events.

PB found audited information provided by SP AusNet to be reliable, and concludes that historical data and future data collected by the same method are suitable for use in the STPIS.

AER's consideration

The AER considers that the recording processes and reporting systems established by SP AusNet to record service performance data are appropriate. In the forthcoming regulatory control period, SP AusNet must report performance data in accordance with the definitions set out in appendix C of this document. These definitions are consistent with appendix B of the STPIS. SP AusNet must advise the AER of any material changes to the systems, definitions, or processes used to collect or report performance data as part of its annual compliance reporting.

Further, the AER expects that SP AusNet will follow developments in market based indicators and, where requested, provide commentary on the market impact data collected by the AER. This will assist the development of market based parameters to be applied during the regulatory control period from 2014.

7.6.6 Revenue at risk

SP AusNet's proposal

SP AusNet's proposal places 1% of revenue at risk through the STPIS. This is an increase from 0.5% of revenue at risk during the current regulatory control period and is consistent with the minimum set in the NER.

Submissions

The EUCV submits that the increase in reward for achievement, or revenue at risk, should be coupled with higher targets due to greater expenditure.[375]

The EUAA submits that one per cent of revenue at risk does not provide a strong enough incentive for SP AusNet to meet the required service targets.[376] The EUAA

[375] EUCV, op. cit., p.48.

states that service performance incentives do not sufficiently mimic the competitive environment in which most of SP AusNet's consumers operate.

AER's consideration

The increase in revenue at risk from 0.5% to 1% is required under the STPIS. Clause 6A.7.4(b)(3) of the NER states that the revenue at risk will fall within the range of one to five per cent of the MAR for the relevant regulatory year. This has been set at 1% by the AER in the STPIS.

It should also be noted that SP AusNet is also subject to an Availability Incentive Scheme (AIS) negotiated directly with VENCorp, which places further revenue at risk. SP AusNet sought an allowance for the AIS under its opex proposal. This is addressed in chapter 6.

7.6.7 Exclusions

SP AusNet's proposal

The STPIS excludes the impact of certain events from the calculation of parameters, and provides that SP AusNet may propose additional exclusions in its revenue proposal. SP AusNet proposes three exclusions that it applied in the previous regulatory control period (outages on shunt reactors, outages required to control voltage and third party outages including outage requests on a third party system), and five new exclusions.

SP AusNet states that new exclusions are necessary due to specific planned maintenance outages that are large and unusual. SP AusNet proposes to exclude from the STPIS large and uncertain VENCorp and customer works including fault level mitigation works, line up-rating, interconnector upgrades, switchyard busbar up-rating[377] and Brunswick to Richmond 220kV cable outages.[378]

Consultant's review

PB recommends that the AER accepts the existing shunt reactor and voltage control exclusions. PB considers the exclusion on shunt reactors to be reasonable as shunt reactors are not required to be in service during peak periods. Further PB considers it appropriate to exclude voltage control outages directed by NEMMCO and where NEMMCO does not have direct oversight of the network (both where the element is available for immediate energisation if required).[379]

With respect to SP AusNet's proposed variation to the standard third party exclusion, PB recommends that as SP AusNet can influence the timing of construction and

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[376] EUAA, op. cit., p.24.

[377] SP AusNet, op. cit., p.49.

[378] ibid., p.48.

[379] PB Strategic Consulting, SP op. cit., p.222.

demolition activities, the incentive should apply.[380] The proposed exclusion of outage requests on a third-party system is a variation proposed to clarify the standard third-party exclusion. PB does not consider the extra words clarify the standard exclusion, and recommends that the criteria not be varied.

PB recommends that the AER revises and accepts the proposed exclusion for fault-level mitigation works. SP AusNet proposes to exclude fault-level mitigation works, including fault-level mitigation works associated with new customer connections, as VENCorp has not formulated a strategy to deal with this issue and the solution may significantly alter outage requirements. PB considers this exclusion is reasonable. With the exception of two projects involving fault-level mitigation works that have been identified (JLTS 200kV Fault Limiting Reactors and Fault Level Mitigation Works at JLTS and MWTS and WMTS 66kV Bus Tie Series Fault Limiting Reactor)[381] PB recommends that the AER accepts the proposal.

PB recommends that the AER rejects SP AusNet's proposal to exclude line up-ratings requested by a customer. SP AusNet states that there is a possibility that such works may significantly impact the circuit availability parameter, as there is no such work forecast for the regulatory control period. PB is of the view that SP AusNet should bear the risk that customer-requested works may lead to variations from its forecast.[382]

On the same basis, PB recommends that the AER rejects SP AusNet's proposal to exclude inter-connector upgrades and switchyard busbar up-ratings from the STPIS. SP AusNet proposed that, as there is no work forecast in the regulatory control period, the work category should be excluded.[383]

PB recommends that the AER rejects SP AusNet's proposed exclusion of the works proposed to be carried out on the Brunswick to Richmond 220kV cable from the STPIS. SP AusNet claims that the years containing work on the cable joints would have outages substantially above the historical average, and on this basis they should be excluded from the STPIS. The 'circuit availability – total' parameter is the only parameter likely to be affected by the planned outages associated with the joint replacements in the cable, as planned outages are not included in the loss of supply and average outage duration parameters.[384] PB states that given the importance of the cable during peak and intermediate periods, the planned works are likely to be performed in off-peak periods.

Further, PB notes that the STPIS does not allow service performance targets for circuit availability parameters to be adjusted for changes in the amount of maintenance work. Nor does the STPIS contain specific exclusions for the failure of equipment to reach its technical life. PB considers that it is not unreasonable to expect a TNSP to carry the risk that equipment requires more or less planned maintenance

[380] ibid.

[381] ibid.

[382] ibid., p.223.

[383] ibid.

[384] ibid.

than envisaged at the time of purchase.[385] For this reason, PB recommends that the AER not adopt the proposed exclusion criterion.

AER's consideration

The AER accepts PB's recommendation that existing shunt reactor and voltage control exclusions be continued into the forthcoming regulatory control period. The AER also agrees with PB's rejection of the proposed third party exclusion.

As there are no line up-ratings, inter-connector upgrade and switchyard busbar up-ratings forecast for the forthcoming regulatory control period, the AER concurs with PB's view that it would not be appropriate to provide an exclusion for such works. Rather, the AER considers it appropriate that incentives apply to SP AusNet to minimise any such outages.

The AER does not consider that the Brunswick to Richmond cable exclusion is warranted, and agrees with PB's reasoning for rejecting the exclusion. Even if work on the cable can not be fully completed in the off-peak period, as suggested by PB, and is also undertaken in the intermediate period, the impact on circuit availability parameters is likely to be minimal.

7.7 AER's conclusion

The AER is required by the NER to apply the STPIS to SP AusNet over the forthcoming regulatory control period. The values to be applied to SP AusNet are set out in table 7.9.

Table 7.9: AER's conclusion – SP AusNet's service target performance incentive scheme values and weightings

Measures	Collar	Target	Cap	Weighting
Availability measures	%	%	%	%MAR
Total circuit	98.41	98.73	99.05	0.20
Peak critical	98.76	99.53	99.92	0.20
Peak non-critical	98.95	99.53	99.81	0.05
Intermediate critical	97.71	99.09	99.78	0.025
Intermediate non-critical	97.94	99.10	99.68	0.025
Loss of supply events		No.		%MAR
>0.05 min per annum	9	6	3	0.125
>0.3 min per annum	4	1	0	0.125
Average outage duration		Minutes		%MAR
Lines	667	382	98	0.125
Transformers	556	412	268	0.125

[385] ibid., p.223.

8 Maximum allowed revenue

8.1 Introduction

This chapter sets out the Australian Energy Regulator's (AER) calculation of SP AusNet's maximum allowed revenue (MAR) for the provision of prescribed transmission services for each year of the forthcoming regulatory control period, in accordance with the building block approach.

8.2 Regulatory requirements

In relation to revenue requirements, cl. 6A.4.2 of the National Electricity Rules (NER) requires that a revenue determination must specify, amongst other things:

(1) the amount of the estimated total revenue cap for the regulatory control period or the method of calculating that amount;

(2) the annual building block revenue requirement for each year of the regulatory control period;

(3) the amount of the maximum allowed revenue for each year of the regulatory control period or the method of calculating that amount.

Annual building block revenue requirement

Cl. 6A.5.4 outlines the calculation of the annual building block revenue requirement for each year of the regulatory control period, which is comprised of the following components:

(1) indexation of the regulatory asset base (RAB) by the amount referred to in cl. S6A.2.4(c)(4)

(2) a return on capital for that year calculated in accordance with cl. 6A.6.2;

(3) depreciation for that year calculated in accordance with cl. 6A.6.3;

(4) the estimated cost of corporate income tax of the transmission network service provider (TNSP) for that year determined in accordance with cl. 6A.6.4;

(5) revenue increments or decrements for that year arising from the efficiency benefit sharing scheme (EBSS) referred to in cl. 6A.6.5;

(6) operating expenditure (opex) forecast under cl. 6A.6.6;

(7) compensation for risks not otherwise compensated for.

The requirements of the NER in relation to each of these components are discussed below, with the exception of the return on capital (see chapter 5) and opex and compensation for other risks (see chapter 6).

Indexation of the RAB

Indexation of the RAB is compensated for in the method used to roll forward the RAB under cl. S6A.2.4(c). That is, the roll forward calculation must incorporate an

adjustment to maintain the real value of the RAB from the beginning of one year to the next.

Depreciation

Under cl. 6A.6.3 of the NER, depreciation for each regulatory year must be calculated on the value of the assets included in the RAB, as at the beginning of that year.

A TNSP must, in its revenue proposal, nominate depreciation schedules for assets or categories of assets that conform to the following requirements:

- the schedules must 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.[386]
- the sum of the real value of the depreciation that is attributable to any asset or category of assets over the economic life of that asset or category of assets (such real value being calculated as at the time the value of that asset or category of assets was first included in the RAB) must be equivalent to the value at which that asset or category of assets was first included in the RAB; [387] and
- the economic life of the relevant assets and the depreciation methodologies and rates underpinning the calculation of actual depreciation for a given regulatory control period must be consistent with those determined for the same assets on a prospective basis in the transmission determination for that period.[388]

If the depreciation schedules nominated by the TNSP conform to these requirements, depreciation must be calculated using those schedules. However, to the extent that the schedules nominated by the TNSP do not conform, cl. 6A.6.3(a)(2) provides that depreciation must instead be calculated using depreciation schedules determined for that purpose by the AER in its final decision.

Corporate income tax

The estimated cost of corporate income tax (ETC_t) must be calculated in accordance with the following formula:[389]

$$ETC_t = (ETI_t \times r_t)(1-\gamma)$$

where:

ETI_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of prescribed transmission services if such an entity, rather than the TNSP, operated the business of the TNSP, such estimate being determined in accordance with the post-tax revenue model (PTRM);

r_t is the expected statutory income tax rate for that regulatory year as determined by the AER; and

[386] NER cl. 6A.6.3(b)(1)

[387] NER cl. 6A.6.3(b)(2)

[388] NER cl. 6A.6.3(b)(3)

[389] NER cl. 6A.6.4(a)

γ is the assumed utilisation of imputation credits, which is deemed to be 0.5.

Efficiency benefit sharing scheme

Adjustments to the MAR from the AER's EBSS will not take effect until the regulatory control period commencing on 1 April 2014. These adjustments will be in the form determined in accordance with the AER's first proposed EBSS as per the transitional provisions in cl. 11.6.18 of the NER.

The transitional provisions in cl. 11.6.10 of the NER provide for adjustments to the MAR arising from such mechanisms implemented as part of the previous revenue determination and other arrangements agreed between the AER and the TNSP. This includes the glide path mechanism provided for in the ACCC's 2002 decision, which was made under the ACCC's *Draft statement of principles for the regulation of transmission revenues* (DRP). Specifically, the MAR for each year of the 2008-14 period is to be adjusted as follows:

$$[C_m]_6^{10} = \frac{\sum_{n=1}^{5}(F_n - A_n)}{5} \times [1 - 0.2(m - 6)]$$

where:

C_m is the glide path adjustment amount

F_n is allowed or forecast opex

A_n is actual opex

n are years 1 to 5 (first regulatory control period)

m are years 6 to 10 (second regulatory control period)

Post tax revenue model

Cl. 6A.5.2 requires the AER to develop a PTRM to calculate the annual building block revenue requirement for each year of the regulatory control period using the approach described in cl. 6A.5.4. A TNSP's revenue proposal must be prepared using the PTRM.[390] The AER is required to publish its PTRM by 28 September 2007. For the purposes of this transmission determination, the transitional provision in cl. 11.6.18 of the NER provides that SP AusNet must use the AER's first proposed PTRM, which was published on 31 January 2007.

The first proposed PTRM estimates the MAR for each year of the relevant regulatory control period by escalating the previous year's MAR using a CPI-X methodology, beginning with the MAR that applies to the TNSP in the final year of the previous

[390] NER cl. 6A.4.1(b)(1)

regulatory control period. The PTRM incorporates a forecast inflation rate to calculate the expected MAR, whereas the actual MAR is escalated by an actual rate of inflation.

Cl. 6A.6.8 requires a TNSP to specify the value(s) of the X factor such that:

- the net present value (NPV) of the expected MAR for each regulatory year is equal to the NPV of the annual building block revenue requirement for each year of the regulatory control period; and
- the expected MAR for the last year of the period is as close as reasonably possible to the annual building block revenue requirement for that regulatory year.[391]

Providing they comply with the above requirements, the X factor for each regulatory year must be that nominated in the TNSP's revenue proposal. However, to the extent that the X factors nominated in the TNSP's proposal do not so comply, the X factors will be those determined for that purpose by the AER in its final decision.[392]

8.3 SP AusNet's proposal

SP AusNet submitted a completed PTRM with its revenue proposal, which contained the annual building block requirements contained in table 8.1. The AER notes that SP AusNet amended certain elements of its revenue proposal after submitting this PTRM, which are discussed elsewhere in this decision.

Table 8.1: SP AusNet's proposed building block calculation ($m, nominal)

year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Capital	196.73	205.57	214.47	223.25	231.99	240.60
Economic depreciation	43.63	50.85	56.96	62.89	68.00	62.24
Opex	166.07	177.19	188.78	199.96	211.69	224.13
Glide path	8.65	7.13	5.51	3.78	1.95	0.00
Net Tax Costs	13.66	14.39	15.01	15.40	15.90	14.92
Building block requirement	**428.74**	**455.12**	**480.72**	**505.28**	**529.53**	**541.88**

Source: SP AusNet PTRM, submitted 28 February 2007.

In its original revenue proposal, SP AusNet claimed a forecast opex amount of $1 167.82m in nominal terms for the period. See chapter 6 for a discussion of these claims.

SP AusNet submitted its own depreciation schedule with the PTRM. SP AusNet's schedule uses a straight-line depreciation method and combines the inflation adjustment on the RAB to derive a nominal economic depreciation value for each year of the forthcoming regulatory control period. The proposed depreciation allowance is based on the shortening of the standard lives for the following asset classes from the lives used for the current period:

- Secondary (from 25 to 15 years)

[391] NER cl. 6A.6.8(c)

[392] NER cl. 6A.6.8(b)

- IT (from 10 to 5 years)
- Vehicles (from 10 to 3 years)

SP AusNet proposes to return a retained efficiency gain of $8.65m achieved over the current regulatory control period to users over the forthcoming regulatory control period through glide path amounts.

For the year ending 31 March 2009, SP AusNet proposes a MAR of $419.53m (nominal). SP AusNet proposes to escalate this amount above CPI by an X factor of -3.22% (i.e. a real increase) for each year of the forthcoming regulatory control period. The MAR for each year is outlined in table 8.2, assuming a forecast inflation rate of 3.02%. The proposed MAR for the final year of the regulatory control period is $28.48m or 5.26% above the building block requirement for that year. While the value of the building block requirement and the MAR diverge over the regulatory control period, they are equivalent in NPV terms.

Table 8.2: SP AusNet's proposed building block requirement and MAR ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Annual Building Block Revenue Requirement	428.74	455.12	480.72	505.28	529.53	541.88
Maximum Allowed Revenue	419.53	446.11	474.37	504.42	536.38	570.36
Difference	**-9.21**	**-9.01**	**-6.35**	**-0.86**	**6.85**	**28.48**

Source: SP AusNet PTRM, submitted 28 February 2007.

The implied unit cost of this MAR is $8.01/MWh in 2008-09 and increases at an annual nominal rate of 5.93% to $10.68/MWh in 2013-14. In real terms, this represents an average annual increase of 2.82%.

8.4 Submissions

Energy Users Association of Australia

The Energy Users Association of Australia (EUAA) submitted that the movement to recognise capital expenditure (capex) from an as-commissioned to an as-incurred framework should be accompanied by a removal of interest payments during construction from SP AusNet's capex forecasts.[393] It also suggested that a potential inconsistency exists where assets under construction are depreciated prior to the date of their commissioning, and that it would be inappropriate for network users to pay the amortised value of these assets before they provide benefits to users.[394]

[393] EUAA *Submission to AER review of SP AusNet Transmission Revenue Determination April 2008-March 2014,* June 2007, p. 5.

[394] ibid.

The EUAA submitted that the implied increase in terms of per unit cost from VENCorp, (which substantially reflects SP AusNet's MAR) was very significant and unwarranted.[395]

Energy Users Coalition of Victoria

The Energy Users Coalition of Victoria (EUCV) directed the AER to address the issue that assets are being depreciated faster to allow replacement with newer assets. It stated that assets that still perform their function must not be replaced simply because newer assets are available.[396]

The EUCV suggested SP AusNet be required to demonstrate that it had directly caused savings in operational expenditure over the current regulatory control period prior to the sharing of the resulting benefits (in the form of glide path payments).[397]

8.5 Issues and the AER's considerations

8.5.1 Opening asset base and roll forward

The NER require that SP AusNet's RAB as at the end of each year of the forthcoming regulatory control period be calculated by taking the opening RAB value, converting it to a nominal figure by adding an inflation adjustment, adding any capex and subtracting disposals and depreciation for the year. The closing value for one year's asset base then becomes the opening value for the following year's asset base.

For the reasons discussed in chapter 3, the AER has not accepted SP AusNet's proposed opening RAB value and has re-modelled this value to be $2 203.45m as at 1 April 2008. From this opening value, the AER has modelled SP AusNet's RAB over the forthcoming regulatory control period as shown in table 8.3.

Table 8.3 AER's roll forward of SP AusNet's regulated asset base ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Opening RAB	2,203.45	2,270.09	2,344.42	2,434.32	2,498.44	2,541.98
Net capital expenditure	110.89	125.68	147.26	126.57	111.56	151.68
Return of capital (includes inflation adjustment)	44.26	51.35	57.36	62.45	68.02	63.27
Closing RAB	2,270.09	2,344.42	2,434.32	2,498.44	2,541.98	2,630.39

Source: AER analysis

8.5.2 Forecast capital expenditure

As explained in chapter 4, the AER has provided SP AusNet with a net capex allowance of $677.64m ($2007-08) for the forthcoming regulatory control period. In accordance with the PTRM's timing assumptions, which provide for a half year return

[395] ibid., p. 26.

[396] EUCV, *Response to AER review of Victorian electricity transmission,* June 2007, p. 28.

[397] ibid., p. 45.

on capex before it is rolled into the RAB, this increases to a nominal roll in value of $773.66m as shown in table 8.3 above.

In response to the EUAA's comments, the AER notes that SP AusNet's forecast capex does not include any allowance for interest during construction. This is consistent with the move to recognise capex under a hybrid approach in the PTRM, whereby returns on capital are provided from when expenditure is incurred, and assets are depreciated from when they are commissioned. In facilitating the transition to a hybrid approach, the PTRM capitalises the value of assets under construction as at 1 April 2008 that will be commissioned in the forthcoming regulatory control period. While this is effectively a bring forward of regulated revenues, in present value terms over the life of the assets, the financial impact of whether capex is recognised on an as-incurred, hybrid or as-commissioned approach is not affected. That is, the present value of the returns on and of capital is the same regardless of the approach used to recognise capex. The AER had considered these implications in publishing its first proposed PTRM, which was used by SP AusNet in submitting its revenue application.

8.5.3 Depreciation

The AER has assessed SP AusNet's depreciation schedules and considers that the methods and rates used are in accordance with cl. 6A.6.3(b)(3), with the exception of the proposed economic life of vehicles. SP AusNet proposes to fully depreciate vehicles over three years, which is inconsistent with current industry practice. The AER considers that seven years reflects the expected economic life of these types of assets and has adjusted SP AusNet's depreciation schedules accordingly. In response to the EUCV's comments on the potential early replacement of assets, the AER's consideration of SP AusNet's approach to asset replacement is discussed in chapter 4.

The AER has also required revisions to the remaining economic and tax lives of non-contestable assets that SP AusNet proposes to roll into its RAB, as outlined in table 8.4. These adjustments follow the consideration of Nuttall Consulting's review[398] of the agreements relating to these assets and SP AusNet's associated calculations, and are discussed further in chapter 3.

[398] Nuttall Consulting, *Review of the SP AusNet Non-contestable Roll-in value,* 20 August 2007.

Table 8.4: Remaining lives of non-contestable assets (years)

	Remaining economic lives		Remaining tax lives	
Asset class	SP AusNet proposed	AER decision	SP AusNet proposed	AER decision
Secondary	10.52	11.51	24.52	23.96
Switchgear	42.09	42.40	35.94	35.70
Transformer	41.98	41.86	32.20	32.51
Reactive	37.49	37.24	36.92	33.88
Towers and Lines	54.58	54.70	24.58	14.70
Establishment	42.02	40.97	40.62	33.61
Communications	11.85	13.13	20.01	18.14

Source: Nuttall Consulting, pp. 19-20.

8.5.4 Weighted average cost of capital

The AER has applied a nominal vanilla weighted average cost of capital (WACC) determined in chapter 5 of this decision to SP AusNet's opening RAB for each year of the regulatory control period to determine the return on capital building block amount. The nominal vanilla WACC of 8.85% is based on a post-tax nominal return on equity of 11.70% and a pre-tax nominal return on debt of 6.95%.

8.5.5 Operating and maintenance expenditure

The AER determines that SP AusNet should recover a real opex allowance of $929.50m ($2007-08) during the forthcoming regulatory control period. This includes allowances for easement land tax, debt raising costs and rebates, and is discussed further in chapter 6.

8.5.6 Estimated taxes payable

Tax estimates relate to SP AusNet's regulated activities only. The AER has modelled SP AusNet's income tax payable during the forthcoming regulatory control period, based on its tax depreciation and expense profiles. The amount of tax payable is calculated using the 60% gearing assumed in the WACC framework, rather than SP AusNet's actual gearing position, and a statutory income tax rate of 30%. This calculation has been affected by revisions to tax depreciation arising from the review of the remaining tax lives of non-contestable assets mentioned above. Table 8.5 shows the AER's estimate of SP AusNet's tax payments.

Table 8.5: Proposed tax allowances ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Tax Payable	27.22	28.45	29.44	29.87	30.52	28.42
Less Value of Imputation Credits	-13.61	-14.22	-14.72	-14.93	-15.26	-14.21

Source: AER analysis

8.5.7 Efficiency glide-path amounts

The AER considers that SP AusNet's proposed glide path amounts have been calculated in accordance with the DRP. This calculation is replicated in table 8.6.

Table 8.6 Calculation of efficiency glide-path amounts ($m, 2007-08)

Year ending 31 March	2003	2003-04	2004-05	2005-06	2006-07	2007-08
Approved Opex Profile	20.6	69.3	70.3	69.7	70.3	71.2
Actual Opex Spend	17.8	61.8	62.1	63.7	60.2	61.7
Underspend	2.8	7.5	8.3	6	10	9.4
Average Underspend						8.4

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Proportion retained by SP AusNet	100%	80%	60%	40%	20%	0%
Glidepath payments	8.4	6.7	5.0	3.4	1.7	0.0

Source: AER estimates, SP AusNet revenue application, p. 111.

In assessing these amounts, the AER has not undertaken a detailed review of SP AusNet's opex underspends for the previous period, although notes that certain costs and pass through amounts (e.g. easement land tax, debt and equity raising costs and rebates) have been excluded from the glide path calculation. While the AER notes the EUCV's suggestion to perform an ex post assessment of efficiency gains, the difficulties in doing so were noted in the DRP and accordingly this was not incorporated as a regulatory principle.[399] By contrast, the DRP explicitly states that capex underspends would be included in glide path payments only where it was clearly demonstrated that gains were due to management induced efficiencies. SP AusNet has not proposed to include any capex amounts in the glide path calculation.

The opex underspends reported by SP AusNet indicate that the incentive arrangements outlined in the DRP that applied over the 2003-08 regulatory control period were effective. The AER notes that actual expenditures for several opex items, including labour, corporate and routine maintenance costs, have been used as a basis for formulating and assessing SP AusNet's forecasts for the 2008-14 period.

8.6 AER's conclusion

Annual Building Block requirement and expected MAR

The AER's determination of SP AusNet's annual building block requirement is outlined in table 8.7.

[399] ACCC, 1999 Draft statement of principles for the regulation of transmission revenues (DRP), May 1999, p. 94-97.

Table 8.7: AER building block calculation ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Return on capital	195.01	200.90	207.48	215.44	221.11	224.97
Economic depreciation	44.26	51.35	57.36	62.45	68.02	63.27
Opex (includes easement land tax)	146.37	160.62	165.06	179.19	183.25	200.20
Glide-path	8.65	7.12	5.50	3.78	1.95	0.00
Tax liability	13.61	14.22	14.72	14.93	15.26	14.21
Building block requirement	407.89	434.22	450.13	475.79	489.59	502.65
SP AusNet's proposal	428.70	455.10	480.70	505.30	529.50	541.90
Difference	-20.81	-20.88	-30.57	-29.51	-39.91	-39.25

Source: AER analysis

The AER has applied an X factor of -1.52% to derive an expected[400] MAR for each year of the 2008-14 regulatory control period, compared to SP AusNet's proposed X factor of -3.22%. SP AusNet's expected total revenue cap is $2 762.26m (nominal). The divergence between the expected MAR and building block requirement in each year is illustrated in table 8.8.

Table 8.8: Building block calculation and expected MAR ($m, nominal)

Year ending 31 March	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Building block requirement	407.89	434.22	450.13	475.79	489.59	502.65
Expected MAR	410.56	429.30	448.91	469.40	490.84	513.25
difference	0.65%	-1.13%	-0.27%	-1.34%	0.26%	2.11%

Source: AER analysis

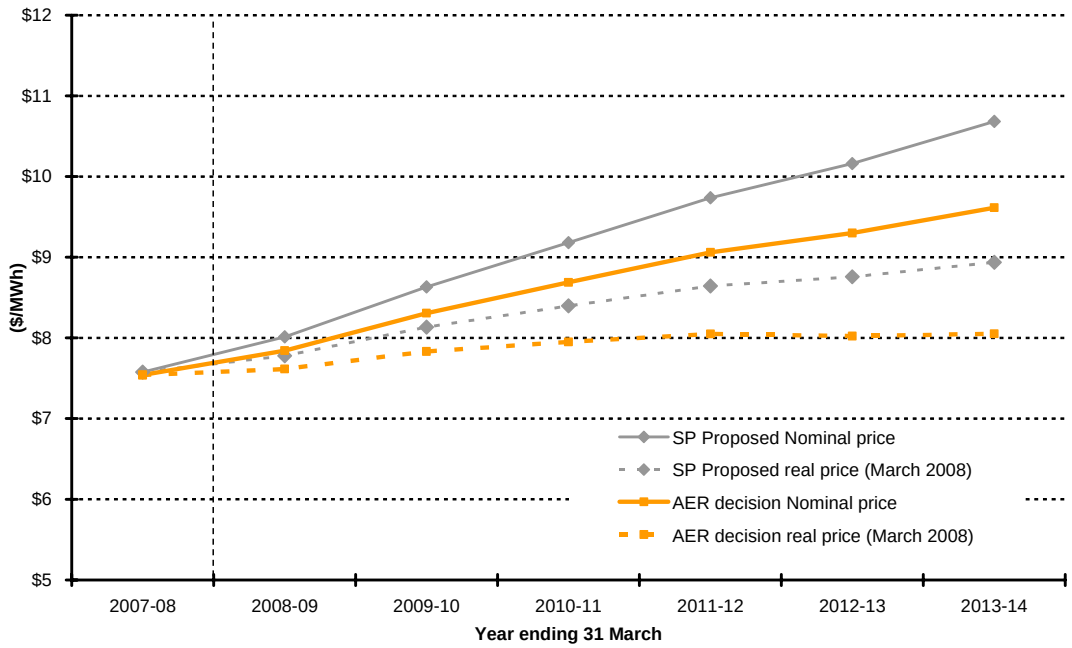
The AER considers that using a single X factor for each year of the period, as was done by SP AusNet, results in a building block requirement and expected MAR in the final year of the period that are not unreasonably different, and is therefore in accordance with cl. 6A.6.8(c)(2).

In terms of a nominal per MWh "price", the expected MAR equates to $7.84 in 2008-09, increasing by an average of 4.16% per year to $9.61 in 2013-14. This compares to SP AusNet's proposal which resulted in an annual average nominal price increase of 5.93% equating to a per MWh price of $10.68 in 2013-14. In real terms, the expected MAR resulting from this determination increases at an average annual rate of 1.13% over the period, compared to 2.82% under SP AusNet's revenue proposal.[401] The real and nominal price paths, as proposed by SP AusNet and determined by the AER, are illustrated in figure 8.1.

[400] The expected MAR is based on forecast inflation and excludes any adjustments that would form part of the actual MAR in each year.

[401] Note that SP AusNet's original proposal used a forecast inflation rate of 3.02%, while the AER's determination assumes a rate of 3.00%.

Figure 8.1 Price path from 2007-08 to 2013-14 ($/MWh)



Source: AER, SP AusNet PTRM, submitted 28 February 2007.

Method of calculating SP AusNet's MAR

Clause 6A.4.2(a)(3) requires the AER, in its revenue determination, to specify the amount of MAR for each year of the regulatory control period, or the method of determining that amount.

SP AusNet's MAR for each year of the 2008-14 regulatory control period will be the sum of its Allowed Revenue (AR) for that year and adjustments arising from the AER's Service Target Performance Incentive Scheme (STPIS) and any pass through amounts. SP AusNet's AR is calculated using the building block and CPI-X methodologies, and is equivalent to the expected MAR discussed in previous sections. That is:

$$AR_t = AR_{t-1} \times (1 + \Delta CPI) \times (1 - X_t)$$

and

$$MAR_t = AR_t + S_{ct} \times \left(AR_{t-2} \frac{3}{12} + AR_{t-1} \frac{9}{12} \right) + P_{t-1}$$

where:

AR_t is the allowed revenue for year t

t represent regulatory years 2 to 6 as outlined in table 8.9

ΔCPI is the annual % change in the most recently published "Consumer Price Index All Groups, Weighted Average of Eight Capital Cities". For SP AusNet, this will be the December quarter CPI.

X is the X factor specified in this determination.

MAR_t is the maximum allowed revenue for year t

S is the service standards factor determined in accordance with the STPIS set out in chapter 7 and appendix C of this decision.

P are any pass-through amounts determined by the AER in accordance with the requirements of cl. 6A.7.2 and 6A.7.3, as well as potentially cl. 11.6.21. [402]

ct represent calendar years 2 to 6 as outlined in table 8.9.

Table 8.9 Timing of the calculation of allowed revenues and the financial incentive

t	Allowed revenue (financial year)	ct	Financial incentive (calendar year)
2	1 April 2009 – 31 March 2010	2	1 January 2008 – 31 December 2008
3	1 April 2010 – 31 March 2011	3	1 January 2009 – 31 December 2009
4	1 April 2011 – 31 March 2012	4	1 January 2010 – 31 December 2010
5	1 April 2012 – 31 March 2013	5	1 January 2011 – 31 December 2011
6	1 April 2013 – 31 March 2014	6	1 January 2012 – 31 December 2012

SP AusNet's AR for 2008-09 will be equal to the MAR for 2007-08 (i.e. $392.63m) escalated by CPI-X using the annual inflation rate calculated from the December 2007 quarter CPI. The AER expects this CPI to be published in January 2008, thus the value of the AR for 2008-09 will not be specified until the AER's determination on 31 January 2008. The resulting AR will be subsequently adjusted for any service standards incentive rewards or penalties for performance in 2007, as allowed under the ACCC's 2002 decision. These further adjustments, and thus the value of SP AusNet's MAR for 2008-09, will not be known until after the AER's determination.[403]

[402] The AER's interpretation of cl. 11.6.21, as it relates to an easement land tax event, is outlined in chapter 5.

[403] The AER will conduct its service standards compliance review and notify SP AusNet of the outcome in March 2008.

9 Determination of negotiating framework

9.1 Introduction

The AER is required to assess SP AusNet's proposed negotiating framework for the relevant regulatory control period in accordance with the requirements of rule 6A.9 of the NER.

The purpose of the negotiating framework is to stipulate the minimum procedure that a TNSP must follow when negotiating the terms and conditions of access with an applicant that seeks to receive a negotiated transmission service. In accordance with chapter 6A Part K, in the event of an access dispute a commercial arbitrator must have regard to the negotiating framework.

There are three types of negotiated transmission services that a service applicant may request and negotiate with a TNSP. These services include:

- connection services (which might include entry, exit and TNSP to MNSP connection services)
- use of system services supplied by the shared transmission network that exceed or are below the networks specified performance standard under any legislation of a participating jurisdiction
- use of system services relating to augmentation or extension for loads of the transmission network.[404]

The negotiating framework only relates to negotiated services, as the pricing of prescribed transmission services is covered by the pricing methodology that applies to a TNSP, as discussed in chapter 11 of this draft decision.

Determination of a TNSP's negotiating framework is a new function conferred on the AER by chapter 6A of the NER. SP AusNet's transmission determination is the first transmission determination under the new chapter 6A, and therefore the first to include a determination relating to a negotiating framework.

This chapter sets out the process by which the AER has considered SP AusNet's proposed negotiating framework under the new provisions of chapter 6A, outlined below, and the reasons for its determination in relation to the proposed framework.

9.2 Regulatory requirements

Clause 6A.2.2(2) of the NER states that a transmission determination made by the AER pursuant to cl. 6A.2.1 must include a determination relating to the TNSP's negotiating framework.

[404] National Electricity Rules, Definition "Negotiated Transmission Service", Chapter 10, p 827.

TNSP's Proposal

In accordance with cl. 6A.9.5(a) of the NER, a TNSP must prepare a document setting out the procedure to be followed during negotiations between that provider and any person who wishes to receive a negotiated transmission service from the provider, as to the terms and conditions of access for provision of the service. Under cl. 6A.10.1(b) of the NER, the TNSP must submit its proposed negotiating framework to the AER at the same time that it submits its revenue proposal.

Consistent with cl. 6A.9.5(b) of the NER, the negotiating framework for a transmission network service provider must comply with and be consistent with the applicable requirements of a transmission determination applying to the provider, and with the requirements of cl. 6A.9.5(c) of the NER, which are discussed below.

Under cl. 6A.10.1(c) of the NER, the proposed negotiating framework must comply with the requirements of, and must contain or be accompanied by such information as required by, the submission guidelines made for that purpose under cl. 6A.10.

AER determination of negotiating framework

The AER must assess the TNSP's proposed negotiating framework under cl. 6A.9.5(c) of the NER, which requires a TNSP's negotiating framework to specify:

(1) a requirement for the provider and service applicant to negotiate in good faith the terms and conditions of access for provision of the negotiated transmission service;

(2) a requirement for the provider to provide all such commercial information as a service applicant may reasonably require to enable that applicant to engage in effective negotiation with the provider for the provision of the negotiated transmission service, including the cost information described in subparagraph (3);

(3) a requirement for the provider to identify and inform a service applicant of the reasonable costs and/or the increase or decrease in costs (as appropriate) of providing the negotiated transmission service and demonstrate to a service applicant that the charges for providing the negotiated transmission service reflect those costs and/or the cost increment or decrement (as appropriate);

(4) a requirement for a service applicant to provide all such commercial information as the provider may reasonably require to enable the provider to engage in effective negotiation with that applicant for the provision of the negotiated transmission service;

(5) a reasonable period of time for commencing, progressing and finalising negotiations with a service applicant for the provision of the negotiated transmission service, and a requirement that each party to the negotiation must use its reasonable endeavours to adhere to those time periods during the negotiation;

(6) a process for dispute resolution which provides that all disputes as to the terms and conditions of access for provision of negotiated transmission services are to be dealt with in accordance with Part K of Chapter 6A of the NER;

(7) the arrangements for payment by a service applicant of the provider's reasonable direct expenses incurred in processing the application to provide the negotiated transmission service;

(8) a requirement that the transmission network service provider determine the potential impact on other transmission network uses of the provision of the negotiated transmission service; and

(9) a requirement that the transmission network service provider must notify and consult with any affected transmission network users and ensure that the provision of the negotiated transmission service does not result in non-compliance with obligation in relation to other transmission network users under the rules.

Cl. 6A.9.3 of the NER requires the AER's determination relating to the negotiating framework to set out requirements that are to be complied with in respect of the preparation, replacement, application or operation of the provider's negotiating framework.

The AER must make a decision to either approve or refuse to approve the proposed negotiating framework.[405] If the AER's decision is to refuse to approve the proposed negotiating framework, the AER must include in its decision an amended negotiating framework which is determined on the basis of the current proposed negotiating framework, and amended from that basis only to the extent necessary to enable it to be approved in accordance with the NER.[406]

9.3 SP AusNet's proposal

SP AusNet's proposed negotiating framework sets out a two stage process for new negotiated connections.[407] The first stage involves SP AusNet responding to a connection enquiry in accordance with a preliminary program which is subject to cl. 5.3.3(b) of the NER. This preliminary program involves SP AusNet providing information back to the connection applicant regarding its application. The second stage involves the connection applicant making an application to connect. This process may be combined into one stage for augmentations to an existing connection.[408]

The proposed negotiating framework describes the division of functions between SP AusNet and VENCorp, and states that connection applicants must separately submit a connection enquiry to VENCorp to obtain advice in respect of that organisation's primary responsibility.[409]

SP AusNet undertakes in its proposal to provide a reasonable period of time in its preliminary program for commencing, progressing and finalising negotiations for the provision of negotiable services.[410] Timeframes may be varied by agreement between the parties.

[405] National Electricity Rules, cl. 6A.14.1(6).

[406] ibid., cl. 6A.13.2(c)

[407] SP AusNet, *Proposed Negotiating Framework* 2008/09–2013/14, p. 4.

[408] ibid., p. 5.

[409] ibid., p. 4.

[410] ibid., p. 6.

SP AusNet proposes that a minimum fee of $10,000 will apply to all applications to connect.[411] Any additional expenses will only be incurred where the applicant agrees to cover costs.[412]

The proposal provides that, in response to the applicant's submission of service level requirements, SP AusNet will provide to the applicant a scope of works and a description of the nature of the connection service that is the subject of negotiation.[413]

SP AusNet proposes that, by initiating the negotiation process, the applicant and SP AusNet enter an implied agreement to provide to the other party all such commercial information as the other party may reasonably require.[414] All information provided by SP AusNet is to be treated as confidential. However, unless otherwise informed SP AusNet will assume that all information provided by the applicant may be disclosed to network service providers and NEMMCO.[415]

Further, it is stated in SP AusNet's proposed negotiating framework that SP AusNet will notify and consult any transmission network user that may be affected as a result of a negotiated transmission service.[416]

SP AusNet states in its proposal that any disputes arising during the course of negotiations are subject to Part K of chapter 6A of the NER.[417]

9.4 Submissions

The AER received no submissions in response to SP AusNet's proposed negotiating framework.

9.5 Issues and the AER's considerations

This section sets out the AER's considerations in assessing whether SP AusNet's negotiating framework complies with the NER.

9.5.1 Proposed negotiating framework — compliance with cl. 6A.9.5

The AER has assessed the adequacy of SP AusNet's proposed negotiating framework against the minimum requirements set out in cl. 6A.9.5(c). These requirements primarily relate to the conduct of parties during the negotiation process. In assessing whether SP AusNet's proposed negotiating framework complies with, and is consistent with the requirements in cl. 6A.9.5(c), the AER has had regard to the negotiated transmission services principles set out in cl. 6A.9.1.

[411] ibid.

[412] ibid, p. 6.

[413] ibid, p. 7.

[414] ibid.

[415] ibid, p. 8.

[416] ibid, p. 9.

[417] ibid, p. 8.

9.5.1.1 Negotiate in good faith

Clause 6A.9.5(c)(1) of the NER requires SP AusNet's negotiating framework to state that SP AusNet and a service applicant will negotiate in good faith the terms and conditions of access for the provision of negotiated transmission services.

At part 3 of the proposed negotiating framework SP AusNet undertakes to negotiate in good faith.[418] To give context to this undertaking a number of obligations under the NER are listed.[419] SP AusNet states in the introduction to the "Objectives of negotiation" section of its proposed negotiating framework that the "principal objective of negotiation is the completion of an Offer to Connect in respect of connection services required by the connection applicant, and execution of the connection agreement."[420]

The statement in the proposed negotiating framework, and the obligations paraphrased from cl. 5.3.6, refer only to the provision of an offer to connect, and do not give full effect to the requirement that terms and conditions of access be negotiated in good faith.

To comply with cl. 6A.9.5(c)(1), SP AusNet is required to insert words (*in italics*) into the third paragraph of part three so that the new sentence reads "For its part, SP AusNet shall negotiate in good faith *the terms and conditions of access for the provision of negotiated transmission services*, having regard to…" It should also be noted that the reference to cl. 5.3.6(g) in the first paragraph of this part is incorrect and must be replaced with the correct reference to cl. 5.3.6(f).

9.5.1.2 Provision of commercial information by SP AusNet

Clause 6A.9.5(c)(2) requires SP AusNet to include in its negotiating framework a provision ensuring that it will provide all such commercial information as a service applicant may reasonably require to enable the service applicant to engage in effective negotiation with SP AusNet for the provision of negotiable services.

SP AusNet undertakes in its proposed negotiating framework to provide a connection applicant with all such commercial information as may be reasonably required to engage in effective negotiations with SP AusNet for the provision of negotiable transmission services as to the price at which the negotiated service is to be provided.[421]

Clause 6A.9.5(c)(2) does not limit the requirement to price as SP AusNet has done in its proposed negotiating framework. Therefore the statement in SP AusNet's proposed negotiating framework is not compliant with cl. 6A.9.5(c)(2).

[418] ibid., p. 4.

[419] ibid.

[420] ibid.

[421] ibid., p. 7.

Before it approves SP AusNet's proposed negotiating framework, the AER requires amendment to this statement to achieve consistency with the requirements of the NER. Accordingly, the first sentence of part 7 of the proposed negotiating framework should be amended by deleting the words "as to the price at which the negotiated service is to be provided". The amended sentence reads: "By entering into the negotiation process, SP AusNet and the *Connection Applicant* each agree to provide to the other party all such commercial information as the other party may reasonably require, to enable that party to engage in effective negotiation with the other party, for the provision of *negotiable services* including cost information."

9.5.1.3 Provision of cost information

Clause 6A.9.5(c)(3) of the NER requires SP AusNet, in its negotiating framework, to undertake to identify and inform the service applicant of the reasonable costs and/or the increase or decrease in costs (as appropriate) of providing the negotiated transmission service, and demonstrate to the service applicant that the charges for providing such a service reflect those costs and/or the cost increment or decrement (as appropriate). This requirement puts the onus on the service provider to identify, inform and demonstrate.

At part 7 of the proposed negotiating framework, it is stated that SP AusNet shall identify and inform the connection applicant of the reasonable costs, and/or increase or decrease in costs (as appropriate) of negotiable service in accordance with cl. 6A.9.5(c)(3)(i). Further, upon request, SP AusNet will demonstrate to the connection applicant that its charges for providing negotiable services reflect costs and/or cost increments or decrements. The words "upon request" shift the onus from SP AusNet to provide the information, to the service applicant to request the information. As this is not consistent with cl. 6A.9.5(c)(3)(ii) SP AusNet is required to remove the words "upon request" from the proposed negotiating framework.

As set out in the proposed negotiating framework, the costs information provided by SP AusNet will be itemised in a breakdown of the incremental costs required to provide the network services, and will be provided to demonstrate that the charges are fair and reasonable. The typical structure for the breakdown is set out in the proposed negotiating framework.[422]

Subsequent to the above amendments, the AER is satisfied that SP AusNet's proposed negotiating framework will meet the requirements of cl. 6A.9.5(3). The AER notes the reference to cl. 6A.9.5(c)1(ii) should be to cl. 6A.9.5(c)(3)(ii), and will be corrected.

[422] ibid.

9.5.1.4 Provision of commercial information by connection applicant

In accordance with cl. 6A.9.5(c)(4), SP AusNet's negotiating framework must require a service applicant to provide all such commercial information as SP AusNet may reasonably require to enable SP AusNet to engage in effective negotiation with the service applicant for the provision of negotiable service.

By entering into negotiations with SP AusNet, it is stated in the proposed negotiating framework that a connection applicant agrees to provide SP AusNet with all such commercial information as may be reasonably required, to engage in effective negotiations with SP AusNet for the provision of negotiable transmission services as to the price at which the negotiated service is to be provided.[423]

Clause 6A.9.5(c)(4) does not limit the requirement to price as SP AusNet has done in its proposed negotiating framework. Therefore the statement in SP AusNet's proposed negotiating framework is not compliant with cl. 6A.9.5(c)(4).

As set out at section 1.5.3 of this determination, the provision must be remedied by the deletion of the limiting words "as to the price at which the negotiated service is to be provided" in the first paragraph of part 7 of the proposed negotiating framework. The remedied statement with respect to the provision of commercial information by a service applicant to SP AusNet is consistent with the requirements at cl. 6A.9.5(c)(4).

9.5.1.5 Reasonable timeframe for negotiations

To comply with cl. 6A.9.5(c)(5), SP AusNet must specify a reasonable period of time for commencing, progressing and finalising negotiations with a service applicant for the provision of the negotiated transmission service, and a requirement that each party to the negotiation must use its reasonable endeavours to adhere to those time periods during the negotiations.

SP AusNet's proposed negotiating framework is consistent with the requirements at 6A.9.5(c)(5) of the NER. SP AusNet undertakes to provide a reasonable period of time in its preliminary program for commencing, progressing and finalising negotiations with the connection applicant.[424] The preliminary program may be varied upon agreement between the parties prior to the commencement of negotiations. The timeframe for negotiations, set out at part 5.1 of the proposed negotiating framework, establishes that SP AusNet is required by its licence to make an offer to connect within 65 business days of receiving all the necessary information to process the application. The information generally required by SP AusNet is set out in the proposed negotiating framework.

In accordance with cl. 6A.9.5(c)(5), SP AusNet states that during negotiations SP AusNet and the intending network user must use reasonable endeavours to adhere to timeframes set during the negotiation for the provision of the offer to connect. SP AusNet goes further in its proposal, requiring that SP AusNet and the intending

[423] ibid., p. 7.

[424] ibid., p. 6.

network user must use reasonable endeavours to adhere to timeframes during the execution of the connection agreement. Therefore, the AER is satisfied that SP AusNet's proposed negotiating framework is consistent with the rule requirement.

9.5.1.6 Dispute resolution process

Clause 6A.9.5(c)(6) requires the negotiating framework to set out a process for dispute resolution in which all disputes as to the terms and conditions of access for the provision of negotiated transmission services are to be dealt with in accordance with Part K of chapter 6A.

At part 9 of SP AusNet's proposed negotiating framework it is stated that by entering into the negotiation process, SP AusNet and the connection applicant agree that disputes arising during the course of the negotiation shall be dealt with in accordance with Part K of chapter 6A of the NER.

The proposed negotiating framework is consistent with the minimum requirements of cl. 6A.9.5(c)(6) of the NER.

9.5.1.7 Payment of reasonable direct expenses incurred by service applicant

As required by cl. 6A.9.5(c)(7), SP AusNet must set out in its negotiating framework arrangements for payment by the service applicant of SP AusNet's reasonable direct expenses incurred in processing the application to provide the negotiated transmission service. Clause 6A.9.1(1) requires that the price for a negotiated transmission service to be based on the costs incurred in providing that service.

At part 5.2 in the proposed negotiating framework, SP AusNet states that the agreed charging arrangements will be consistent with applicable AER cost allocation guidelines and negotiated transmission service criteria. Each application for the provision of a negotiable transmission service is subject to a minimum application fee of $10,000.[425] The arrangements for payment to SP AusNet set out in the proposed negotiating framework are flexible, as SP AusNet may enter an alternative arrangement with the connection applicant to recover fees and expenses.

The AER notes that there is no express provision for a refund in the event that costs incurred by SP AusNet do not reach the minimum application fee of $10,000.

To ensure consistency with cl. 6A.9.1(1), SP AusNet is required insert the words in italics in the second paragraph of section 5.2. "SP AusNet may agree an alternative arrangement with the Connection Applicant to recover *or refund* connection application fees." Subsequent to this amendment, SP AusNet's arrangements for the payment of reasonable direct expenses incurred in the processing of an application for negotiated transmission services are consistent with cl. 6A.9.5(c)(7) and cl. 6A.9.1(1) of the NER.

[425] ibid.

9.5.1.8 Impact on other transmission network users

Clause 6A.9.5(c)(8) requires the TNSP to specify in its negotiating framework that it will determine the potential impact of the provision of the negotiated transmission services on other transmission network users.

SP AusNet undertakes in its proposed negotiating framework to determine the potential impact on other transmission network users of the provision of the negotiated transmission service.[426]

SP AusNet's proposed negotiating framework is consistent with cl. 6A.9.5(c)(8) of the NER.

9.5.1.9 Notification and consultation with any affected user

Clause 6A.9.5(c)(9) requires the TNSP to specify in its negotiating framework that it will notify and consult with any affected transmission network user and ensure that the provision of the negotiated transmission service does not result in non-compliance with obligations in relation to other transmission network users under the NER.

Where SP AusNet determines that the provision of a negotiated transmission service will have an impact on another network user, SP AusNet undertakes to notify and consult affected users and ensure that the provision of the negotiated service does not result in non-compliance with any service standards or other obligations in relation to other transmission network users under the NER.[427]

SP AusNet's proposed negotiating framework is consistent with the requirements of cl. 6A.9.5(c)(9).

9.6 AER's conclusions

The AER considers SP AusNet's proposed negotiating framework for the forthcoming regulatory control period is, in a number of respects, not compliant with the requirements of cl. 6A.9.5(c).[428] In accordance with cl. 6A.12.1(d) of the NER, the AER's draft decision includes details of the changes required before the AER will approve the framework.

Appendix D to this draft decision sets out SP AusNet's proposed negotiating framework and the changes required (shown in bold and strikethrough) before the AER will approve the framework.

[426] ibid, p. 11.

[427] ibid.

[428] National Electricity Rules 6A.14(7).

10 Determination of negotiated transmission service criteria

10.1 Introduction

The NER require the AER to include in a transmission determination the negotiated transmission service criteria (negotiating criteria) that will apply to the TNSP. The negotiating criteria are to be used by the TNSP in negotiating the terms and conditions, including price, and any access charges for accessing a negotiated transmission service. In the event of a dispute in relation to the terms and conditions of access, or any charges to be paid to the TNSP, a commercial arbitrator must consider the negotiating criteria.

Unlike other elements of a transmission determination, a TNSP is not required to submit negotiating criteria to the AER as part of its proposal. Rather, it is the responsibility of the AER to determine and specify the negotiating criteria in accordance with the NER.

This chapter sets out the AER's considerations in determining the negotiated transmission service criteria that will apply to SP AusNet for the forthcoming regulatory control period.

10.2 Regulatory requirements

Clause 6A.2.2(3) of the NER states that a transmission determination made pursuant to cl 6A.2.1 must include a determination specifying the negotiating criteria that will apply to the TNSP.

Clause 6A.9.4(a) states that the AER's determination must set out the negotiated transmission service criteria that will be applied:

- by the TNSP in negotiating the terms and conditions of access for negotiated transmission services, including prices to be charged for the provision of the service and any access charges which are negotiated by the TNSP during the relevant regulatory control period; and
- by a commercial arbitrator in resolving any dispute between a TNSP and a person wishing to receive a negotiated transmission service in relation to the terms and conditions of access to the service, including the price to be charged for the provision of the service, and any access charges that are to be paid to the TNSP.

Clause 6A.9.4(b) of the NER requires the negotiating criteria determined by the AER to give effect to and be consistent with the negotiated transmission service principles set out in cl 6A.9.1.

10.3 Submissions

The AER received two submissions to the proposed negotiating criteria for SP AusNet, from VENCorp and the Southern Generators.[429]

VENCorp

VENCorp commented that the AER's proposed negotiating criteria effectively restate the principles, but have been ordered differently and slightly reworded.[430] VENCorp states a preference for the adoption of the principles by reference, rather than restatement to prevent debate on consistency between the negotiating criteria and the principles.[431]

Southern Generators

In the first of the three broad comments the Southern Generators state that the negotiating criteria should not be limited to a restatement of the principles. Rather, the negotiating criteria should inform both TNSPs and their customers as to what prices and other terms and conditions should be included or should not be included in their agreements.[432] Recommended criteria are set to give effect to this proposition.

Secondly, the Southern Generators state that a number of the negotiating criteria mirror the corresponding principles by requiring that the prices for negotiated transmission services be based on, or reflect the cost of providing that service (specifically negotiating criteria 5, 6, 7, 8 and 9). The Southern Generators submit that these criteria should also include a requirement that prices be based on the efficient cost only of providing the relevant service. It is submitted that this is consistent with the approach taken by the Australian Energy Market Commission (AEMC) rule determination in support of the National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18.[433]

Thirdly, the Southern Generators state that the wording of the negotiating criteria should be as close as possible to the principles to prevent uncertainty or doubt in interpreting the negotiating criteria.[434]

10.4 Issues and the AER's considerations

This section sets out the AER's considerations in determining negotiated transmission service criteria for SP AusNet that are consistent with, and give effect to, the

[429] Including AGL, Flinders Power, International Power Australia, Loy Yang Power Marketing Management Company and TRUenergy.

[430] VENCorp, Submission on the Proposed Negotiated Transmission Service Criteria for SP AusNet and VENCorp, 7 August 2007, p. 1.

[431] ibid., p. 2.

[432] Southern Generators, Negotiated Transmission Service Criteria Submission, 8 August 2007, p. 1.

[433] ibid., p. 1.

[434] ibid., p. 2.

requirements of the NER, and in particular the negotiated transmission services principles.

The AER notes that, in Victoria, the functions relevant to the provision of negotiated transmission services are shared between SP AusNet and VENCorp, such that VENCorp has primary responsibility for the provision of use of system or shared network services. The AER recognises that this may mean that the application of individual negotiated transmission services principles to SP AusNet, as given effect in the negotiated transmission service criteria determined by the AER, may be limited.

10.4.1 Determining the negotiated transmission service criteria

Clause 6A.9.4(b) requires the negotiating criteria determined by the AER to give effect to and be consistent with the negotiated transmission service principles set out in cl 6A.9.1.

In accordance with cl 6A.11.3, the AER published the proposed negotiating criteria for SP AusNet for the forthcoming regulatory control period for consultation prior to the release of this draft decision.

10.4.2 AER's considerations on the submissions on the proposed negotiated transmission service criteria

The AER notes that both VENCorp and the Southern Generators submit that the negotiating criteria should mirror the principles with no amendment to the wording to prevent differences in interpretation. The AER considers that the rewording is necessary to make the negotiating criteria enforceable requirements rather than mere guiding principles.

The Southern Generators submit that an efficient cost requirement should be included in the negotiating criteria that require charges to reflect costs. This submission relies on the statement made by the AEMC in the rule determination at National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18,[435] however only part of the sentence was quoted in the submission (the remainder of the sentence is inserted in italics).

> Moreover, requiring generators and large end-users to negotiate with TNSPs about the recovery of costs directly incurred by the TNSP as a consequence of their connection will ensure that the efficiency of those costs is subject to increased scrutiny *by a well informed and commercially interested counter-party*.

As stated in the AEMC rule determination, the end users of negotiated transmission services are likely to be larger and better resourced, providing a counterweight to the market power possessed by the TNSP, therefore making commercial negotiation a feasible proposition.[436] It is clearly set out in the rule determination that it is the responsibility of the service applicant to scrutinise the efficiency of the costs incurred

[435] AEMC, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006, No. 18, p xvii.

[436] ibid.

in providing the negotiable service. On this basis the AER does not consider it necessary to insert an efficiency requirement into the negotiating criteria.

The AER considers the detail sought by the Southern Generators in the first broad comment, and in the detailed comments provided in relation to individual criteria, to be an unnecessary level of prescription. Negotiated transmission services are intended to be subject to less intrusive regulation than prescribed services as there are fewer market failure concerns.[437] Therefore the AER does not consider it beneficial to set out specific terms and conditions to be included in negotiated transmission service agreements. Rather, service applicants should negotiate the terms of the agreement on a case by case basis.

10.5 AER's conclusions

The negotiated transmission service criteria set out in Appendix E to this draft decision, will apply to SP AusNet for the 2008-14 regulatory control period, and give effect to the negotiated transmission service principles. All italicised terms used in the negotiating criteria should be given the same meaning as in the NER.

The AER notes that the provisions of Chapter 6A create a regime for the regulation of negotiated services that is intended to be less intrusive than that applying to prescribed services. This approach is premised on the basis that there are fewer market failure concerns in relation to these services. In deciding on the negotiate/arbitrate regime, the AEMC considered that users of negotiated transmission services are likely to be large, well resourced, and possess countervailing market power enabling them to negotiate these services effectively.[438] As such, these services are not subject to the upfront price control that prescribed transmission services are in revenue determinations. Rather, they are the result of commercial agreement or failing agreement, determined through commercial arbitration.

This is the first transmission determination by the AER to include a determination of NTSC and an approved negotiating framework. The AER will monitor the effectiveness of the NTSC, and of the new framework, throughout the forthcoming regulatory period.

[437] ibid.

[438] ibid., p. 41.

11 Pricing Methodology

11.1 Introduction

This chapter sets out the AER's considerations of SP AusNet's proposed pricing methodology for prescribed services for the forthcoming regulatory period.

SP AusNet undertakes three roles in relation to transmission pricing:

(1) the allocation of its aggregate annual revenue requirement (AARR) to each of the categories of prescribed transmission services

(2) the allocation of its aggregate service revenue requirement (ASRR) for prescribed entry and prescribed exit services to transmission network connection points and

(3) the pricing of connection services (prescribed entry and exit services).

Under the Victorian arrangements, VENCorp is responsible for the pricing of prescribed TUOS services and prescribed common transmission services.[439] VENCorp's proposed pricing methodology is not discussed in this draft decision, and is the subject of a separate draft determination by the AER due for release on 30 November 2007.

This chapter is set out as follows:

- Regulatory requirements under chapter 6A of the NER and the 'agreed interim requirements' published by the AER on 16 February 2007;
- Summary of SP AusNet's proposed pricing methodology;
- Submissions received on SP AusNet's proposed pricing methodology;
- Issues and AER's considerations;
- AER's conclusions on SP AusNet's proposed pricing methodology.

11.2 Regulatory requirements

NER requirements

Clause 6A.24.1(b) of the NER defines a pricing methodology in terms of the pricing principles (as set out in rule 6A.23 of the NER):

> A *pricing methodology* is a methodology, formula, process or approach that, when applied by a *Transmission Network Service Provider*:
>
> (1) allocates the *aggregate annual revenue requirement* for *prescribed transmission services* provided by that provider to:

[439] The pricing arrangements specific to Victoria are set out in the Victorian derogation at cl. 9.8.4F of the NER ('Pricing for connection to and use of Victorian transmission network'). The derogation modifies the operation of Part J of Chapter 6A of the NER as it applies to SP AusNet and VENCorp.

(i) the *categories of prescribed transmission services* for that provider; and

(ii) *transmission network connection points* of *Transmission Network Users*; and

(2) determines the structure of the prices that a *Transmission Network Service Provider* may charge for each of the *categories of transmission services* for that provider.

In accordance with cl. 6A.10.1(e) of the NER, SP AusNet's proposed pricing methodology must:

(1) give effect to and be consistent with the *Pricing Principles for Prescribed Transmission Services*; and

(2) comply with the requirements of, and contain or be accompanied by such information as is required by, the *pricing methodology guidelines* made for that purpose under rule 6A.25.

Clause 6A.14.3(g) of the NER requires the AER to approve SP AusNet's proposed pricing methodology in its draft decision if it is satisfied that it meets the two requirements set out above. If the AER refuses to approve any aspect of SP AusNet's proposed pricing methodology in its draft decision, cl. 6A.12.1(e) requires the draft decision to include details of the changes required or matters to be addressed before it will be approved.

Under rule 6A.25 of the NER, the AER is required to develop pricing methodology guidelines by 31 October 2007. As this date is after the deadline for submission of SP AusNet's revenue proposal and pricing proposal, rule 11.8 of the NER requires the AER to develop transitional arrangements (referred to as the "agreed interim requirements").

Clause 11.8.4 of the NER specifies that the agreed interim requirements are to apply to SP AusNet in place of the pricing methodology guidelines for the forthcoming regulatory period:

> For the purposes of making a 2008 pricing methodology, anything that must be done in accordance with the *pricing methodology guidelines* must instead be done in accordance with the agreed interim requirements.

Agreed interim requirements

After consulting with the businesses subject to cl. 11.8.4 of the NER (including SP AusNet), the AER released the agreed interim requirements on 16 February 2007.

Section 2.1(a) of the agreed interim requirements states that:

> Subject to the proposed *pricing methodology* being consistent with the *pricing principles* in rule 6A.23 of the *National Electricity Rules*, the proposed *pricing methodology* must be:
>
> (1) to the extent applicable, consistent with cl. 9.8.4F of the *National Electricity Rules*; and
>
> (2) consistent with Part C of Chapter 6 of the old *National Electricity Rules*.[440]

[440] The 'old' NER refers the NER in force immediately before the commencement of the National Electricity Amendment (Economic Regulation of Transmission Services) Rule and as reflected in version 9 of the NER).

11.3 SP AusNet's proposal

In preparing its proposed pricing methodology, SP AusNet reviewed its previous pricing methodology, which, it states, complied with Part C of the old NER (hereafter 'Part C'). SP AusNet submits that its previous pricing methodology is consistent with the pricing principles in Part J of chapter 6A of the new NER (hereafter 'Part J'), and has redrafted its previous pricing methodology to comply more explicitly with Part J and the AER's agreed interim requirements. SP AusNet states that:

> In respect of matters that do not relate to the pricing principles in Part J of Chapter 6A, SP AusNet's proposed pricing methodology refers to Part C of the old Chapter 6 in accordance with the requirements of the interim arrangements.[441]

Further, SP AusNet states that:

> In preparing its proposed pricing methodology, SP AusNet examined carefully the provisions in rule 6A.23 as these pricing principles must be satisfied in accordance with paragraph (a) of the agreed interim requirements. This examination led SP AusNet to conclude that the requirement to satisfy the principles in rule 6A.23 is incompatible with applying the old National Electricity Rules.[442]

Specifically, SP AusNet argues that rules 6.3, 6.4 and 6.5 of Part C are 'superseded by cl. 6A.23 of the new rules'[443] and provides a number of examples, which include:

> (1) *Aggregate annual revenue requirement* definition which applies in Cl. 6A.23.2 (also see 6A.22.1) is different to the *aggregate annual revenue requirement* definition in the old Rules.
>
> (2) The term *attributable cost share* appears in Cl. 6A.23.2(a), but does not exist in the old Rules.
>
> (3) There is no such term as the *[annual service revenue requirement] ASRR* in the old Rules – and therefore it is not possible to adopt the old Rules whilst also demonstrating that 6A.23.2(b) has been satisfied.[444]

Therefore SP AusNet has developed its proposed pricing methodology in accordance with the pricing principles set out in rule 6A.23 of Part J, with minimal reference to Part C.

Allocation of the AARR to categories of prescribed transmission services

In accordance with cl. 6A.23.2 of Part J, SP AusNet's proposed pricing methodology outlines the allocation of its aggregate annual revenue requirement (AARR) to each category of prescribed transmission services. SP AusNet states in its proposal that:

> To give effect to the allocation process, assets must be ascribed to a particular *category of prescribed transmission services* in accordance with cl. 6A.23.2 of the NER.[445]

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[441] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, pp.4-5

[442] SP AusNet, Response to Cl. 6A.11.1 Information Request, p.30.

[443] SP AusNet, Pricing Methodology – Cl. by Cl. Assessment, p.8

[444] SP AusNet, Response to Cl. 6A.11.1 Information Request, p.30.

SP AusNet's proposed allocation of each of its asset categories to each of the categories of prescribed services is (broadly) summarised below:

- prescribed exit services
  - Lines (specifically, two 66kV double circuit lines)
  - Connection transformers (as appropriate)
  - Switchgear (as appropriate)
  - Land and station establishment (apportioned with prescribed TUOS services on a case-by-case basis)
  - Secondary systems (as appropriate)
- prescribed entry services
  - Connection transformers (as appropriate)
  - Switchgear (as appropriate)
  - Secondary systems (as appropriate)
- prescribed common transmission services
  - Reactive compensation plant
  - Communications
  - Victorian Network Switching Centre (VNSC)
  - System spares
  - Non-system assets
  - Easements
  - Easement land tax
- prescribed TUOS services
  - Lines (except for two 66kV double circuit lines)
  - Main system tie transformers
  - Switchgear (except for switchgear associated with Generators, connection transformers, some tie circuit breakers and 66kV/22kV equipment)
  - Land and station establishment (apportioned with prescribed exit services on a case-by-case basis)
  - Secondary systems (as appropriate)[446]

SP AusNet notes that cl. 6A.23.2(c)(2) of Part J defines the resulting amount of its allocation process to be the annual service revenue requirement (ASRR) for each category of prescribed services.

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[445] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, p.8

[446] SP AusNet, *Proposed Pricing Methodology 2008/09 – 2013/14*, pp.8-9. SP AusNet notes that 'a shallow connection policy is applied in determining the allocation of switchgear' (p.8).

Allocation of the ASRR to transmission network connection points

SP AusNet's proposal outlines the process followed to allocate the ASRR for prescribed entry and prescribed exit services to network connection points, in accordance cl. 6A.23.3 of Part J. SP AusNet values its assets in accordance with an optimised replacement cost methodology. Further, SP AusNet proposes the following allocation methodology for multiple customers at a single terminal station:

- Shared entry services: shared costs will be allocated by asset replacement cost (ORC) share;
- Shared exit services: shared costs will be allocated using coincident maximum demand information (and in accordance with the terms agreed with SP AusNet);
- Shared entry and exit services: shared costs will be allocated by asset replacement cost (ORC) share.[447]

Price structures

SP AusNet's proposal outlines its methodology for pricing of prescribed entry and prescribed exit services. In accordance with cl. 6A.23.4(c) of Part J, SP AusNet proposes that these prices be set at a fixed annual amount.[448]

Information requirements and billing

SP AusNet states in its proposal that it has adopted the billing process requirements set out in Part C, in accordance with the agreed interim requirements.

11.4 Submissions

The EUCV submitted that the AER should verify that the costs of connections to new generation and for exports of power from Victoria are allocated appropriately.[449]

11.5 Issues and the AER's considerations

Section 2.1(a) of the agreed interim requirements sets out a two-step process for the AER in its assessment of SP AusNet's proposed pricing methodology:

3. determine whether SP AusNet's proposed pricing methodology is consistent with the pricing principles set out in rule 6A.23 of Part J and
4. *subject to satisfying step (1)*, determine whether SP AusNet's proposed pricing methodology is consistent with Part C.[450]

[447] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, pp.10-11

[448] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, p.11

[449] Energy Users Coalition of Victoria (EUCV), *Response to AER review of Victorian electricity transmission*, June 2007, p.6

[450] In addition, section 2.1(a)(1) of the agreed interim requirements – the requirement to modify Part J of Chapter 6A of the NER to take account of the Victorian arrangements (cl. 9.8.4F) – applies to

In its proposal SP AusNet argues that the requirements of rules 6.3, 6.4 and 6.5 of Part C are 'superseded' by the requirements of rule 6A.23 of Part J, due to the addition or amendment of the definition of key terms in rule 6A.23 (eg. AARR, attributable cost share, ASRR). SP AusNet therefore claims that it is unable to comply with the requirements of Part C without simultaneously being inconsistent with the requirements of Part J.

The AER agrees that the terminology contained in SP AusNet's proposed pricing methodology should, to the extent possible and practical, reflect the terminology contained in rule 6A.23 of Part J. However, the AER considers that the observed differences in terminology between Part C and Part J do not necessarily imply that the requirements of Part C and Part J are inconsistent. The AER considers that if the provisions of Part C will supplement or elaborate on (without being inconsistent with) the pricing principles contained in rule 6A.23 of Part J, the Part C provisions must be applied.

Following the two-step process described above, this section sets out the AER's assessment of SP AusNet's proposed pricing methodology against each of the three pricing principles set out in rule 6A.23 of Part J.

11.5.1 Allocation of the AARR to categories of prescribed transmission services

In its proposed pricing methodology, SP AusNet claims that its allocation of specific asset categories to each category of prescribed services has been undertaken in accordance with cl. 6A.23.2 of Part J.

SP AusNet's proposed actual application of the allocation process is (broadly) summarised in section 11.3, above.

The AER considers that SP AusNet's process for the allocation of specific asset categories to each of the categories of prescribed services is consistent with the principles set out in cl. 6A.23.2 of Part J.

However, the principles in cl. 6A.23.2 of Part J do not provide guidance on the actual application of the allocation process, and in particular the types of assets that are to be allocated to each category of prescribed services. Rather, cl. 6A.25.2(d) of Part J provides that the AER's pricing methodology guidelines must contain this information. Specifically, the guidelines must specify or clarify:

> the types of transmission system assets that are directly attributable to each category of prescribed transmission services, having regard to the desirability of consistency of cost allocation across the NEM.

In the absence of the AER's final pricing methodology guidelines (to be released 31 October 2007), the agreed interim requirements apply to SP AusNet for the forthcoming regulatory period. In accordance with section 2.1(a) of the agreed interim requirements, SP AusNet's actual application of the allocation process must be

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SP AusNet's proposed pricing methodology. The AER considers that SP AusNet's proposed pricing methodology adequately reflects the requirements of cl. 9.8.4F of the NER.

assessed for consistency with the requirements (specifically, rules 6.3 and 6.4) of Part C, to the extent that these requirements are not inconsistent with the requirements of cl. 6A.23.2 of Part J.

Clause 6.3.1(b) of Part C provides that:

> The delineation between the assets which provide:
>
> (1) entry service;
>
> (2) exit service;
>
> (3) transmission use of system service; and
>
> (4) common service,
>
> is set out in schedule 6.2.

The AER considers that the requirements for asset allocation outlined in Schedule 6.2 of Part C are not inconsistent with the principles contained in cl. 6A.23.2 of Part J. Schedule 6.2 of Part C gives effect to the principle of 'attributable cost share' defined at cl. 6A.22.3 of Part J by outlining the appropriate allocation of assets to each category of prescribed services.

Further, the information on asset-specific allocation contained in Schedule 6.2 of Part C is essentially equivalent to the information which must be included in the AER's pricing methodology guidelines under cl. 6A.25.2(d) of Part J. Therefore in the absence of the AER's pricing methodology guidelines, section 2.1(a) of the agreed interim requirements requires the AER to assess SP AusNet's proposed application of the asset allocation process against the requirements of Schedule 6.2 of Part C.

The AER considers that, in a number of respects, SP AusNet's proposed allocation of its assets to each of the categories of prescribed services is inconsistent with the requirements of the relevant provisions of Schedule 6.2 of Part C. In the absence of a reference to Schedule 6.2 of Part C, the AER considers that SP AusNet's proposal does not contain the appropriate qualifying statements against each of its proposed asset allocations. Schedule 6.2 of Part C contains the appropriate qualifiers on specific asset allocations, which makes it applicable to most circumstances. Without these qualifying statements, SP AusNet's proposed pricing methodology may incorrectly allocate its assets to categories of prescribed services in some circumstances. This has the potential to create distortions in transmission prices.

For example, SP AusNet proposes to allocate its asset category 'Reactive Compensation Plant' as follows:

> All reactive plant is assigned to *prescribed common transmission services*.[451]

Schedule 6.2 of Part C prescribes that reactive plant may be allocated in one of three ways, depending on which users receive the benefits of the protective equipment:

[451] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, p.8

1) Allocate to common services[452] if the reactive plant provides equivalent benefits to all users within the transmission system without any differentiation of their location; or
2) Allocate to transmission use of system services[453] if the benefits of the reactive plant can be allocated on a locational basis, but cannot be allocated to a particular user or group of users; or
3) Allocate to exit services[454] if – for reactive plant at the sub-transmission voltage level – it is clearly evident that the plant has been provided to meet the local reactive requirements of one or more users connected at the relevant substation.

SP AusNet states that it has undertaken its asset allocation in accordance cl. 6A.23.2 of Part J. Implicitly therefore, SP AusNet proposes that all reactive plant is 'directly attributable' to prescribed common services, in accordance with cl. 6A.22.3.

It may be the case that all of SP AusNet's currently held reactive plant provides 'equivalent benefits to all users' and should be allocated to prescribed common services. However the AER understands that, consistent with Schedule 6.2 of Part C, this may not be the case in all circumstances. Therefore, in accordance with Schedule 6.2 of Part C, SP AusNet's proposed pricing methodology must be amended to allow for different allocation where the need arises.

As a second example, SP AusNet proposes to allocate its asset category 'Lines' as follows:

> All lines are allocated to *prescribed TUOS services*, with the following exceptions:
>
> - 66kV double circuit lines between East Rowville, Cranbourne and Frankston Terminal Stations; and
> - 66kV double circuit lines between Templestowe Terminal Station and Subs DC, HB, L and WD.
>
> The line assets listed immediately above are allocated to *prescribed exit services*.[455]

The requirements for the allocation of line assets under Schedule 6.2 of Part C can be summarised as follows:

> Transmission lines should be allocated to prescribed TUOS services unless:
>
> - The line connecting a particular user (ie. generator or large customer) is radial, in which case allocate to prescribed entry/exit services; or
> - The lines connect a generator to the TNSP's connection assets, in which case allocate to prescribed entry services.

[452] 'Common services' are analogous to Prescribed Common Transmission Services under Part J of the new Chapter 6A.

[453] 'Transmission use of system services' are analogous to Prescribed TUOS Services under Part J of the new Chapter 6A.

[454] 'Exit services' are analogous to Prescribed Exit Services under Part J of the new Chapter 6A.

[455] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, p.8

> More generally, a 'shallow connection asset' policy applies, in which only those assets that provide supply to only those users connected at the connection point are allocated to prescribed entry/exit services.

It is not clear how the two lines listed by SP AusNet (above) meet the requirements of Schedule 6.2 of Part C for allocation to prescribed exit services. This does not necessarily preclude SP AusNet's allocation of these two lines to prescribed exit services, as section 2.2.2 of Schedule 6.2 of Part C points out (in relation to the allocation of assets to exit services):

> Treatment on a case by case basis may be necessary for any specific situations which are not accommodated by these general rules.

SP AusNet has not provided details in its proposed pricing methodology outlining the reasons for the allocation of these two specific lines to prescribed exit services. The AER therefore considers that SP AusNet must amend its proposed pricing methodology to demonstrate that these two lines have been allocated to prescribed exit services in accordance with Schedule 6.2 of Part C.

The reasoning underlying these two examples is applicable to each of the amendments required to SP AusNet's actual asset allocation set out in appendix F. On this basis, the AER considers that SP AusNet has not demonstrated that its proposed allocation of assets to each category of prescribed services is consistent Schedule 6.2 of Part C in accordance with section 2.1(a) of the agreed interim requirements.

The full set of specific amendments required in SP AusNet's proposed asset allocation process is set out in Items F.1 to F.5 of appendix F.

11.5.2 Allocation of the ASRR to transmission network connection points

SP AusNet states that it allocates the ASRR for prescribed entry and prescribed exit services to network connection points in accordance cl. 6A.23.3 of the NER (as outlined above). SP AusNet states that it values its assets in accordance with an optimised replacement cost methodology, in accordance with cl. 6A.22.4(b) of Part J.

Clause 6.4.2 of Part C performs a similar allocation to that required by cl. 6A.23.3 of Part J. For example, cl. 6.4.2(a) of Part C states that, for entry services:

> the cost of *entry services (entry costs)* for each connection point is determined by adding the amount of the *annual revenue requirement* for all individual assets classified as *entry service* assets which provide *entry service* for the *connection point* and allocating this cost to *Generators connected* at the *connection point*.

Clause 6.4.2(b) provides an identical allocation process in relation to exit services.

However, the allocation described at cl. 6.4.2 of Part C applies only:

> Where there is no contract containing provisions relating to the allocation of *connection service* costs…

As there is no equivalent provision restricting the applicability of the allocation principles contained in cl. 6A.23.3 of Part J, the AER considers that cl. 6.4.2 of Part C is inconsistent with cl. 6A.23.3 of Part J. In accordance with section 2.1(a) of the agreed interim requirements, cl. 6A.23.3 of Part J must apply to the extent of this inconsistency.

The AER considers that SP AusNet's proposed process for the allocation of its ASRR for prescribed entry and prescribed exit services to network connection points is consistent with the principles set out in cl. 6A.23.3 of Part J.

SP AusNet proposes an allocation methodology for multiple customers at a single terminal station (as outlined above) and provides illustrative examples at Appendices 1 and 2 of its proposal.[456] SP AusNet's proposed allocation methodology for multiple customers at a single terminal station is as follows:

- Shared entry services: shared costs will be allocated by asset replacement cost (ORC) share;
- Shared exit services: shared costs will be allocated using coincident maximum demand information from the previous year (and in accordance with the terms agreed with SP AusNet);
- Shared entry and exit services: shared costs will be allocated by asset replacement cost (ORC) share.[457]

SP AusNet submits that:

> The NER do not specify any principles to address the allocation of costs to multiple customers at a single terminal station. Nevertheless, SP AusNet proposes the following standard allocation methodology for multiple customers at a single terminal station with its existing customers. Customers remain free to negotiate a different methodology with SP AusNet at any time.[458]

Neither the provisions of Part J nor Part C of the NER provide any specific guidance as to the allocation of costs to multiple customers at a single terminal station.

The AER has reviewed SP AusNet's proposed allocation methodology for multiple customers at a single terminal station, and considers it to be, for the most part, in accordance with the general principles of rule 6A.23 of the NER. SP AusNet's proposal to share costs between customers based on each customer's share of the costs of the assets or share of demand appears to represent a reasonable and equitable allocation methodology for existing customers. Further, SP AusNet states that its customers are able to negotiate a different allocation methodology at any time, which provides flexibility in the event of a disagreement.

However, SP AusNet's proposed allocation of shared exit costs relies on historical demand information, as follows:

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[456] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, pp.14-15

[457] ibid., pp.10-11

[458] ibid., p.10

> Coincident maximum demand information provided for the allocation will be for the previous financial year. For example, in the calculation of 2007/08 charges, data from 2006/07 would be used.[459]

SP AusNet's proposal therefore does not account for the allocation of shared costs to new exit customers which do not yet have any historical demand data. The AER considers that this may result in an incorrect allocation of shared exit costs should a new customer establish a connection to SP AusNet's network during the forthcoming regulatory period. The AER therefore considers that SP AusNet must amend its proposed pricing methodology to include an allocation methodology applicable to a scenario where a new exit customer establishes a connection at a terminal station from which one or more existing exit customers receive supply.

The specific amendment that the AER requires to SP AusNet's proposed allocation methodology for multiple customers at a single terminal station is set out Item F.6 of appendix F.

11.5.3 Price structures

SP AusNet states in its proposed pricing methodology that it sets prices for prescribed entry and prescribed exit services in accordance with cl. 6A.23.4(c) of Part J, which states that a TNSP must develop separate prices for the recovery of the ASRR, and specifically that:

> Prices for prescribed entry services and prescribed exit services must be a fixed annual amount.

The requirements for entry and exit charges prescribed in Part C are equivalent to the requirements of cl. 6A.23.4(c) of Part J. Clauses 6.5.1 and 6.5.2 of Part C requires that prices for prescribed entry and prescribed exit services, respectively, must be a fixed annual amount.

On this basis, the AER considers that SP AusNet's proposed pricing structure is consistent with the pricing principles in rule 6A.23 and the agreed interim requirements.

11.5.4 Information requirements and billing

The AER has reviewed SP AusNet's proposed billing procedures against the relevant provisions of Part C, and considers that SP AusNet has correctly reflected these requirements, in accordance with the agreed interim requirements.

11.6 AER's conclusions

The AER considers SP AusNet's proposed pricing methodology for the forthcoming regulatory period is, in a number of respects, not compliant with the requirements of the NER and the agreed interim requirements. In accordance with cl. 6A.12.1(e) of

[459] SP AusNet, Proposed Pricing Methodology 2008/09 – 2013/14, p.11

the NER, the AER's draft decision includes details of the changes required and matters to be addressed before the AER will approve the methodology.

Appendix E to this draft decision sets out the changes required and matters to be addressed before SP AusNet's proposed pricing methodology will be approved by the AER.

Appendix A: Detailed review of past capital expenditure

This appendix provides further detail on each of SP AusNet's past capex projects that were subject to a detailed review by PB, and the AER's considerations in respect of each project.

A.1 Malvern Terminal Station redevelopment

SP AusNet's proposal

SP AusNet's cost information templates indicate that the Malvern terminal station (MTS) redevelopment project has an expected cost of $35.58m (nominal) across the current regulatory control period (including a WIP component). The MTS redevelopment represents 9.3% of SP AusNet's past network capex.

MTS is an urban terminal station located in the south eastern suburbs of Melbourne and provides both 66kV and 22kV supplies to the distribution network. In 2002, SP AusNet engaged SKM to undertake an asset replacement study for MTS. SKM found that many of the assets at MTS were in poor condition, and recommended a brownfields replacement project with a capital cost of $27.97m.[460]

Consultant's review

PB identified a clear need for the redevelopment of MTS given that the majority of the assets are nearing, or at the end of, their useful lives. PB also considered that the importance of MTS in supplying south east Melbourne and the OH&S and environmental risks further supported the need for the project.

After reviewing SP AusNet's analysis of possible alternatives, PB was satisfied that SP AusNet has implemented the most efficient option to address the identified need. PB found that there had been a considerable change in the scope of the project from that originally proposed by SP AusNet, but that this did not alter the economic analysis of the options.[461]

PB considers that despite the scope changes that occurred during the project, SP AusNet has adequately justified and documented changes in scope, and that its actions have been consistent with prudent asset management and good industry practice.

AER's considerations

The AER considers that SP AusNet has demonstrated a justifiable need for the project, and that the redevelopment project both had regard to, and is consistent with, SP AusNet's asset management strategies and overarching policies.

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[460] SKM, *Asset Management Study, Malvern Terminal Station,* 2002, p.56.

[461] PB Strategic Consulting, *SP AusNet revenue reset: An independent review*, August 2007, p.A19.

As this was one of the first major station rebuilds SP AusNet undertook, it engaged the services of SKM to analyse the various redevelopment options for the site. On the basis of the information provided, the AER agrees with PB's finding that SP AusNet undertook a robust analysis of the alternatives and implemented the most efficient option.

Due to a significant change in the scope of works, the project cost increased from the 2002 proposed cost of $27.2m, to $38.57m (nominal). The AER considers that it is not unreasonable to expect a change in scope on such a complex and large project, especially given that this was one of the first station rebuilds undertaken by SP AusNet. The AER agrees with PB's finding that the changes in scope and the resultant increase in costs were prudent. In saying this, however, the AER considers it reasonable to expect that SP AusNet has learnt from the early rebuilds such as MTS, and on the basis of this experience should now be able to more accurately forecast the costs associated with station rebuilds.

The AER therefore concludes that $38.57m (nominal) is prudent and efficient expenditure that can be included in SP AusNet's RAB at the commencement of the forthcoming regulatory control period.

Table A.1: AER's conclusion – Malvern terminal station redevelopment ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.1	0.0	10.8	23.3	4.4	38.6
PB's recommendation	0.0	0.0	0.1	0.0	10.8	23.3	4.4	38.6
AER's conclusion	0.0	0.0	0.1	0.0	10.8	23.3	4.4	38.6

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.2 Brunswick terminal station redevelopment

SP AusNet's proposal

SP AusNet's cost information templates indicate that the Brunswick terminal station (BTS) redevelopment project has an expected cost of $22.08 (nominal) across the current regulatory control period (including a WIP component). The BTS redevelopment represents 5.3% of the SP AusNet's past network capex.

BTS is an urban terminal station that supplies the inner northern suburbs of Melbourne. BTS is one the oldest of SP AusNet's terminal stations, with most of the major assets on the site between 48 to 60 years old. BTS also provides 22kV supplies to Richmond terminal station, which supplies Melbourne's CBD.

SP AusNet approached the redevelopment of BTS in a different manner to the MTS redevelopment by undertaking more of the initial work in-house. SP AusNet did not engage a consultant (again SKM) until later in the BTS redevelopment process.

Accepting the SKM recommendations, the SP AusNet Board approved the BTS refurbishment in March 2003 at a value of $27.1m.

Consultant's review

PB states that there is little, or arguably no, explicit consideration of SP AusNet's asset management strategies contained in the project documentation for the BTS refurbishment. However, despite this inadequacy in the project documentation, following its detailed review, PB considers that it is not unreasonable to conclude that due to the overall age of assets at BTS there is a justifiable need for the BTS redevelopment project.[462]

PB found that there were considerable variations between the original project and the actual implementation, concluding that:

> …a skilled asset manager would have reasonably anticipated (and accounted for) some of these variations in the original cost estimates…[463]

AER's considerations

In redeveloping the BTS, SP AusNet sought input from its consultant (SKM) at a later stage in the project than it did in the MTS redevelopment. In particular, SKM was not asked to provide its independent advice on the condition of the assets at BTS. This may explain why SP AusNet could not provide the AER with the same degree of condition assessment documentation as it was able to in relation to the MTS redevelopment. In spite of this, as PB has noted, sufficient information is available to conclude that there is a justifiable need for the redevelopment in the current period, primarily due to the age of the assets.

The AER is concerned by the inadequacies surrounding the project documentation for BTS. Areas of particular concern include the lack of supporting information regarding the condition of the assets, and the variation in project scope and cost. Despite these inadequacies in the project documentation, the AER accepts, on the basis of PB's detailed analysis and the information provided, that the actual cost of $22.08m (nominal) is prudent and efficient given the nature of the project and the scope of works.

[462] PB Strategic Consulting, op cit., p.A29.

[463] ibid.

Table A.2: AER's conclusion – Brunswick Terminal Station redevelopment ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.0	11.2	10.5	0.4	0.0	22.1
PB's recommendation	0.0	0.0	0.0	11.2	10.5	0.4	0.0	22.1
AER's conclusion	0.0	0.0	0.0	11.2	10.5	0.4	0.0	22.1

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.3 Redcliffs terminal station refurbishment

SP AusNet's proposal

SP AusNet's cost information templates indicate that the Redcliffs terminal station (RCTS) redevelopment project has an expected cost of $14.97m (nominal) across the current regulatory control period (including a WIP component).[464] The RCTS redevelopment represents 3.6% of SP AusNet's past network capex.

RCTS is a rural terminal station situated in North West Victoria that supplies the Redcliffe and Mildura areas at the 66kV and 22kV level. The station was augmented in 2001 to accommodate the Murraylink interconnector.

The Asset Management Division of SP AusNet undertook an internal study into the redevelopment options for RCTS in October 2004. The study documentation states that its scope is similar to the studies conducted by SKM for MTS and BTS, namely that it is charged with identifying the viable options for the future of RCTS, and ranks them according to their overall merits.[465] The SP AusNet study concluded that the most efficient option was to combine the brownfield redevelopment of both the 220kV and 66kV switchyards. The project was approved by the SP AusNet Board in November 2004.

Consultant's review

PB concluded that SP AusNet has demonstrated a justifiable need based on the condition of the assets, the importance of the station due to its interconnection role, and OH&S issues. However, PB notes that there was a lack of documented evidence that corroborated the findings of the internal SP AusNet study.

PB is of the view that the selected option was reasonable and prudent. It notes that the preferred option for the secondary assets was not the least cost alternative, but was selected as it offered a greater decrease in risk, and increased asset utilisation. PB concludes that, overall, the option selected by SP AusNet was prudent and efficient.

[464] The expected completion date is October 2007.

[465] Redevelopment study by SP AusNet's Asset management division, October 2004, p.5.

PB found that the cost of the RCTS project has increased in the order of 27% from the 2004 estimate, with the project only 75% complete.[466] On 24 April 2007, after submission of its revenue proposal to the AER, SP AusNet submitted a revised authority to proceed document to its Board, explaining the reasons for the overspend. The main reasons included:

- the original project scope was inadequate
- the original project cost estimates were inadequate due to an inadequate brownfield adjustment factor and because of significant input cost increases
- the project manager was found not to be suitable.

After considering this information, PB was critical of SP AusNet's project management and control process, finding that:

> The rigour applied to project scoping, project costing, and project management was less than that which could be expected of a prudent and skilled asset manager. It is PB's view that a prudent asset management process would have resulted in the earlier detection and intervention in this project. [467]

Consequently, PB questioned SP AusNet's implementation of the RCTS project. However, PB was unable to quantify any imprudent overspend, noting that where aspects of the overspend should have been identified as necessary expenditure at the time of the project scoping, the overspend was warranted.[468]

AER's considerations

The AER accepts PB's recommendation that there is a justified need for the RCTS refurbishment, and that the project documentation demonstrates consistency with SP AusNet's asset management strategy and overarching policies.

The AER agrees with PB's finding that SP AusNet had regard to a reasonably comprehensive range of solutions to address the identified need, and that it selected the efficient option.

However, the AER shares PB's concerns in relation to SP AusNet's implementation of the RCTS project. SP AusNet's initial project scoping and project monitoring (specifically in relation to spending and scope creep) were clearly inadequate and not in keeping with industry practice. Having reviewed the documentation provided by SP AusNet, the AER accepts however that it is not possible to directly attribute any easily identifiable and quantifiable portion of the final overspend to inefficient and imprudent project management. As a result, and in the context of corrective action eventually taken by SP AusNet, the AER does not recommend any prudency adjustment due to the conduct of the project manager.

[466] PB Strategic Consulting, op. cit., pp.A48-49.

[467] PB Strategic Consulting, op. cit., p.A49

[468] PB Strategic Consulting, op. cit., p.A49.

SP AusNet has provided the AER with a revised authority to proceed for RCTS dated 24 April 2007. This document states that $2.77m of the $3.2m overspend was a result of brownfield specific cost increases (supported by line–by–line assessment), many of which PB states should have been incorporated into the original cost estimates. SP AusNet has not quantified the remaining $0.43 overspend, and has presented it as a contingency "to cover any remaining unforseen conditions or contractor claims".[469]

The AER notes that the project is currently 75% complete, and is expected to be completed by October 2007. Over such a short period, the AER considers that a prudent asset manager in SP AusNet's position should be able to forecast costs with a high degree of accuracy. The AER will therefore make a reduction of $0.43m to the value of the RCTS project to be included in the RAB, bringing the total prudent amount to $14.54m. With the exception of this contingency allowance, the AER accepts that the capex associated with the RCTS refurbishment is prudent and efficient.

Table A.3: AER's conclusion – Redcliffs Terminal Station refurbishment ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.0	0.0	8.6	6.3	0.0	14.9
PB's recommendation	0.0	0.0	0.0	0.0	8.6	6.3	0.0	14.9
AER's adjustment	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	-0.4
AER's conclusion	0.0	0.0	0.0	0.0	8.6	5.9	0.0	14.5

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.4 Bendigo terminal station refurbishment

SP AusNet's proposal

SP AusNet's cost information templates indicate that the Bendigo terminal station (BETS) redevelopment project has an expected cost of $14.45m (nominal) across the current regulatory control period.[470] The BETS redevelopment represents 3.5% of SP AusNet's past network capex.

BETS is a regional terminal station that supplies the northern and eastern areas of Victoria. The station can have a significant impact on the operation of Murraylink and the Snowy interconnector.

In 2004, SP AusNet initiated an internal study to investigate the asset management options for BETS. In developing a range of options, this investigation considered condition, performance, level of risk and specific customer requirements with regard to connections. The Board of SP AusNet approved the BETS redevelopment project in December 2004 at a cost of $15.1m.

[469] SPA, Revised Authority to Proceed 24 April 2007, p.5.

[470] SP AusNet expects the BETS project to be completed in 2007-08.

Consultant's review

PB found that the SP AusNet study identified a need for the project, and that it was in line with SP AusNet's asset management strategy. PB also concluded that the project was well scoped and included recognition of site specific issues not included in earlier station refurbishment cost estimates. However, PB concluded that based on the information provided it was not possible to say that the timing of the project was optimal, and that it may have been possible to defer the project by up to two years.

AER's considerations

The AER concurs with PB in finding that there was a justifiable need for the BETS refurbishment and that the project was consistent with SP AusNet's asset management strategy. SP AusNet has selected the least cost option, and appears to have targeted its replacements at higher risk assets, while retaining those assets that are still in good condition. The AER notes PB's comments in relation to the timing of the project and SP AusNet's failure to provide adequate information relating to the projected remaining life estimates of the assets at BETS. However, based on the information provided by SP AusNet and the advice from PB, the AER considers that it appears likely that the optimal timing of the project is still within the current regulatory control period.

The actual project cost of the BETS refurbishment was over $1m less than the forecast cost at 2002. This may indicate that SP AusNet can both more accurately forecast the station rebuild costs, and is becoming more efficient at executing the rebuild projects, as it gains experience in this area.

The AER agrees with PB's recommendation to include $14.45m (nominal) in the RAB as proposed by SP AusNet, and accepts that this amount represents prudent and efficient expenditure.

Table A.4: AER's conclusion – Bendigo terminal station refurbishment ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.0	0.7	2.6	11.2	0.0	14.5
PB's recommendation	0.0	0.0	0.0	0.7	2.6	11.2	0.0	14.5
AER's conclusion	0.0	0.0	0.0	0.7	2.6	11.2	0.0	14.5

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.5 Installation of optical fibre ground wire (OPGW) in the metro area

SP AusNet's proposal

SP AusNet's cost information templates indicate that the optical fibre ground wire (OPGW) project had a cost of $2.92 (nominal) across the current regulatory control period. The OPGW redevelopment represents 0.6% of SP AusNet's past network capex.

The OPGW project involves the replacement of overhead communications wires with optical fibre ground wires. These wires form a critical part of the communication network which operates protection and control signals on SP AusNet's network.

SP AusNet states that the driver for the project was an incident in May 2002 in which a third party damaged one of SP AusNet's overhead communications wires. Following this incident SP AusNet reviewed its policy relating to communications for protection and control signals and concluded that having its communication network on above ground poles posed an unacceptably high risk, and that OPGW should be installed. Compliance with the NER's fault clearing requirements is also discussed in SP AusNet's documentation relating to this project.

Consultant's review

PB considers that the need for this project was predominately compliance based, resulting from SP AusNet's review of its exposure to the risks of having an overhead communications network. PB found that this was a justifiable need and that the timing of the project was critical.

PB concludes that SP AusNet did not give adequate consideration to alternative options to alleviate the identified risks, and specifically, that:

- more information regarding the risk of the 'do nothing' option was needed
- there was inadequate analysis of the impact on failure rates or restoration times of increasing line patrols
- analysis of the option to lease underground ducts was lacking

- there was inadequate development of the option of a third element in the two existing above ground communications networks.[471]

Despite these shortcomings in SP AusNet's analysis of the alternatives, PB concludes that SP AusNet ultimately acted efficiently in its implementation of the OPGW project and that the costs of the project reflected a prudent investment decision on the part of SP AusNet.

AER's considerations

The AER recognises the compliance based need for this project, and agrees with PB's conclusion that the project was, despite an apparent lack of rigour in the assessment of alternatives, ultimately implemented in an efficient manner. While accepting that this aspect of SP AusNet's analysis may have been lacking, the AER considers that on the basis of the information available it is likely that the least cost option would have remained the same. However, it should be noted that while a significant driver for the project is compliance with the NER and Victorian System Code, it was a commercial decision by SP AusNet — based in its estimate of the risks facing the business — to alter its policy in relation to its communication infrastructure and invest in the OPGW.

The AER concludes that the costs incurred in relation to the OPGW project are prudent and efficient, and that the amount of $2.92m (nominal) should be included in SP AusNet's RAB.

Table A.5: AER's conclusion – Installation of OPGW in metro area ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	2.3	0.7	-0.1	0.0	0.0	0.0	2.9
PB's recommendation	0.0	2.3	0.7	-0.1	0.0	0.0	0.0	2.9
AER's conclusion	0.0	2.3	0.7	-0.1	0.0	0.0	0.0	2.9

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.6 Tower signage

SP AusNet's proposal

An investigation into a fatality of a line worker in June 2002 found that it was necessary to erect signage on SP AusNet towers to identify the different circuits on a tower.

SP AusNet's cost information templates indicate that the tower signage project had a cost of $3.69m (nominal) across the current regulatory control period. The tower signage project represents 0.89% of SP AusNet's past network capex.

[471] PB Strategic Consulting, op. cit., p.A38.

Consultant's review

PB identified a clear need for this project that was supported by SP AusNet's OH&S policies. PB also accepts that the assessment of alternatives was adequate and the timing of this project was optimal.

PB concludes that the cost of the project was reasonable, but was unable to confirm whether it was the least cost option as no costing was presented in the selection of the preferred alternative.[472]

AER's considerations

The AER considers that there was a clear need for this project given the fatality in 2002. This need supports SP AusNet's prompt implementation of the project.

Although unable to conclude on the information available that the project was implemented at the least cost, the AER concurs with PB's finding that the alternative chosen by SP AusNet and the associated expenditure was reasonable and prudent. Given the analysis undertaken by PB, and that SP AusNet has approximately 13,000 towers (many of which required signage as part of this project), the AER concludes that the cost of $3.69m is prudent and should therefore be included in SP AusNet's RAB.

Table A.6: AER's conclusion – Tower signage ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	3.5	0.2	0.0	0.0	0.0	0.0	3.7
PB's recommendation	0.0	3.5	0.2	0.0	0.0	0.0	0.0	3.7
AER's conclusion	0.0	3.5	0.2	0.0	0.0	0.0	0.0	3.7

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.7 220 kV & 66 kV Current transformer replacements — stage 2

SP AusNet's Proposal

SP AusNet's cost information templates indicate that the 200 kV and 66 kV current transformer (CT) replacements — stage 2 project cost is expected to be $3.88m (nominal) across the current regulatory control period (including a WIP component).[473] The CT replacement project represents 0.93% of SP AusNet's past network capex.

Stage 2 of the CT replacement project is part of a broader program of works targeting CTs with a high rate of expected failure.

[472] PB Strategic Consulting, op. cit., p.A54.

[473] The expected completion date for this project is late 2007-08.

Following explosive failures of CTs in 2002 and 2005, SP AusNet developed a model to rank its CTs according to the likelihood of failure. The model attempts to predict when CTs should be replaced. This project is designed to capture those CTs that have a high risk of failure that are not being replaced as part of a station rebuild or refurbishment.

Consultant's review

PB found that there was little corroborating evidence supporting SP AusNet's claim that many of the CTs are nearing the end of their useful lives. However PB concluded that given the age of the equipment and the history of failure there is a justified need for the replacement project.

PB considers that SP AusNet has adequately demonstrated the strategic alignment of this project with its overarching policies and that on the information provided the timing of the project was optimal.

Based on the scope of works, PB concluded that the estimated cost of $3.88m (nominal) was prudent and should therefore be included in SP AusNet's RAB.

AER's considerations

Considering the age of the assets and past catastrophic failures identified by SP AusNet, the AER considers that there is an identified need for the project.

SP AusNet used its CT risk model as an input in determining which CTs needed replacing. However it appears as if the model was at an early stage of development, as SP AusNet has applied it differently in this stage of the project, than in the next stage, which is reviewed in detail in the discussion of SP AusNet's forecast capex for the forthcoming regulatory control period in chapter 4, and Appendix B (in this later stage of the project SP AusNet has used a 'threshold' of 10 years when deciding which assets to replace).

The AER accepts PB's view that while the project is yet to be implemented (the project is scheduled to start and finish in 2007/08), based on the proposed scope of works, the project cost presented is prudent and efficient, and concludes that the prudent amount of $3.88m should be included in the RAB.

Table A.7: AER's conclusion – 220 kV and 66 kV CT replacements – stage 2 ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.0	0.0	0.0	2.6	1.3	3.9
PB's recommendation	0.0	0.0	0.0	0.0	0.0	2.6	1.3	3.9
AER's conclusion	0.0	0.0	0.0	0.0	0.0	2.6	1.3	3.9

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.8 Replacement of 66 kV shunt reactors at HOTS, KGTS and RCTS

SP AusNet's proposal

SP AusNet's cost information templates indicate that the replacement of the 66 kV shunt reactors at HOTS, KGTS & RCTS cost $3.14m (nominal) across the current regulatory control period. This project represents 0.75% of SP AusNet's past network capex.

Shunt reactors provide reactive voltage support to the network. The shunt reactors at HOTS, KGTS & RCTS developed serious defects early in their operation due to a high level of vibration.

Consultant's review

PB is satisfied that there was a justifiable need to replace these assets. The identified defects cannot be rectified through refurbishment, and as the risk of failure increases there is a risk that SP AusNet will not be able to meet its contractual obligations to VENCorp.[474]

PB is of the opinion that the range of alternatives identified and analysed by SP AusNet was reasonably comprehensive and that, while the chosen alternative was not shown to be least cost, it was the most efficient option to meet the identified need.

PB concludes that the project was implemented in accordance with the original proposal, in a manner consistent with prudent asset management and good industry practice. PB therefore recommends that the proposed amount of $3.14m be included in the RAB.

AER's considerations

The AER accepts PB's finding that there is a justified need for this project. Further, the AER is satisfied that despite the selected project not being the least cost option, SP AusNet has provided documentation that supports its claim that it acted in a prudent and efficient manner.

[474] PB Strategic Consulting, op. cit., p.A66.

The AER considers that SP AusNet has acted as a prudent asset manager implementing the project at an efficient cost of $3.14m and will include this value in the RAB.

Table A.8: AER's conclusion – Replacement of 66kV shunt reactors at HOTS, KGTS and RCTS ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	3.1	0.0	0.0	0.0	0.0	3.1
PB's recommendation	0.0	0.0	3.1	0.0	0.0	0.0	0.0	3.1
AER's conclusion	0.0	0.0	3.1	0.0	0.0	0.0	0.0	3.1

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.9 Replacement of 16mm pin insulators — stage 2

SP AusNet's proposal

SP AusNet's cost information templates indicate that the replacement of 16mm pin insulators — stage 2 project cost $2.07 (nominal) across the current regulatory control period. This project represents 0.04% of SP AusNet's past network capex.

Insulators are designed to suspend the electrical cable from the tower and in doing so insulate the tower structure from the electrical cable. The purpose of this project is to address the risk posed by aging transmission line insulators, as part of a broader program targeted at these assets.

This project focuses on high risk situations, including road crossings where the consequences of a line drop could be significant.

In March 2007 approval was granted for the replacement of 1,839 high risk insulator strings on approximately 400 towers at a total cost of $2.2m.[475]

Consultant's review

PB concludes that the replacement of the insulators outlined in SP AusNet's scope of work is warranted. It found that SP AusNet has documented the condition of the insulators and that it has undertaken a reasonable assessment of the alternatives.

With respect to timing, PB considers that SP AusNet's proposed timing is prudent, given the presented risk profile and the consequences of a failure. PB was unable to draw a conclusion with respect to project implementation, as the project is yet to be undertaken.

[475] SP AusNet, Authority to proceed document, project X668, 14 March 2007.

AER's considerations

The AER considers that SP AusNet has justified the need to replace the aging high-risk 16mm pin insulators as identified in its authority to proceed document of 14 March 2007. The AER accepts that SP AusNet undertook an appropriate analysis of the alternatives and selected the most efficient option.

As the project is yet to be implemented, the AER is unable to comment on its implementation, but does conclude that its timing appears prudent.

The AER also considers that the proposed cost is prudent given the identified scope of work.

Table A.9: AER's conclusion – Replacement of 16mm pin insulators — stage 2 ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1
PB's recommendation	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1
AER's conclusion	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.10 Non-network past capex – Business IT

SP AusNet's proposal

SP AusNet's cost information templates indicate that total cost of business IT expenditure was $37.9 (nominal) across the current regulatory control period. Business IT represents 56% of SP AusNet's past non-network capex.

Business IT is the largest expenditure category within SP AusNet's non-system past capex. SP AusNet has developed policy documents that guide its purchasing and recording of such expenditure.[476]

[476] SPAusNet, Transmission Business System Strategy, V1.0

Consultant's review

In undertaking its review of SP AusNet's Business IT expenditure, PB focused on the following three areas, drawn from SP AusNet's procurement guidelines.

Replacement of desktop fleet

PB found that SP AusNet's replacement of its computer hardware was both appropriate and timely. In reaching this position PB reviewed SP AusNet's documentation relating to the replacement.

PB found that SP AusNet has purchased 26 computers individually at a significantly higher unit cost than those purchased as part of the bulk replacement. PB concluded that there was an opportunity for SP AusNet to reduce its computer related costs by exploiting its purchasing power, and suggests that, had all units been purchased under the bulk agreement, the total purchase cost would have been reduced by $52 000. PB has not, however, recommended any adjustment be made.

Energy management system (EMS) upgrade

SP AusNet controls and monitors the electricity transmission system via a SCADA[477] system. This project involved the upgrade of the SCADA system to reduce the risk of failure. PB considered that this project may more appropriately have been classified as network capex, but did not recommend any change, as IT is treated the same across the categories.[478]

HR learning and performance project

This project was a company wide initiative that was intended to deliver benefits to all company employees. PB concludes that the approval documentation supports the need, defines the scope and provides an adequate economic assessment of the alternative options.

PB found that the cost of the project has been split 60:40 between distribution and transmission, but could not identify on what basis this allocation was determined, or how it is controlled.

PB also undertook a review of the overall business IT expenditure and found three calculation errors. PB has made adjustment to account for these errors totalling a reduction of $1.66m (nominal).

AER's considerations

The AER agrees with PB's findings that there was scope for SP AusNet to reduce its expenditure on the purchase of 26 laptops independent of the bulk purchase. However, the AER does not consider the expenditure actually incurred to be

[477] Supervisory, control and data acquisition system.

[478] PB Strategic Consulting, op. cit., p.150.

imprudent, and does not propose to make any associated adjustment to SP AusNet's proposed value to include in the RAB for non-system capex.

The AER will, however, make an adjustment to SP AusNet's roll-in value to correct for the errors identified by PB. The three errors sum to a reduction of $1.66m (nominal).

Table A.10: AER's conclusion – Business IT ($m, nominal)

	2003^	2003-04	2004-05	2005-06	2006-07*	2007-08*	Work-in-progress	Total
SP AusNet's Proposal	3.96	6.18	5.13	9.25	5.69	7.67	0.00	37.87
PB's adjustment	0.00	0.00	0.83	0.04	0.00	-2.52	0.00	-1.66
PB's recommendation	3.96	6.18	5.96	9.29	5.69	5.15	0.00	36.22
AER's adjustment	0.00	0.00	0.83	0.04	0.00	-2.52	0.00	-1.66
AER's conclusion	3.96	6.18	5.96	9.29	5.69	5.15	0.00	36.22

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

A.11 Non-network past capex – Inventory

SP AusNet's proposal

SP AusNet's cost information templates indicate that the total cost of inventory was $4.04m (nominal) across the current regulatory control period. Inventory represents 6% of SP AusNet's past non-network capex.

Consultant's review

In examining the SP AusNet inventory movements, PB found that some inventory items were being capitalised rather than being written-off at the time of purchase. PB notes that this is inconsistent with SP AusNet's capitalisation policies. PB concluded that it would be difficult to identify the precise value of the inventory that should have been expensed, and as such recommends that no adjustment is made to the ex post roll-in value. However, PB has recommended an adjustment to SP AusNet's ex ante inventory proposal which is addressed in chapter 4 of the draft decision.

AER's considerations

The AER considers that SP AusNet should amend its accounting practices to be consistent with accounting standard AASB116 which states that normal line items should not be capitalised, but rather should be written off at the time of purchase. However, the AER accepts that PB has been unable to quantify the effect of this recommended reclassification on SP AusNet's past non-network capex, and has therefore made no ex post adjustment.[479]

[479] See chapter 4 of this draft decision for the AER's considerations in relation to SP AusNet's forecast inventory expenditure.

Table A.11: AER's conclusion – Inventory ($m, nominal)

	2003^	2003/04	2004/05	2005/06	2006/07*	2007/08*	Work-in-progress	Total
SP AusNet's Proposal	0.03	1.58	0.40	1.65	0.38	0.00	0.00	4.04
PB's recommendation	0.03	1.58	0.40	1.65	0.38	0.00	0.00	4.04
AER's conclusion	0.03	1.58	0.40	1.65	0.38	0.00	0.00	4.04

Source: SP AusNet proposal, PB analysis, AER analysis.
Notes:
^ Stub period from 1 January to 31 March 2003
* Forecasts

Appendix B: Forecast capital expenditure

This appendix presents the AER's detailed analysis on the following:

B.1 Detailed review of forecast capex projects

B.2 Extension of findings to remaining station rebuild / refurbishment projects

B.3 Labour and materials escalations

Appendix B.1 Detailed review of forecast capex projects

This appendix sets out the AER's consideration of PB's recommendations relating to its detailed review of a sample of SP AusNet's forecast capex projects. The details of PB's assessment as a result of its detailed sample project reviews are set out at section 5 of its report.[480]

PB conducted a detailed review of six network projects and one non-network project proposed by SP AusNet for inclusion in its forecast capex allowance. The selection of projects was undertaken in consultation with the AER and was designed to cover a broad range of projects of different sizes, across different asset classes, locations and timings. The sample list of projects reviewed is provided in table B.1.1.

Table B.1.1: Detailed forecast capex project review – sample project list

Project category	Expenditure driver	Sample project description	Project capex ($m, 07/08)	% of total capex
Station replacements	Asset failure risk	Refurbishment of HWPS Switchyard	36.6	4.3%
	Asset failure risk	Redevelopment of RTS	89.7	10.5%
Other asset replacements	Asset failure risk	Transformer replacement	28.8	3.4%
	Compliance	Replacement of station and control centre SCADA	43.9	5.1%
	Operational performance	Response capability for undefined works	5.5	0.6%
Compliance	Compliance	Replacements of post-type CTs	24.5	2.9%
Non-network	Support the business	Vehicles	8.4	1.0%
Total			**237.4**	**27.8%**

[480] PB Strategic Consulting, SP AusNet Revenue Reset: An independent review, 16 August 2007.

B.1.1 Refurbishment of Hazelwood Power Station Switchyard

B.1.1.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the 'Refurbishment of Hazelwood Power Station Switchyard' project ('HWPS') has an expected capital cost of $36.6m (as-incurred, $2007-08) spread over the entire 2008-09 – 2013-14 regulatory control period. The capex cost represents 4.3% of SP AusNet's total proposed forecast capex allowance.

Subsequent to the submission of its revenue proposal, SP AusNet revised its capex cost estimate for the HWPS project to $35.7m (as-incurred, $real 07-08) following additional planning work.

The scope of the project involves the replacement of twenty-four (24) 220kV bulk oil circuit breakers (CBs) and the associated bay and secondary equipment, as well as the establishment of a new control building at the site.[481] The primary need for replacement identified by SP AusNet through its detailed condition assessments is the risk of CB bushing failure, which typically leads to explosion, fire, and collateral damage to adjacent plant. SP AusNet states that all 24 bulk oil CBs proposed for replacement at HWPS are aged between 40-45 years and are exhibiting age and duty-related deterioration.

The timing profile of the expenditure is primarily driven by the complexity of the work on bulk-oil CBs in a brownfield site, and the need to stage the replacement in consultation with the connected parties given the system-wide criticality of the CBs.

SP AusNet presented a detailed economic analysis of the two options considered feasible to mitigate the risk of asset failure – the 'targeted brownfield replacement option' and the 'deferred replacement option'.[482] The economic analysis indicated that the 'targeted brownfield replacement option' is the least cost option in present value terms – 20% cheaper than the 'deferred replacement option'. On this basis SP AusNet selected the 'targeted brownfield replacement option' for inclusion in its proposed forecast capex allowance.

B.1.1.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation relating to the HWPS Refurbishment, and considers that SP AusNet has demonstrated a clear and justifiable need for the refurbishment at HWPS, given the risk of explosive failure of the CB bushings. The 24 bulk oil CBs proposed for replacement are ranked 2 through 25 out

[481] The HWPS 220kV Switchyard was established in the mid 1960s to provide entry connection to the adjacent Hazelwood Power Station. The switchyard consists of 33 circuit breakers and six bus-bars, within 21 separate bays.

[482] SP AusNet, *Refurbishment of Hazelwood Power Station 220kV Switchyard*, 25 January 2007. The 'deferred replacement option' involves deferral of the replacement of the 24 CBs until 2018/19 (10 years), with refurbishment of the critical CB components (ie. air compressor systems, bushings) and expenditure on bunding in the interim period.

of a fleet of over 1 000 CBs in SP AusNet's CB risk model, indicating a high priority.[483]

The HWPS refurbishment delivers on SP AusNet's circuit breaker plant strategy to replace all bulk oil CBs between the years 2007-2019. However given that the HWPS refurbishment is planned for completion in 2013, PB considers that there may be some opportunities for deferral while still meeting the high-level strategy.

PB considers that SP AusNet has considered a comprehensive range of alternatives to address the need identified at HWPS, but notes that the economic support for SP AusNet's preferred option (the 'targeted brownfield replacement option') could have been strengthened had a number of additional alternatives been included in the NPV analysis. Upon reviewing the NPV analysis presented by SP AusNet, PB concluded that the 'deferred replacement option' was the least-cost option – about 23% cheaper than the 'targeted brownfield replacement option' – on the basis that SP AusNet had incorrectly included a real capex escalator of 5% in its analysis.[484]

In revisiting its NPV analysis to correct for the acknowledged erroneous inclusion of a real capex escalator, SP AusNet re-defined the 'deferred replacement option' to take account of the technical difficulties associated with refurbishing the CB bushings. The revised NPV analysis presented by SP AusNet indicated that the 'targeted brownfield replacement option' was the least-cost option, albeit marginally. PB accepts SP AusNet's claim that the low historical success rate of refurbishing 220kV CB bushings makes it unlikely that replacement could be deferred by 10 years as the NPV analysis suggests. PB therefore concludes that the 'targeted brownfield replacement option' represents the most reasonable, efficient and technically sound option to address the identified need at HWPS.

PB considers that the cost estimate of $35.7m presented by SP AusNet, developed using its detailed 'Expert Estimator', is reasonable and thorough, noting that the estimate includes a contingency allowance (around 5%) and an adjustment for real capex cost escalations (ie. labour and materials). PB considers that the project scope is fundamentally based on a 'like-for-like' replacement of the 24 CBs, noting however that:

> Use of plant side ROIs ([remote operated isolators] as opposed to bus side ROIs), and the replacement of a number of post insulators, surge arrestors, current transformers and capacitor voltage transformers, appears to be beyond the scope of work to address the specified CB failure need identified by SPA.[485]

PB recommends a downward adjustment of $4.0m be made to the cost estimate on the basis that SP AusNet has not justified the need for this expenditure.

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[483] Note that lower numbers in the CB risk model indicate assets assessed by SP AusNet as having a higher risk of failure in relative terms.

[484] PB considers that there is no basis to include a 5% real capex escalator across the entire NPV analysis timeframe, particularly as real input cost escalators were already included in the capital cost estimates.

[485] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review,* 16 August 2007, p.A101.

B.1.1.3 AER's considerations

The AER considers that SP AusNet has identified a clear need for expenditure at HWPS to mitigate the asset failure risk posed by the 24 CBs. The AER notes SP AusNet's advice that if nothing is done to address the risk of CB failure at HWPS by 2013, the 24 CBs proposed for replacement are forecast to fail at a rate of one every two years. The AER considers that this poses an unacceptable risk to the quality, reliability and security of supply. In addition, the consequences of failure of the critical CBs at HWPS are considerable, given that HWPS allows for the direct connection of approximately 1600MW of baseload generation from Hazelwood Power Station into the 220kV transmission network.[486]

The AER considers that the proposed refurbishment at HWPS aligns with SP AusNet's Asset Management Strategy (AMS) to replace the vast majority of bulk-oil CBs in the next 15 years. According to the AMS, 42% of SP AusNet's fleet of 980 CBs are of bulk-oil design (ie. around 400).[487] Therefore replacement of 24 of the highest risk CBs in the fleet at HWPS over the forthcoming regulatory control period seems reasonable and in accordance with SP AusNet's overarching strategy.

The AER considers that SP AusNet has demonstrated that it has given extensive consideration to the capex-opex trade-off in informing its decision whether or not to proceed with capital investment at HWPS over the forthcoming regulatory control period.

The AER notes PB's initial recommendation to defer the replacement at HWPS to the forthcoming regulatory control period (ie. commencing in 2014) on the basis that SP AusNet had incorrectly applied a real capex escalator of 5%, which acted to disadvantage the 'deferred replacement option'. It is clear from the revised NPV analysis that SP AusNet should have further considered technical issues associated with refurbishment of the 220kV CB bushings in its initial NPV analysis. Notwithstanding the fact that the results of the revised NPV analysis presents only a marginal economic case for the 'targeted brownfield replacement option' (around 1.5% cheaper than the 'deferred replacement option'), the AER accepts PB's view that SP AusNet has selected the most reasonable, prudent and technically sound option to address the identified need at HWPS.

The AER considers that the lengthy timing profile of the capex (ie. across the six years of the forthcoming regulatory control period) is prudent, given the criticality of the station, its complex and brownfield nature, and the need to stage the works to minimise disruptions to the Victorian transmission system.

The AER accepts PB's recommendations that the technical scope and cost of the bulk-oil CB replacements appears efficient and prudent taking into account the incremental costs of replacing the old CBs with units of modern equivalence. The

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[486] SP AusNet, *Refurbishment of Hazelwood Power Station 220kV Switchyard*, 25 January 2007, p.11. Depending on network conditions, the HWPS switchyard also potentially allows for entry connection of an additional 2050MW from other power stations nearby, at Yallourn, Jeeralang and Morwell.

[487] SP AusNet, Asset Management Strategy – Victorian Electricity Transmission Network, 23 February 2007, p.69

AER notes that the average cost to remove the existing plant and replace each of the 24 CBs at HWPS (around $1.5m) is approximately 15% greater than PB's calculation of SP AusNet's average cost for replacement of a 220kV CB across its entire network ($1.29m).[488] The AER considers that this difference in cost is reasonable, given the significant brownfield-related costs which are likely to be specific to the HWPS site.[489]

PB recommends a decrease to the proposed capex allowance of $4m due to SP AusNet's failure to justify some elements of the scope of works proposed at HWPS. The AER accepts PB's technical advice that the items identified (including plant side ROIs, post insulators, surge arrestors, current transformers and capacitor voltage transformers) are not required to meet the identified need to mitigate the risk of CB failure at HWPS, and are beyond the policy directive from VENCorp.[490] Given PB's advice, the AER is not satisfied that the $4.0m allowance for these items reasonably reflects a prudent and efficient cost required to meet the capex objectives at cl. 6A.6.7(a) of the NER. Specifically, the AER considers that SP AusNet's proposed capex for these elements of the project do not reasonably reflect benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4)).

On this basis, the AER has made a downward adjustment to the capex allowance for the HWPS refurbishment of $4.0m relative to SP AusNet's (updated) proposal, as shown in table B.1.2.

Table B.1.2: AER's conclusion – Refurbishment of HWPS Switchyard ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	8.20	4.10	8.80	3.50	5.80	6.20	36.60
SP AusNet's variation to Proposal	-3.30	7.60	-0.20	-0.10	-0.20	-4.70	-0.90
SP AusNet's updated Proposal	4.90	11.70	8.60	3.40	5.60	1.50	35.70
PB's recommended adjustment	0.00	-0.80	-0.80	-0.80	-0.80	-0.80	-4.00
AER's adjustment	0.00	-0.80	-0.80	-0.80	-0.80	-0.80	-4.00
AER's conclusion	4.90	10.90	7.80	2.60	4.80	0.70	31.70

* Capex as-incurred

[488] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.59.

[489] The AER also notes that a contingency amount has been applied to capex cost estimates of around 4.8%. The application of the contingency allowance is discussed further in section 4.6.6 of this draft decision.

[490] SP AusNet, VENCorp Input to SP AusNet 2008-13 Asset Replacement Proposals.

B.1.2 Redevelopment of Richmond Terminal Station

B.1.2.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the 'Redevelopment of the Richmond Terminal Station' project (hereafter 'RTS') has an expected capital cost of $89.7m (as-incurred, $2007-08) forecast between the years 2011-12 and 2013-14. The RTS project is the largest proposed forecast capex project, representing 10.5% of SP AusNet's total proposed forecast capex allowance.

The scope of the RTS project involves three distinct components:

(1) Redevelopment of the 220kV switchyard with indoor gas insulated switchgear (GIS) and reconfiguration using 12 circuit breakers in a breaker-and-a-half arrangement to increase reliability.

(2) Replacement of three of the four 220/66kV transformers, with the fourth unit to be released as a strategic spare.

(3) Redevelopment of the 66kV switchyard with outdoor air insulated switchgear (AIS).

SP AusNet advises that there are a number of key drivers for the need and timing of the proposed redevelopment of RTS, including:

- a reduction in asset failure risks, primarily the 220/66kV transformers, the 220kV and 66kV CBs, and the 220kV CTs
- pending augmentation requirements to meet forecast demand within the Melbourne CBD and inner suburban areas
- a reduction in OH&S risks associated with both asset failures and geotechnical subsidence hazards at the site.[491]

SP AusNet has identified a number of options to address the needs identified at RTS, including the 'do nothing' option, 'brownfield replacement', as well as various 'targeted replacement' options. In addition, given the space constraints and subsidence at the site, SP AusNet has given due consideration to options such as 'greenfield replacement', the trade-off between GIS and AIS, and the use of load transfers and embedded generation. SP AusNet engaged engineering consultants Connell Wagner to provide independent technical advice on the selection of options. Connell Wagner largely supports SP AusNet's proposed project scope for works at RTS (outlined above).[492]

[491] RTS was developed in the 1930s on the banks of the Yarra River as one of the key metropolitan stations supplying the Melbourne CBD and surrounding areas.

[492] Connell Wagner's recommendation for redevelopment of the 66kV switchyard using GIS (as opposed to AIS) was not accepted by SP AusNet in its final project design.

B.1.2.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation and considers that there are a number of needs that require attention at RTS, particularly in relation to the 220kV switchyard. PB comments however, that:

> …SPA has not presented a single, cohesive economic justification for the wide scope of works captured in the redevelopment of RTS… We note the limited economic analysis presented by SPA appeared to support the need (benefits) for transformation augmentation only – without any discussion of costs…[493]

PB undertook the assessment of SP AusNet's proposal at RTS in terms of the three distinct components of the proposed works identified by SP AusNet – the 220kV switchyard, the 220/66kV transformer replacements, and the 66kV switchyard.

PB's conclusions are summarised as follows:

- PB considers that there is a clear need to redevelop the 220kV switchyard, given the relatively poor condition of the assets therein, the design-induced exposure of the switchyard to outages, and the high consequences of outages at RTS. PB recommends a downward adjustment of $4.0m to the cost of the 220kV redevelopment to account for the inefficient incremental cost of the twelve CB breaker-and-a-half arrangement over the eight CB ring bus arrangement.
- While recognising that the three ageing 220/66kV transformers proposed for replacement by SP AusNet are assigned a relatively high failure risk ranking in the transformer risk model, PB considers that the replacements should prudently be deferred beyond the forthcoming regulatory control period without and considerable increase in failure risk. On this basis PB recommends removing the allowance of $20.6m for replacement of the three 220/66kV transformers.
- With respect to the 66kV switchyard, while acknowledging that there are a number of CBs exhibiting a relatively high risk of failure, PB considers that SP AusNet has not demonstrated that the complete replacement of the switchyard prior to 2013-14 is prudent and efficient. PB recommends removing the allowance of $23m associated with the redevelopment of the 66kV switchyard.

In relation to the subsidence of the yard, PB considers that the adoption of cost effective remedial actions and monitoring – as suggested in a report prepared for SP AusNet by engineering consultants GHD – mitigates the geotechnical risk as a genuine justification for SP AusNet's proposed works at RTS.[494]

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[493] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.A138

[494] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.A138-A142.

B.1.2.3 AER's considerations

The AER considers that, as evidenced by the outputs of SP AusNet's detailed asset risk models, there are a number of asset failure risks at RTS that require attention during the forthcoming regulatory control period. The AER has assessed these risks in the context of the critical nature of RTS in supplying Melbourne's CBD and inner suburbs and the resulting high consequences of failure should this occur.

The AER agrees with PB that given the size and importance of the proposed RTS project, SP AusNet should have undertaken a comprehensive economic analysis weighing up the various options available to address the identified need at RTS.[495] In the absence of such an analysis, the AER is not satisfied that all of SP AusNet's forecast capex costs for the RTS project reasonably reflect prudent and efficient costs in accordance with cl. 6A.6.7 of the NER. Despite the fact that the RTS project is not forecast to commence until 2011 and the analysis undertaken by SP AusNet is at an early stage, the AER is still required to critically assess the proposal against the requirements of the NER before determining whether it represents prudent and efficient capex for inclusion in the forecast capex allowance.

The AER agrees with PB that there is a clear need for redevelopment of the 220kV switchyard as a priority, as indicated by the high risk of failure assigned to a significant proportion of the assets within the yard, most notably the ageing 220kV CBs and 220kV CTs. The AER accepts that a failure of one or more of these critical 220kV assets will have an unacceptable impact on the quality, reliability and security of supply. Further, the timing of the replacement is supported by PB given the high cost of maintaining the 220kV plant coupled with the old and redundant 220kV protection relays. Although a comprehensive economic analysis from SP AusNet would have strengthened this conclusion, in particular the extent and importance of the opex-capex trade-off, the AER is satisfied that there is a justifiable need for replacement in the forthcoming regulatory control period. On the basis of PB's analysis, the AER considers that the strategic benefits of providing space for future development at RTS justifies the incremental cost of indoor GIS (as opposed to AIS) for the 220kV switchyard.

SP AusNet advises that, due to the current configuration of the 220kV switchyard, a failure of one of the three primary 220kV CBs will result in an outage of two 220/66kV transformers, and in some circumstances also a 220/22kV transformer.[496] In order to mitigate this reliability risk, SP AusNet proposes to reconfigure the 220kV switchyard into a twelve CB breaker-and-a-half arrangement. PB considered SP AusNet's proposed reconfiguration, and recommends that:

[495] SP AusNet presented an economic analysis for the RTS project, but only in relation to the transformer augmentation aspects of the proposed scope of works.

[496] SP AusNet, Richmond Terminal Station Redevelopment – Economic cost-benefit analysis, p.8.

> …sufficient analysis has not been undertaken to clearly justify the twelve CB breaker-and-a-half arrangement, as opposed to a simpler and more cost effective eight CB ring bus arrangement that provides a very similar level of operational flexibility.[497]

The AER sought clarification from PB on the relative costs and benefits of a twelve CB breaker-and-a-half arrangement as opposed to an eight CB ring bus arrangement. PB advised that the latter is likely to provide the same or similar reliability as the former, but at approximately 75% of the cost. On this basis, the AER agrees with PB that the twelve CB breaker-and-a-half arrangement appears inefficient, and has made a downward adjustment of $4m to the cost of the 220kV switchyard redevelopment to account for the incremental cost.

In relation to the three 220/66kV transformers proposed by SP AusNet for replacement, PB recommends deferral due to the following factors:

- The underlying need for replacement appears to be primarily aligned with Citipower's augmentation plans, rather than driven by the condition of the assets.
- A capex allowance for refurbishment of two of the transformers has been proposed by SP AusNet and appears to represent a prudent approach to addressing the issues associated with these transformers.
- The availability of a spare metropolitan transformer purchased to serve RTS.
- Recent and continuing augmentation of transformer capacity at Brunswick TS and Malvern TS during the current regulatory control period.

The AER has reviewed SP AusNet's documentation relating to the three transformers at RTS, and agrees with PB that the primary need for replacement appears to be driven by CitiPower's plans to augment the transformers at RTS. Given the transformer augmentation developments at Brunswick and Malvern over the current regulatory control period, the need for augmentation at RTS appears mitigated. In any case, the AER agrees with PB that the augmentation aspects of the replacement should be considered in a comprehensive joint business case involving all relevant parties.

While no case for replacement has been made, the AER considers that SP AusNet has demonstrated a clear need to address problems associated with two of the three 220/66kV transformers proposed for replacement (ranked 58 and 50 out of a possible risk ranking of 69).[498] The AER accepts SP AusNet's advice that a run-to-failure policy for transformers does not represent an efficient outcome given the large incremental costs associated with unplanned rather than planned replacement (eg. reliability implications, urgent equipment purchase, OH&S costs).[499]

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[497] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.A139.

[498] SP AusNet advises that the third transformer is in reasonable internal and external condition, and has been assigned a ranking of 45.

[499] SP AusNet, Transformer replace on failure analysis, pp.1-2.

SP AusNet advises that, based on experience, refurbishment of ageing transformers such as those at RTS may increase reliability but does not necessarily extend the life of the assets. PB disagrees with this assertion, and considers that an amount of around $2m (as-incurred, $2007-08) proposed by SP AusNet for refurbishment of two transformers at RTS over the forthcoming regulatory control period will sufficiently mitigate the associated asset failure risk in the forthcoming regulatory control period.[500] The AER agrees with this analysis, and considers the refurbishment option to be a reasonable means by which to address the issues associated with these two transformers. Further, SP AusNet has clearly demonstrated the benefits associated with refurbishment of these two transformers by proposing an allowance in its forecast capex program.

On this basis the AER considers that SP AusNet has not demonstrated that replacement of these three transformers in the forthcoming regulatory control period is a more efficient option than refurbishment. The AER has made a downward adjustment of $20.6m to SP AusNet's forecast capex allowance, to reflect the benchmark expenditure that would be incurred by an efficient TNSP.

With respect to the 66kV switchyard, the AER considers that SP AusNet has not presented a clear technical or economic justification for the complete redevelopment of the switchyard prior to 2013-14. SP AusNet has not presented a thorough economic analysis of the various options available to mitigate the asset failure risks in the 66kV switchyard. SP AusNet claims that there are a number risks in the 66kV switchyard that warrant attention, most notably the risk associated with failure of twelve of the twenty-two 66kV CBs.[501] However on the basis of the CB risk model outputs, the AER agrees with PB that deferral of the capex associated with the 66kV switchyard beyond 2013-14 (ie. around 1-2 years minimum) will not result in a material increase in the risk of failure of these 66kV CBs at RTS over the forthcoming regulatory control period.

On this basis, the AER considers that SP AusNet has not demonstrated that the expenditure associated with the redevelopment of the 66kV switchyard reasonably reflects prudent and efficient expenditure required over the forthcoming regulatory control period. The AER has made a downward adjustment of $23.0m to SP AusNet's forecast capex allowance to reflect this assessment.

Finally, in relation to the subsidence of the yard, the AER has reviewed the documentation submitted in support of the RTS project and agrees with PB that SP AusNet should consider the range of cost effective remedial actions suggested in the GHD report.

In sum, the AER accepts PB's recommendations with respect to the proposed redevelopment of RTS, and considers that SP AusNet's proposed capex for the following items does not reasonably reflect prudent and efficient capex required to meet the capex objectives:

[500] SP AusNet, Program for transformer refurbishments, p.5

[501] The outputs of SP AusNet's CB risk model indicate that these twelve CBs are currently (as at 2008) in the 'Medium/Low' risk category, and are expected to move into the 'Medium' risk category by 2013, corresponding to a Mean-Time-Between-Failure (MTBF) of around 15 years.

- The incremental cost of reconfiguring the 220kV switchyard into a twelve CB breaker-and-a-half arrangement.
- The cost for replacement of three transformers.
- The cost for the redevelopment of the 66kV switchyard.

In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex, (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment to SP AusNet's forecast capex allowance of $51.7m, as shown in table B.1.3.

Table B.1.3: AER's conclusion – Refurbishment of RTS ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	0.00	0.00	0.00	7.20	44.80	37.70	89.70
PB's recommended adjustment	0.00	0.00	0.00	-7.20	-24.50	-20.00	-51.70
AER's adjustment	0.00	0.00	0.00	-7.20	-24.50	-20.00	-51.70
AER's conclusion	0.00	0.00	0.00	0.00	20.30	17.70	38.00

* Capex as-incurred

B.1.3 Transformer replacements

B.1.3.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the Transformer replacement program has an expected capital cost of $28.8m (as-incurred, $2007-08) spread across each year of the forthcoming regulatory control period. The transformer replacement program represents 3.4% of SP AusNet's total proposed forecast capex allowance.

The scope of the transformer replacement program involves replacement of five transformers (12 separate tanks) at four locations across SP AusNet's network:

(1) Dederang: replacement of three single-phase (330/220kV, 225 MVA) units. These are the oldest main-tie units in SP AusNet's fleet (aged between 42-46 years), and rank 46, 44 and 34 in the transformer risk model.[502] The proposed replacement in 2009 will allow for some augmentation and is timed to coordinate with VENCorp's proposed installation of a 4th unit at Dederang TS around 2011-12. SP AusNet advises that whilst there are no incipient faults with these transformers at present, the risk of failure is increasing with time.

(2) Bendigo: replacement of one transformer (230/67.5/22kV, 125 MVA) comprising of a bank of six separate units aged between 44-48 years, and ranked moderately (39, 35, 29, 29, 20 and 20) in the transformer risk model. The replacement is timed to coincide with SP AusNet's Glenrowan Terminal

[502] SP AusNet's transformer risk model assigns a ranking between 0 and 69 to each of the 217 units in the fleet, with a ranking of 69 indicating the unit with the highest relative risk of failure.

Station rebuild, and includes some augmentation to account for Powercor's augmentation plans at Bendigo Terminal Station. SP AusNet has also identified technical issues not captured in the risk models (eg. the failure of one of the six units will lead to damage to the others due to the physical layout at the station, lack of spares for tap changer mechanisms, and excessive noise), which it states further supports the need for replacement in the forthcoming regulatory control period.

(3) Yallourn: replacement of one transformer (230/11kV, 54 MVA) with an age of about 50 years and a ranking of 58 in the transformer risk model. It is timed for replacement at the earliest opportunity (2011-12) given its deteriorating state. It has a history of failures and costly maintenance and is supported with a full spare unit. SP AusNet advises that it has served beyond its expected life, mainly due to the fact that it only serves a small load (around 12% of its capacity).

(4) Metropolitan fleet: replacement of two (2) out of twenty-one (21) three-phase transformers (220/66kV, 150 MVA) aged between 38-43 years and assigned a ranking of between 34 and 64 in the transformer risk model. Of a fleet of twenty-one metro transformers, six are proposed for replacement as part of station projects (one at Thomastown, three at Richmond, and two at Geelong). SP AusNet advises that the remaining fifteen metropolitan units are exhibiting excessive ageing rates due to high load growth and the Victorian planning criteria. The most critical units are at West Melbourne, Springvale, Morwell and Ringwood, and SP AusNet advises that the selection of the two units to be replaced in the forthcoming regulatory control period will be determined on the basis of the relative rates of deterioration between the units.

B.1.3.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation regarding the transformer replacement program, and makes the following conclusions:

- Some of the transformers proposed for replacement are not driven purely by SP AusNet's risk-related needs, but the need to replace appears to be primarily driven by its customers' augmentation plans (eg. at Dederang and Bendigo).
- It is not apparent how SP AusNet's proposal takes account of existing strategic spares and the units to be released as part of its station rebuild projects (eg. at Bendigo and in the Metropolitan area). Given that strategic spares are available to SP AusNet, the consequences of failure are minimised and replacement has not been justified in all cases.
- Although SP AusNet's proposal delivers on its strategy to target single-phase units and reduce the relative asset failure risk level on a fleet-wide basis over the forthcoming regulatory control period, it has not provided an economic justification for replacement of individual transformers ranked relatively low in the transformer risk model (eg. at Bendigo and in the Metropolitan area).
- With respect to the ageing Yallourn unit, given the low load supplied SP AusNet has not demonstrated that replacement with a 150 MVA unit is efficient and prudent.

Based on these findings, PB recommends removing an amount of $19.3m from SP AusNet's forecast capex allowance. PB recommends an allowance of $9.5m to account for the replacement of one metropolitan transformer and 50% of the cost of replacement/augmentation of the Dederang transformer (with VENCorp to justify the remaining 50%).[503]

B.1.3.3 AER's considerations

Taking into account PB's advice, the AER considers that SP AusNet has not justified its proposed replacement of all of these five transformers as prudent and efficient expenditure over the forthcoming regulatory control period. The AER considers that the pressing need for replacement of assets on a stand-alone basis must be demonstrated in order for the associated proposed capex to meet the capex objectives in the NER. The AER is informed by PB's comments in relation to the application of the detailed transformer risk model that:

- the proposed program is materially larger than the current program and this appears to capture more units that are rated below 45
- of the 57 units proposed for replacement, there will be 34 (60%) that have a transformer condition score less than the highest ranked unit not being replaced.[504]

The AER has reviewed the documentation provided by SP AusNet and considered the proposed replacements on an individual location-by-location basis.

In relation to the SP AusNet's proposed replacement of the third Dederang transformer, the AER agrees with PB's assessment that although the three units rank 'moderately high' in the transformer risk model (46, 44, and 34 respectively), the need to replace based on the risk of failure alone is marginal. In addition, SP AusNet has assigned a spare unit to the state grid, which significantly mitigates the consequences of failure.[505] PB considers that the potential augmentation benefits at Dederang are high, as evidenced by VENCorp's proposal to install a fourth transformer at Dederang (330/220kV, 340MVA) between the years 2010 and 2013. PB makes the following comment:

> On the balance of the information presented by SPA and VENCorp, we are not satisfied both projects (ie. the replacement of one of the existing units and the installation of a fourth unit) are needed.[506]

On this basis PB considers that SP AusNet and VENCorp should coordinate their replacement/augmentation plans. PB recommends the inclusion of an allowance of

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[503] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.A126-A130.

[504] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.114. Note that the highest ranked unit not proposed for replacement has a ranking of 46, and that the threshold risk ranking for a detailed review by SP AusNet is 40.

[505] SP AusNet, *Strategic spares policy*, p.11. The AER considers that the state grid spare could also be used at Dederang to limit outages should VENCorp proceed with its works.

[506] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.A129.

50% of the cost of replacement of the third transformer at Dederang (around $5m) be included in SP AusNet's forecast capex allowance.

Given PB's advice, the AER considers that the combination of SP AusNet's and VENCorp's plans at Dederang could result in inefficient excess capacity at the expense of Victorian consumers. On the basis that SP AusNet has not justified the need for replacement in the forthcoming regulatory control period based on the risk and consequences of failure alone, the AER does not consider an allowance for replacement of the third Dederang transformer reasonably reflects prudent and efficient expenditure required over the forthcoming regulatory control period.[507] On this basis the AER has made a downward adjustment of $9.9m to SP AusNet's forecast capex allowance to remove the replacement cost of the transformer at Dederang.

In relation to the six separate units at Bendigo SP AusNet advises that based on age, expected deterioration and associated increased maintenance, these units will be due for replacement in 5-10 years.[508] These six units rank quite low in the transformer risk model (ranked between 20 and 39), and are all below SP AusNet's stated threshold for detailed review (40). Therefore the AER considers that SP AusNet has not demonstrated a clear need for replacement in the forthcoming regulatory control period. As PB suggests, the timing of the replacement at Bendigo appears primarily driven by the need to coordinate with augmentation projects, rather than on the basis of asset failure risk alone.

The AER does not consider that the technical issues identified by SP AusNet add weight to its justification for replacing these transformers at Bendigo. In addition, given that there are opportunities to use spares expected to be released from Glenrowan (six single phase units with a failure risk ranking between 22 and 36), the consequences of failure are significantly mitigated in the event that an unexpected failure should occur over the forthcoming regulatory control period. On this basis the AER has made a downward adjustment of $6.1m to SP AusNet's forecast capex allowance to remove the replacement cost of the transformers at Bendigo.

With respect to the proposed replacement of the Yallourn transformer, the AER agrees with PB's analysis that, given the low load supplied by the unit (around 6.5 MVA), SP AusNet has not justified replacement with a unit of capacity 150 MVA. However the AER considers that SP AusNet has demonstrated a clear need to replace this ageing and deteriorating unit (ranked 58 in the transformer risk model) so as to maintain the quality, security and reliability of supply. The AER considers that a reasonable, prudent and efficient option at Yallourn is to replace the existing transformer with a 220/11kV 10 MVA unit, which is more reflective of the expected load. On this basis the AER has made a downward adjustment of $1.9m to

[507] The AER considers that the alleviation of the constraint on the 330/220kV tie transformers is best addressed by VENCorp as part of its planned augmentation program for the forthcoming regulatory control period.

[508] SP AusNet, Transformer replacement program, p.8.

SP AusNet's forecast capex allowance to remove the incremental cost of a large replacement unit at Yallourn.[509]

Finally in relation to the proposed replacement of two transformers to address the asset failure risk in the metropolitan fleet (220/66kV 150 MVA), the AER considers that SP AusNet has not established a clear need for expenditure to replace two units. SP AusNet has not fully taken account of the potentially more cost efficient alternatives to replacement available. The AER agrees with PB that there are five 220/66kV metropolitan transformers with a high risk ranking of 50 or above that warrant attention in the forthcoming regulatory control period.[510] The AER considers that SP AusNet has demonstrated a clear need for an allowance to replace only one of these transformers, based on the likelihood that SP AusNet has more efficient options to address the risks associated with the remaining four units. In particular the AER considers that:

- The 220/66kV transformer at Brooklyn Terminal Station (BLTS) should be prioritised by SP AusNet for replacement as part of the $51.9m ($m, 2007-08) 'Redevelopment of BLTS' project in the forthcoming regulatory control period.
- The completion of the 'Refurbishment of the Geelong Terminal Station' project (GTS) in 2010-11 will release spare units that are in a serviceable condition.[511]
- There is an allowance to refurbish units at Richmond Terminal Station (RTS) in the forthcoming regulatory control period.
- There is a spare metropolitan 220/66kV transformer that can significantly mitigate the consequences of failure.

On this basis the AER accepts PB's recommendation to include an allowance of $4.5m to cover the cost of replacing one of the metropolitan transformers only (most likely at WMTS).[512] The AER has therefore made a downward adjustment of $4.5m to SP AusNet's forecast capex allowance.

[509] The allowance of $1.9m ($2007-08) for replacement at Yallourn is based on a conservative estimate of the cost of purchase and installation of a 220/11kV 10MVA transformer – estimated at 50% of SP AusNet's benchmark costs for the purchase and installation of a 220/11kV 150 MVA unit. The allowance is inclusive of a real capex escalation of 8.5% and an inflation adjustment of 2.6%.

[510] These five 220/66kV transformers and their associated risk rankings are located at WMTS (64), BLTS (57), SVTS (55), and MWTS (54) and RTS (50).

[511] PB notes that the units to be replaced at GTS appear to be in good condition relative to other units that SP AusNet propose to retain in service.

[512] The AER notes that SP AusNet has proposed an allowance of $24.3m ($2007-08) to redevelop the 220/66kV switchyard at WMTS in 2013/14. Despite the relatively poor condition of this particular transformer at WMTS, SP AusNet advises that the transformer replacements at WMTS will not commence until the next regulatory control period commencing 2014-15.

Based on PB's benchmark transformer costs, the AER considers that SP AusNet's cost estimates for transformer replacements are reasonably prudent and efficient.[513]

In summary, the AER is not satisfied that SP AusNet's proposed capex for the following items reasonably reflects prudent and efficient capex required to meet the capex objectives:

- Replacement of transformers at Bendigo.
- Replacement of the third transformer at Dederang.
- The incremental cost of like-for-like replacement of the transformer at Yallourn over replacement with a unit more reflective of the expected load.
- Replacement of one metropolitan transformer.

In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex, (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment to SP AusNet's proposed forecast capex allowance of $22.4m, as shown in table B.1.4.

Table B.1.4: AER's conclusion – Transformer replacements ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.50	5.40	2.00	5.50	7.90	4.50	28.80
PB's recommended adjustment	-3.50	-5.40	2.50	-5.50	-2.90	-4.50	-19.30
AER's adjustment	-3.50	-5.40	2.50	-3.60	-7.90	-4.50	-22.40
AER's conclusion	0.00	0.00	4.50	1.90	0.00	0.00	6.40

* Capex as-incurred

B.1.4 Replacement of station and control centre SCADA

B.1.4.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the 'Replacement of station and control centre SCADA' project has an expected capital cost of $43.9m (as-incurred, $2007-08) spread across the forthcoming regulatory control period. The SCADA project represents 5.1% of SP AusNet's total proposed forecast capex allowance.

SP AusNet advises that the SCADA system is integral to the real-time operation of the transmission network and that there are significant legal and reliability implications associated with failure of the system.

[513] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.57-58. The AER has considered the views of the EUCV with respect to the availability of relatively cheap transformers from the Chinese market. After seeking advice from SP AusNet and PB, the AER understands that there are still some quality concerns with respect to sourcing transformers from new markets such as China.

The scope of the project involves replacement, upgrade and enhancements to the SCADA systems at control centres and substations. SP AusNet states that the key drivers for its proposed capex include: compliance with regulatory and other legal obligations; replacement of its existing out-dated systems; and upgrades and enhancements to allow greater functionality. In assessing the various alternatives available to achieve its objectives, SP AusNet selected the 'incremental upgrade' option over the 'complete system replacement' option. The 'do nothing' option was considered infeasible due to the ongoing need to meet compliance obligations, security concerns, and the expected decline in software vendor support.

SP AusNet advises that a major upgrade to SCADA systems usually occurs in a five-year cycle and involves replacement and upgrade of both IT infrastructure and software. SP AusNet advises that the last 'major' upgrade to the SCADA system was undertaken in 2003.[514]

B.1.4.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation relating to the SCADA project, and has made the following conclusions:

- Although SP AusNet has not presented evidence of an increase in failures or a reduction in availability of the SCADA system, a 'do nothing' option is considered inconsistent with past practice and inappropriate given the ongoing need to ensure these critical systems remain secure.
- The SCADA project delivers strategic benefits consistent with SP AusNet's Asset Management Strategy.
- There may be some common scope between the SCADA project and some of SP AusNet's other proposed forecast capex projects.[515]
- SP AusNet has not justified the augmentation and enhancement components of the expenditure as prudent and efficient.

On this basis PB recommends a reduction of $8.2m associated with the enhancement and improvement components in the capex allowance for the SCADA project.[516]

B.1.4.3 AER's considerations

Notwithstanding the fact that SP AusNet appears to be meeting its legal and compliance obligations with its existing SCADA systems, the AER considers that there is a clear ongoing need to maintain the integrity of the SCADA systems so as to ensure the quality, reliability and security of supply. The primary driver for the expenditure appears to be the maintenance of secure IT and operating systems, rather

[514] SP AusNet, Victorian electricity transmission network – Control and monitoring systems (SCADA) program, p.4.

[515] In particular, the 'Management of secondary systems' project ($11m) and the 'Replacement of station controls' project ($9m).

[516] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.A147-A149.

than specific NEMMCO or legal obligations. The AER accepts that an assumed effective life of around five years for SCADA systems is reasonable and prudent given the apparent speed at which IT assets become technologically obsolete. The AER notes that no major SCADA projects (>$5m) have been undertaken by SP AusNet in the current regulatory control period. On this basis the AER is satisfied that SP AusNet has demonstrated a clear need to replace and upgrade its SCADA systems in the forthcoming regulatory control period.

In relation to the proposed enhancement and improvement expenditure, the AER appreciates the need for SP AusNet to have systems in place such as advanced monitoring and control schemes. However given that SP AusNet already has an advanced condition monitoring system in place and has successfully implemented condition-based replacement policies, the economic need for further enhancement is unclear. In any case, the AER agrees with PB that SP AusNet has not presented a clear economic case to justify the amount of $8.2m as prudent and efficient capex.

Finally, while accepting PB's view that there may be some common scope across a number of SP AusNet's forecast (secondary asset class) projects, the AER agrees that it is not possible to form a conclusion on this issue without having undertaken a detailed review of the individual projects highlighted by PB.

Given PB's advice, the AER is not satisfied that the $8.2m allowance for the enhancement aspects of SP AusNet's proposed SCADA project reasonably reflects prudent and efficient costs required to meet the capex objectives at cl. 6A.6.7(a) of the NER. In making this assessment the AER has taken into account:

- SP AusNet's actual and expected capex during the current regulatory control period (cl. 6A.6.7(e)(5))
- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

On this basis, the AER has made a downwards adjustment to SP AusNet's forecast capex allowance of $8.2m, as shown in table B.1.5.

Table B.1.5: AER's conclusion – Replacement of station and control centre SCADA ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	12.40	7.90	6.50	5.40	7.50	4.20	43.90
PB's recommended adjustment	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
AER's adjustment	-1.30	-1.30	-1.40	-1.40	-1.40	-1.40	-8.20
AER's conclusion	11.10	6.60	5.10	4.00	6.10	2.80	35.70

* Capex as-incurred

B.1.5 Response capability for undefined works

B.1.5.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the 'Response capability for undefined works' project (hereafter 'RCUW') has an expected capital cost of $5.5m (as-incurred, $2007-08) forecast to be incurred in 2008-09. The RCUW project represents 0.6% of SP AusNet's total proposed forecast capex allowance.

Subsequent to submission of its revenue proposal, SP AusNet revised the timing profile of its capex cost estimate of $5.5m for this project to spread it evenly across each year of the forthcoming regulatory control period.

The project scope cannot be described in any specific terms, however SP AusNet advises that it is intended to cover asset-based events that are difficult to forecast in programmed works. SP AusNet advises that there were in excess of $45m worth of unforeseen asset-related works undertaken during the current regulatory control period, and states that an allowance is required going forward because:

> To ignore these events means acceptance of the interruption to programs and higher risks for the company arising from delayed asset replacement.[517]

B.1.5.2 Consultant's review

PB undertook a review of SP AusNet's documentation relating to the RCUW project, and considers that:

- The inclusion of a minor works allowance with an undefined scope is inappropriate given the efficiency based structure of the ex ante regulatory regime.
- SP AusNet has proposed an amount of $20.8m ($m, 2007-08) to improve its response capability across a range of its asset classes.
- There are a number of risk mitigation allowances already included in SP AusNet's proposed forecast capex allowance (eg. contingency allowance in station rebuild projects, 'brownfield factors' as high as 11% observed in a number of projects).

On this basis PB recommends removal of the allowance, given its view that SP AusNet has sufficient discretion within its overall replacement program to ensure minor unforeseen risks can be addressed.[518]

B.1.5.3 AER's considerations

The AER considers that SP AusNet's proposed allowance for response capability of undefined scope does not reasonably reflect prudent and efficient expenditure in

[517] SP AusNet, *Minor Works Program*, p.5.

[518] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.A118-A120.

accordance with cl. 6A.6.7 of the NER. The AER, as informed by the analysis in PB's report, considers that SP AusNet's estimation processes are accurate down to a fine level of detail (eg. through SP AusNet's recently implemented 'Expert Estimator'), and it is clear that SP AusNet has rigorously and systematically prepared its capex forecast using a bottom-up approach.

Further, SP AusNet states that it has undergone a learning process from its experience undertaking major asset replacements in the current regulatory control period.[519] The AER expects that SP AusNet has incorporated this experience in its scoping and costing processes in preparing its capital cost estimates for the forthcoming regulatory control period. Given this learning process, the AER does not consider that the experience from the current regulatory control period (in terms of project forecast and out-turn costs) necessarily provides a valid proxy for the likely experience in the forthcoming regulatory control period.

The AER agrees with PB that it is highly unlikely that SP AusNet's planned capex program will be compromised by unforeseen events such as those listed by SP AusNet in its documentation. SP AusNet has proposed response capability allowances totalling $20.8m related to five of its six network-related asset classes, as well as contingencies elsewhere in its proposed program. Given these proposed allowances, the AER considers that an additional non-descriptive allowance such as the RCUW is not required. Whilst recognising that unforeseen events can occur, the AER considers that under an ex ante incentive regime SP AusNet's asset management practices must be flexible enough to address risks in a systematic and efficient way.

In sum, the AER is not satisfied that the $5.5m allowance for the RCUW project reasonably reflects prudent and efficient capex required to meet the capex objectives at cl. 6A.6.7(a) of the NER. Specifically, the AER considers that SP AusNet's proposed capex for this project does not reasonably reflect benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4)).

On this basis the AER has made a downward adjustment of $5.5m to SP AusNet's proposed forecast capex allowance to remove the allowance for the RCUW project, as set out in table B.1.6.

Table B.1.6: AER's conclusion – Response capability for undefined works ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	5.50	0.00	0.00	0.00	0.00	0.00	5.50
SP AusNet's variation to Proposal	-4.58	0.92	0.92	0.92	0.92	0.90	0.00
SP AusNet's updated Proposal	0.92	0.92	0.92	0.92	0.92	0.90	5.50
PB's recommended adjustment	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
AER's adjustment	-0.92	-0.92	-0.92	-0.92	-0.92	-0.90	-5.50
AER's conclusion	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Capax as-incurred

[519] SP AusNet, Electricity Transmission Revenue Proposal 2008/09-2013/2014, p.32

B.1.6 Replacement of post-type Current Transformers

B.1.6.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the 'Replacement of post-type Current Transformers' project (hereafter the 'targeted CT replacement program') has an expected capital cost of $24.5m (as-incurred, $2007-08) spread across the forthcoming regulatory control period. The targeted CT replacement program represents 2.9% of SP AusNet's total proposed forecast capex allowance.

The project scope involves replacement of 73 sets of single-phase CTs and associated Current Voltage Transformers (CVTs) at 14 different terminal stations, across four different voltage levels. SP AusNet advises that this is a compliance-based capex allowance driven by the need to mitigate the OH&S risk associated with explosive CT failure.[520] SP AusNet advises that its targeted CT replacement program is focussed on replacement of 20-25 year old units, while the station refurbishment program is intended to address the asset failure risks associated with the older units, mostly aged between 35-45 years.

SP AusNet's detailed CT risk model calculates a life expectancy for each of the 1 120 CTs subject to a condition assessment.[521] SP AusNet has effectively established a target over the forthcoming regulatory control period to replace all CTs with a life expectancy of 10 years or less (totalling 580 sets).[522] The outputs of the CT risk model indicate that this policy will drive an improvement in CT asset failure risk (relative to 2003 levels) of 75%, of which the targeted CT replacement program accounts for around 30%.

In considering alternatives, SP AusNet presented an economic analysis to support its proposition that the costs associated with a CT failure under the 'do nothing' option (including emergency clean-up costs and OH&S compliance costs) exceed the cost of planned replacement.

B.1.6.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation relating to the targeted CT replacement program, and makes the following high-level conclusions:

- The replacement of post-type CTs is driven by a clear need to mitigate the risk of explosive fire and the associated OH&S risks.
- The range of alternatives considered by SP AusNet are reasonable and comprehensive, and the selection of the 'planned replacement by asset class' option is prudent.

[520] SP AusNet notes that there have been five major CT failures since 2002, with four of the five failed CTs aged between 20-25 years.

[521] This represents around 60% of SP AusNet's entire CT fleet of around 1,850 units.

[522] SP AusNet, Overview of use of risk analysis in capital planning, 5 June 2007, p.5.

- The proposed timing of the replacement expenditure for the forthcoming regulatory control period appears aggressive and has captured a large proportion of units with a life expectancy extending beyond 2014.
- The costs of the individual CT replacements appears efficient based on benchmark costs, after adjusting for the incremental cost of six 500kV CTs (around $1.7m total) that are no longer included SP AusNet's proposed replacement program.[523]

During the review SP AusNet advised that condition monitoring of CT assets is undertaken on an ongoing and continuous basis, and therefore the outputs of the CT risk model underpinning the replacement decision are rather volatile and dynamic. On this basis SP AusNet stresses that the capex associated with the targeted CT replacement program should be considered an allowance only. PB considers that the approach outlined by SP AusNet to prioritise CT replacements according to its dynamic condition assessments represents a sensible and practical approach.

On the basis of the CT risk model outputs, PB identifies a significant proportion (around 64%) of CTs proposed for replacement with a life expectancy greater than or equal to 7 years, with over 25% having a life expectancy of 10 years. PB considers that SP AusNet has not demonstrated a clear need to replace these units within the forthcoming (six year) regulatory control period. On this basis PB has systematically reviewed SP AusNet's proposed targeted CT replacement program on an asset-by-asset basis, and recommends a reduction in the number of CTs to be replaced from 73 sets to 42 sets. PB comments that:

> Our approach has considered the life expectancy to establish priorities, the location to establish efficiencies, and used the same cost of the replacements as proposed by SPA to arrive at a pragmatic capex allowance.[524]

PB estimates that by capturing the most critical 41 sets of CTs a reduction in overall CT risk of around 20% is achievable over the forthcoming regulatory control period, ensuring that the overall CT risk profile in 2014 is very similar to that in 2008.

PB recommends a downward adjustment to SP AusNet's forecast capex allowance of $12.0m. It considers that an allowance of $12.5m reflects the efficient and prudent amount required to implement its targeted CT replacement program.

B.1.6.3 AER's considerations

The AER considers that SP AusNet has established a clear need to replace high-risk CTs due to the unacceptable risk associated with explosive CT failure. SP AusNet has provided historical evidence that the risk of failure is genuine and realistic for CTs assessed as being in poor internal and external condition. The AER agrees with SP AusNet's analysis that the costs of replacement in the aftermath of an explosive CT failure clearly outweigh the costs of planned replacement. As identified by PB, it

[523] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.A11-A115.

[524] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, p.A113.

is clear that the relevant question relates to whether SP AusNet's proposed timing of CT replacements over the forthcoming regulatory control period is efficient and prudent.

The AER agrees with PB that SP AusNet has not justified its proposed replacement of each of the 73 sets of CTs as prudent and efficient expenditure for the forthcoming regulatory control period. The AER considers that the pressing need for replacement of assets on a stand-alone basis must be demonstrated in order for the associated proposed capex to meet the capex objectives in the NER. The AER agrees with PB that the targeted CT replacement program should be considered an allowance only given the dynamic nature of the condition assessments, and the need to adjust priorities as a result. However, it is evident that PB has approached this review on a systematic asset-by-asset basis, and the AER supports this approach given the availability of the most up-to-date risk model information from SP AusNet.

PB recommends allowing replacement of all units with a life expectancy of six years or less, to align replacement plans with the length of the forthcoming regulatory control period. The life expectancies of the 32 CTs that PB has not recommended for inclusion in the allowance for SP AusNet's targeted CT replacement program therefore range between seven and ten years. For units with a life expectancy greater than six years PB has only recommended replacement where it considers there are efficiencies achievable by combining a number of CT replacements at the one terminal station (a total of 15 units at Yallourn, Moorabool and Templestowe terminal stations). As table B.1.7 indicates, the majority (around 60%) of CTs that PB has not recommended for replacement have been assessed by SP AusNet as having a life expectancy of 9-10 years.

Table B.1.7: PB's recommendations – CTs not recommended for replacement

Station	Life Expectancy (Years) - Number of units			
	7	**8**	**9**	**10**
West Melbourne (WMTS)	2	2		2
South Morang (SMTS)	2		2	2
Springvale (SVTS)		1		1
Dederang (DDTS)		5	1	
Hazelwood TS (HWTS)		1	1	
Heywood (HYTS)				4
Rowville (ROTS)				2
Hazelwood PS (HWPS)				1
Wodonga (WOTS)				2
Tyabb (TBTS)				1

Source: SP AusNet, AER analysis[525]

The AER considers that a replacement threshold for the forthcoming (six year) regulatory control period based on a life expectancy of 10 years is unnecessarily aggressive and inefficient, given that many of these assets are forecast to have a life expectancy of between 3 and 4 years as at 2013-14. SP AusNet has not demonstrated that replacement of these units is needed to ensure that the quality, reliability and security of supply is maintained throughout the forthcoming regulatory control period.

[525] Based on SP AusNet's latest CT risk model outputs (May 2007).

Having regard to capex factor (4) of cl. 6A.6.7(e) of the NER, the AER has removed SP AusNet's proposed allowance for the replacement of those CTs in table B.1.7 assessed as having a life expectancy of 9 years or greater.[526]

In relation to those units with a life expectancy of 7-8 years which have not been recommended for replacement by PB, the AER makes the following conclusions:

- SP AusNet's proposed replacement of two units at WMTS with life expectancies of 7 years appears prudent given the OH&S risk towards the end of the forthcoming regulatory control period. Given this assessment, the AER considers that the proposed replacement of a further two units at WMTS with a life expectancy of 8 years is reasonable and efficient.
- SP AusNet's proposed replacement of two units at SMTS with a life expectancy of 7 years is prudent given the OH&S risk towards the end of the forthcoming regulatory control period. Given that the remaining four units proposed for replacement at SMTS have been assessed as being in reasonable condition, the AER considers it efficient for SP AusNet to keep these assets in service for the duration of the forthcoming regulatory control period and undertake a targeted replacement of the two worst condition CTs only.
- SP AusNet has not demonstrated that its proposed replacement of six units at SVTS and DDTS with a life expectancy of 8 years reasonably reflects prudent and efficient capex required over the forthcoming regulatory control period.
- Given the planned works in the 500kV switchyard as part of the HWTS refurbishment over the forthcoming regulatory control period, the AER considers that the replacement of two further 500kV CTs with life expectancies of 8-9 years as part of the targeted CT program reasonably reflects prudent and efficient capex.

The AER accepts PB's conclusion that the need to replace CTs with a life expectancy of greater than six years over the forthcoming regulatory control period is marginal based on the probability of failure alone. However given the dynamic nature of the CT risk model outputs, and the significant OH&S consequences associated with failure, the AER considers that the proposed replacement of 34 units with a life expectancy of seven years or less is reasonably prudent and efficient. Further, given the opportunities to capture some reasonable efficiencies at some stations, the AER considers that the proposed replacement of 15 units with a life expectancy of greater than seven years reasonably reflects prudent and efficient capex.

In sum, the AER is not satisfied that a capex allowance for 24 of the 73 sets of CTs proposed by SP AusNet for replacement reasonably reflects prudent and efficient capex required to meet the capex objectives at cl. 6A.6.7(a) of the NER. Specifically, the AER considers that SP AusNet's proposed capex on these CTs does not reasonably reflect benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4)).

[526] The AER also agrees with PB's recommendation to reduce the number of CVTs to be replaced (from 17 to 6), given that SP AusNet has not demonstrated a pressing need.

The AER and has made a downward adjustment of $9.09m to SP AusNet's proposed capex allowance of $24.5m, as set out in table B.1.8.[527] The AER has included an allowance of $15.41m for the targeted CT replacement program (49 sets) that will allow SP AusNet the flexibility to prioritise replacement whilst still achieving a significant (>20%) reduction in its level of overall CT risk.

Table B.1.8: AER's conclusion – Replacement of post-type CTs ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	4.80	6.10	5.20	4.20	2.70	1.40	24.50
PB's recommended adjustment	-2.00	-3.60	-2.80	-2.50	-1.00	0.00	-12.00
AER's adjustment	-2.00	-3.60	-2.80	-1.37	-0.42	1.10	-9.09
AER's conclusion	2.80	2.50	2.40	2.83	2.28	2.50	15.41

* Capex as-incurred

B.1.7 Non-network – Vehicles

B.1.7.1 SP AusNet's proposal

SP AusNet's cost information templates indicate that the Non-network – Vehicles project (hereafter 'vehicle replacement program') has an expected capital cost of $8.4m (as-incurred, $2007-08) spread evenly across the forthcoming regulatory control period. The vehicle replacement program is the second largest forecast non-network capex project, and represents 1.0% of SP AusNet's total proposed forecast capex allowance.

SP AusNet states that it has the following objectives with respect to its vehicle replacement program:

- Maintain the number of vehicles in its fleet at approximately 110, consistent with the current period.
- Replace vehicles at the end of the warranty period (normally 3 years), or after 100 000 kms.

This policy effectively amounts to replacement of around 37 vehicles per annum at an average cost of just over $38 000 each.

B.1.7.2 Consultant's review

PB undertook a detailed review of SP AusNet's documentation relating to the vehicle replacement program, and identifies that for vehicles replaced between February and March 2007, the average age and kilometres at replacement is 5 years and 80 000 km respectively. On this basis PB questioned the reasonableness of SP AusNet's proposed three year 100 000 km replacement profile.

[527] The AER has included the allowance for replacement of two 330kV units at SMTS and four 220kV units at WMTS in years five and six (respectively) of the forthcoming regulatory control period, given that replacement is not expected to be required until late in the period. The allowance for replacement of two 500kV units at HWTS has been included in 2011-12 to align with the wider refurbishment project planned at the station.

During the review SP AusNet advised that the replacement profile in the current period does not reflect a smooth 3 year, 100 000 km profile in each year due to:

- the merger with TXU networks in 2004
- significant replacement activity in 2001
- the lumpiness of actual replacement expenditure over a five year period.

Despite SP AusNet's claims, PB considers that SP AusNet's vehicle replacement cycle should reflect current practice, and on this basis recommends a downward adjustment of $3.42m to SP AusNet's proposed allowance for the vehicle replacement program (to reflect a 5-year replacement cycle).[528]

B.1.7.3 AER's consideration

The AER accepts PB's recommendation to amend SP AusNet's allowance for the vehicle replacement program to reflect the replacement profile observed during the current period.

The AER notes SP AusNet's advice with respect to the validity of PB's sample period as a proxy for the forthcoming regulatory control period. The AER understands that a vehicle replacement profile may not be smooth in any given year, and that a 3 year, 100 000 km profile is not an uncommon policy among businesses. However the AER considers that the actual data provided by SP AusNet is compelling evidence that vehicles have been replaced (in 2007) according to an average 5 year 80 000 km profile during the current period. Given this historical evidence, the AER does not consider that an expenditure allowance based on a 3 year 100 000 km replacement reasonably reflects a prudent and efficient capex allowance.

The AER has reviewed the documentation provided by SP AusNet with respect to the cost of vehicles purchased[529] and considers that an amount of around $38 000 ($2007-08) reasonably reflects an efficient average cost.

Given PB's analysis, the AER is not satisfied that SP AusNet's proposed capex for vehicle replacements based on a five-year replacement cycle reasonably reflects a prudent and efficient cost required to meet the capex objectives at cl. 6A.6.7(a) of the NER. In making this assessment the AER has taken into account:

- SP AusNet's actual and expected capex during the current regulatory control period (cl. 6A.6.7(e)(5)), and
- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4)).

[528] PB Strategic Consulting, *SP AusNet Revenue Reset: An independent review*, 16 August 2007, pp.155-157.

[529] SP AusNet, Vehicles sold 2004.xls.

On this basis the AER has made a downward adjustment of $3.42m to SP AusNet's proposed allowance for the vehicle replacement program, as set out in table B.1.9. The allowance of $4.98m is based on replacement of 22 vehicles per annum at an average cost of $38 178 each.

Table B.1.9: AER's conclusion – Support the Business – Vehicles ($m, 2007-08)*

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.40	1.40	1.40	1.40	1.40	1.40	8.40
PB's recommended adjustment	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
AER's adjustment	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-3.42
AER's conclusion	0.83	0.83	0.83	0.83	0.83	0.83	4.98

*Capex as-incurred

The AER has also made a downward adjustment of $0.16m per annum in the PTRM to reflect the lower forecast amount relating to vehicle disposals (see chapter 8 of this draft decision for this adjustment). The revised disposals amount of $0.24m per annum is based on replacement of 22 vehicles per annum with an average residual value of $10 810. After reviewing SP AusNet's documentation the AER considers the average forecast residual value of vehicles disposed to be reasonable.[530]

[530] SP AusNet, *Vehicles info*.

Appendix B.2 Extension of findings to remaining station rebuild / refurbishment projects

This appendix contains the AER's assessment of SP AusNet's proposed forecast capex for the seven station rebuild / refurbishment projects not included as part of PB's sample project review.

The AER has reviewed the following documentation provided by SP AusNet during the detailed project review:

- SP AusNet's detailed risk model outputs for power transformers, circuit breakers (CBs) and current transformers (CTs).[531]
- SP AusNet's NPV analyses relating to each of the station rebuild / refurbishment projects proposed by SP AusNet for inclusion in its forecast capex proposal.[532]
- Relevant project-specific documentation provided by SP AusNet with its initial proposal.

The AER has analysed the information provided by SP AusNet with respect to the seven station projects not subject to PB's detailed sample project review, on a station-by-station basis.

B.2.1 Redevelopment of Brooklyn Terminal Station

SP AusNet's cost information templates indicate that the 'Redevelopment of Brooklyn Terminal Station' project ('BLTS') has a forecast capex cost of $51.9m ($m, 2007-08) expected to be incurred in the years 2010-11 – 2012-13.

The scope of the BLTS project involves replacement of a significant number of 220/66kV and 220/22kV transformers, as well as redevelopment of the 220kV and 66kV switchyards.

The asset failure risk ranking of the specific assets proposed by SP AusNet for replacement as part of the BLTS project (Transformers, CBs, CTs) are set out in tables B.2.1 – B.2.3 below.

[531] SP AusNet, TRANSFORMER RANKING LIST (21 May 07), 22 May 2007; CB Model Output (21 May 07), 23 May 2007; and CT Data, 28 May 2007.

[532] SP AusNet, Emails to AER/PB, 25 May 2007 and 6 June 2007. Following PB's findings that a 5% real capex escalator had been incorrectly included in the NPV analysis for the 'Refurbishment of HWPS Switchyard' project, SP AusNet supplied the NPV analyses for the remaining station projects in order to verify that real capex escalations had not been included elsewhere.

Table B.2.1: BLTS – Outputs from Transformer risk model

Power Transformers at BLTS	Ranking in risk model			
	>39	30-39	20-29	<20
Units proposed by SP AusNet for replacement	**19**	**3**	**1**	
Type of units proposed				
220/22kV	2	3	1	
220/66kV	15			
66/22kV	1			
Other / Voltage not specified	1			

Table B.2.2: BLTS – Outputs from CB risk model

Circuit Breakers at BLTS	Ranking in risk model (MTBF yrs)				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement		**5**	**1**	**23**	
Type of units proposed					
220kV CBs				5	
22kV CBs		5	1		
66kV CBs				18	

Table B.2.3: BLTS – Outputs from CT risk model

Current Transformers at BLTS	Ranking in risk model (Life expectancy)					
	0-8 yrs	9-10 yrs	11-12 yrs	13-15 yrs	16-20 yrs	> 21yrs
Units proposed by SP AusNet for replacement	**10**	**14**	**8**	**1**		
Type of units proposed						
220kV CTs	9	10	7	1		
500kV CTs						
Other / Voltage not specified	1	4	1			

The outputs of the transformer risk model (see table B.2.1) indicate that 16 units at BLTS have been assigned a risk ranking of 50 or above. On this basis the AER considers that there is a clear need to replace transformers at BLTS during the forthcoming regulatory control period. Although a number of 220/22kV units proposed by SP AusNet for replacement have been assigned a lower risk ranking (ie. below 40), the AER considers that replacement of these units is efficient given the clear need for a large volume of transformer replacements at BLTS. The AER expects that the transformer replacements undertaken by SP AusNet at BLTS over the forthcoming regulatory control period will release a number of spare single-phase 220/22kV transformers for use elsewhere on the system.

The AER considers, however, that the risk model outputs provided by SP AusNet do not support the proposed redevelopment of the entire 220kV and 66kV switchyards.

In relation to the proposed redevelopment of the 220kV switchyard, table B.2.2 indicates that the five 220kV CBs (four bays) proposed for replacement by SP AusNet at BLTS have been assigned a 'Medium/Low' risk ranking, corresponding to an MTBF of greater than 19.38 years. The timing of the 220kV switchyard redevelopment appears to be driven by the asset failure risk of the 220kV CTs, given that all 31 CTs at BLTS have been assigned a life expectancy of less than 12 years (table B.2.3). SP AusNet's NPV analysis for the 220kV switchyard redevelopment indicates that under the 'Do nothing' option, the replacement of the 220kV switchyard can be deferred out to 2017, but only with upfront refurbishment costs.[533] In addition, SP AusNet's NPV analysis indicates that there are significant community (risk) costs associated with upfront refurbishment of the 220kV switchyard under the deferred replacement option (around $4.33m in 2008-09).

Nuttall Consulting questions the basis for the upfront refurbishment costs given the relatively good condition of the 220kV CBs. Further, regarding the risk cost included in the NPV analysis for BLTS, Nuttall Consulting comments that:

> As this risk cost is so significant in determining the least cost option, it would be expected that its derivation would be discussed. For example, it is not clear what assumptions have been made on the outage times, the level of load at risk, and contingency plans to limit the lost load should an outage eventuate. It is noted that without this risk cost, but still maintaining the refurbishment cost, the deferred option has the lowest NPV.[534]

On this basis, the AER considers that SP AusNet has not demonstrated that its proposed replacement of four 220kV CBs at BLTS reasonably reflects prudent and efficient capex required to meet the capex objectives over the forthcoming regulatory control period. The AER has made a downward adjustment of $5.16m to remove the allowance to replace these four CBs from SP AusNet's forecast capex allowance.[535] The AER considers that sufficient allowance remains for SP AusNet to prioritise replacement of the high-risk CTs (and 22kV CBs) at BLTS over the forthcoming regulatory control period.

Finally, the AER considers that the CB risk model outputs do not support the proposed redevelopment of the 66kV switchyard, given that all 18 CBs have been assigned a 'Med/Low' risk of failure (table B.2.2). The primary driver for replacement of the 66kV CBs at BLTS appears to be the strategic objective of phasing out all 'LG4C' units over the next fifteen years. The AER has examined the CB risk model outputs, and considers that there is not currently any evidence of an LG4C fleet

[533] SP AusNet, BLTS 220kV and Transformers Eco Eval Summary.xls, 6 June 2007

[534] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.4.

[535] In the absence of a direct capex cost estimation for these four CBs in SP AusNet's NPV analysis for the 220kV switchyard redevelopment at BLTS, the AER has applied SP AusNet's average unit costs for replacement of a 220kV CB, of $1.29m per unit. The AER has sourced this unit cost from the PB report (PB Strategic Consulting, *SP AusNet Revenue Reset – An independent review*, 16 August 2007, p.59).

problem requiring attention.[536] The AER considers that the mere fact that the fleet is large does not justify advanced replacement. In addition, SP AusNet's NPV analysis for the 66kV switchyard redevelopment indicates that the upfront replacement option is more expensive that the deferred replacement option if replacement is deferred until 2018 as stated.[537] On this basis the AER has made a downward adjustment of $5.4m to remove the allowance to redevelop the 66kV switchyard from SP AusNet's forecast capex allowance.[538]

In summary, on the basis of the information reviewed for the BLTS redevelopment, the AER considers that SP AusNet's proposed capex for the following elements of the scope of works at BLTS does not reasonably reflect prudent and efficient capex required to meet the capex objectives:

- Replacement of CBs within the 220kV switchyard.
- Redevelopment of the 66kV switchyard.

In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment of $10.6m to SP AusNet's proposed forecast capex allowance, as set out in table B.2.4.

Table B.2.4: AER's conclusion – Redevelopment of BLTS ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	0.00	0.00	5.19	29.87	16.80	0.00	51.85
AER's adjustment	0.00	0.00	-0.54	-8.27	-1.75	0.00	-10.56
AER's conclusion	0.00	0.00	4.65	21.60	15.05	0.00	41.29

B.2.2 Refurbishment of Thomastown Terminal Station

SP AusNet's cost information templates indicate that the 'Refurbishment of Thomastown Terminal Station' project ('TTS') has a forecast capex cost of $43.7m ($m, 2007-08) expected to be incurred in the years 2008-09 – 2011-12.

[536] According to the CB risk model outputs, the highest ranked LG4C 66kV CB has been assigned a 'Med/Low' failure risk, corresponding to an MTBF of 24.22 yrs.

[537] SP AusNet, BLTS 66kV Eco Eval Summary.xls, 6 June 2007. Under 'Option 1', SP AusNet states that the 66kV switchyard redevelopment will be deferred until 2018, however the relevant cash flows appear in the NPV analysis in the years 2013-15.

[538] The capex cost estimate of $5.4m has been sourced from SP AusNet's NPV analysis for the 66kV switchyard redevelopment at BLTS ('Option 3').

The scope of the TTS project involves replacement of two 220/66kV transformers (the 'B2' and 'B3' units), as well as redevelopment of the 220kV and 66kV switchyards.[539]

The asset failure risk rankings of the specific assets proposed by SP AusNet for replacement as part of the TTS project (Transformers, CBs) are set out in tables B.2.5 – B.2.6 below.

Table B.2.5: TTS – Outputs from Transformer risk model

Power Transformers at TTS	**Ranking in risk model**			
	>39	30-39	20-29	<20
Units proposed by SP AusNet for replacement	**7**	**2**		
Type of units proposed				
220/66kV	7	2		

Table B.2.6: TTS – Outputs from CB risk model

Circuit Breakers at TTS	**Ranking in risk model (MTBF yrs)**				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement	**20**			**19**	**2**
Type of units proposed					
220kV CBs	20				
66kV CBs				19	
66kV Capacitor bank CBs					2

The outputs of the transformer risk model (table B.2.5) indicate that the 220/66kV 'B2' transformer at TTS has been assigned a relatively high risk ranking of between 38 and 58 (multiple single phases). On this basis the AER considers that there is a clear need to replace the B2 transformer at TTS during the forthcoming regulatory control period. In relation to the 220/66kV 'B3' transformer (assigned a relatively low risk ranking of 32), the AER considers that SP AusNet has not demonstrated that replacement is required during the forthcoming regulatory control period.
SP AusNet's NPV analysis for the TTS redevelopment indicates that it has not considered the deferral option for the B3 transformer.[540] On this basis the AER considers that SP AusNet has not justified that its proposed replacement of the B3 transformer during the forthcoming regulatory control period reasonably reflects capex that would be incurred by a prudent and efficient TNSP in meeting the capex objectives (cl. 6A.6.7(e)(4)).

[539] SP AusNet, Thomastown Terminal Station Refurbishment, 17 January 2007, p.5.

[540] SP AusNet, TTS Economic Evaluation Summary Sheets.xls, 6 June 2007.

Nuttall Consulting reviewed the AER's analysis and SP AusNet's documentation relating to the proposed replacement of the B3 transformer at TTS, and comments that:

> …there is little discussion in the project summary of SP AusNet's considerations with regards to the need for the replacement of both transformers at the same time…provided that the second unit does not need a major refurbishment to remain in service, there does not appear to be a clear technical reason why it would not be prudent and efficient to defer the replacement of the second unit.[541]

The AER has made a downward adjustment of $6.0m to remove the cost of replacing the B3 transformer from SP AusNet's proposed forecast capex allowance.[542]

The AER considers that the CB risk model outputs (table B.2.6) provided by SP AusNet clearly support the proposed redevelopment of the 220kV switchyard at TTS, given that all of the 220kV CBs have been assigned a 'Very high' risk of failure. SP AusNet's NPV analysis supports the upfront 'Brownfield replacement' of these high-risk assets within the 220kV switchyard at TTS.[543]

In relation to the proposed redevelopment of the 66kV switchyard, table B.2.6 indicates that all of the 66kV CBs proposed for replacement by SP AusNet at TTS (16 bays) have been assigned a 'Medium/Low' risk ranking, corresponding to an MTBF of between 19.38 and 29.82 yrs. SP AusNet advises that the primary driver for replacement of the 66kV switchyard at TTS is the risk associated with such a large fleet of LG4C units:

> The large fleet represents a significant risk for SP AusNet if a rapid failure mode develops in that fleet, because the company would not be able to address such an event when there are over 200 circuit breakers connected to the transmission system.[544]

The AER does not consider that the reasons provided by SP AusNet justify replacement of CBs within the 66kV switchyard at TTS over the forthcoming regulatory control period, given that all of these CBs have been assessed by SP AusNet as being in relatively good condition. The AER has examined the CB risk model outputs, and considers that there is not currently any evidence of a LG4C fleet problem requiring attention.[545] The AER considers that the mere fact that the fleet is large does not justify advanced replacement.

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[541] Nuttall Consulting, Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance, 22 August 2007, p.6.

[542] SP AusNet's NPV analysis for TTS indicates that an amount of $14.1m is proposed for replacement of the two 220/66kV 150MVA transformers at TTS. The AER considers that removal of an amount of $6m for the B3 transformer is reasonable, with sufficient allowance ($8.1m) remaining for SP AusNet to replace the B2 transformer and undertake works around the B3 transformer while it remains in service.

[543] SP AusNet, TTS Economic Evaluation Summary Sheets.xls, 6 June 2007.

[544] SP AusNet, Thomastown Terminal Station Refurbishment, 17 January 2007, p.4.

[545] According to the CB risk model outputs, the highest ranked LG4C 66kV CB has been assigned a 'Med/Low' failure risk, corresponding to an MTBF of 24.22 yrs.

SP AusNet's NPV analysis for the 66kV switchyard redevelopment at TTS indicates that the 'Brownfield replacement' option is marginally cheaper than the 'Deferred replacement' option, primarily due to:

- The significant refurbishment costs included in the cost estimate for the deferral option.
- The significant additional capex costs included in the cost estimate for the deferral option associated with replacement of CTs, VTs (Voltage Transformers), and the installation of oil bunding around the LG4C CBs.

The AER considers that such a major overhaul may not be warranted over the forthcoming regulatory control period, given:

- The 66kV CBs at TTS have been assessed by SP AusNet as being in relatively good condition (MTBF>19.38 yrs)
- SP AusNet's advice that the LG4C CBs are currently relatively inexpensive in terms of maintenance costs (planned and unplanned).[546]

In relation to the inclusion of capex for oil bunding, the AER considers that SP AusNet may have inappropriately included a capex allowance for oil bunding in the deferral option, given that it has proposed an allowance of $11.6m for oil containment at all remaining stations as part of a separate forecast capex project.[547] It is also unclear from SP AusNet's documentation why oil bunding around 66kV assets is required under the deferral option at Thomastown and not at other stations.

Finally, it appears that SP AusNet has not considered the extent to which the inclusion of a significant amount of secondary works in its proposed scope of works for the 66kV switchyard redevelopment at TTS affects the selection of the most efficient alternative.[548]

Therefore on the basis of the available information, the AER is not satisfied that SP AusNet has demonstrated that upfront replacement of the 66kV CBs (LG4C units) at TTS represents expenditure likely to be incurred by a prudent and efficient TNSP in meeting the capex objectives (cl. 6A.6.7(e)(4)). On this basis the AER has made a downward adjustment of $5.20m to remove the allowance to redevelop the 66kV switchyard at TTS from SP AusNet's forecast capex allowance.[549]

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[546] SP AusNet, AMS – Victorian Electricity Transmission Network: Circuit Breakers – Summary of issues and strategies, 9 January 2007, p.21.

[547] SP AusNet, *Continuing environmental program for water and oil management,* 12 February 2007. It is unclear from SP AusNet's documentation whether this project relates to bunding around all plant within switchyards, or just to bunding around power transformers.

[548] SP AusNet presented separate NPV analyses for primary and secondary works at TTS.

[549] SP AusNet's NPV analysis for TTS indicates that an amount of $3.06m is proposed for the redevelopment of the 66kV switchyard at TTS (16 CB bays), and a total of $4.82m is proposed for the 220kV and 66kV secondary works at TTS (36 CB bays in total). On this basis the AER has removed an amount of $5.20m to account for both the 66kV primary works ($3.06m) as well as a reasonable estimate of $2.14m for the 66kV secondary works in 16 of the 36 bays (all voltages) proposed for replacement.

In summary, on the basis of the information presented by SP AusNet, the AER considers that SP AusNet's proposed capex for the following elements of the scope of works at TTS does not reasonably reflect prudent and efficient capex required to meet the capex objectives:

- Replacement of the B3 transformer.
- Replacement of CBs within the 66kV switchyard.

In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex, (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment of $11.2m to SP AusNet's proposed forecast capex allowance, as set out in table B.2.7.

Table B.2.7: AER's conclusion – Refurbishment of TTS ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.90	22.92	15.37	1.54	0.00	0.00	43.73
AER's adjustment	-2.14	-9.06	0.00	0.00	0.00	0.00	-11.20
AER's conclusion	1.76	13.86	15.37	1.54	0.00	0.00	32.53

B.2.3 Redevelopment of Ringwood Terminal Station

SP AusNet's cost information templates indicate that the 'Redevelopment of Ringwood Terminal Station' project ('RWTS') has a forecast capex cost of $29.4m ($m, 2007-08) expected to be incurred over the entire 2008-09 – 2013-14 regulatory control period.

The scope of the RWTS project involves replacement of one 66/22kV and two 220/22kV transformers, as well as redevelopment of the 22kV, 220kV and the 66kV switchyards.[550]

The asset failure risk ranking of the specific assets proposed by SP AusNet for replacement as part of the RWTS project (Transformers, CBs) are set out in tables B.2.8 – B.2.9 below.

[550] SP AusNet, Ringwood Terminal Station Redevelopment, 16 October 2006, p.5.

Table B.2.8: RWTS – Outputs from Transformer risk model

Power Transformers at RWTS	Ranking in risk model			
	>39	30-39	20-29	<20
Units proposed by SP AusNet for replacement	**4**	**3**		
Type of units proposed				
220/22kV	3	3		
66/22kV	1			

Table B.2.9: RWTS – Outputs from CB risk model

Circuit Breakers at RWTS	Ranking in risk model (MTBF yrs)				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement	**10**	**4**		**7**	
Type of units proposed					
220kV CBs	10				
22kV CBs		4			
66kV CBs				7	

The outputs of the transformer risk model (table B.2.8) indicate that the 220/22kV 'No.1' transformer at RWTS has been assigned a relatively high risk ranking of between 48 and 53 (three single phases). On this basis the AER considers that there is a clear need to replace the No.1 transformer at TTS during the forthcoming regulatory control period. The AER notes SP AusNet's advice that the 66/22kV unit is used to provide voltage control at RWTS given that the 220/22kV transformers do not have on-load tap changers. Given that the 66/22kV unit is ranked relatively high in the transformer risk model (ranked 44), the AER considers that replacement of this unit as part of the RWTS station project is reasonable.

In relation to the 220/22kV 'No.2' transformer (assigned a relatively low risk ranking of between 32 and 38), the AER considers that the need for replacement in the forthcoming regulatory control period is marginal. However given SP AusNet's advice that there will be no voltage control on the No.2 transformer should the 66/22kV unit be retired, the AER considers it reasonable and prudent for SP AusNet to replace the No.2 transformer over the forthcoming regulatory control period. The AER expects that the three single-phase 220/22kV units making up the No.2 transformer to be replaced at RWTS during the forthcoming regulatory control period will be released as spares for use elsewhere on the network as required.

The AER considers that the CB risk model outputs (table B.2.9) provided by SP AusNet clearly support the proposed redevelopment of the 220kV switchyard at RWTS, given that all of the 220kV CBs are assigned a 'Very high' or 'High' risk of failure. Further SP AusNet's NPV analysis for the 220kV switchyard redevelopment at RWTS indicates that the upfront replacement option is clearly the least-cost

alternative to address the 220kV CB failure risks at RWTS.[551] This NPV result is primarily driven by the significant additional capex costs associated with major CB refurbishments under the deferral option. Given the relatively poor condition of the 220kV CBs at RWTS, the AER considers that this assumption is reasonable.

In relation to the proposed redevelopment of the 66kV switchyard, table B.2.9 indicates that all of the 66kV CBs proposed for replacement by SP AusNet at RWTS have been assigned a 'Medium/Low' risk ranking, corresponding to an MTBF of between 19.38 and 29.82 yrs. The primary driver for replacement appears to be SP AusNet's strategic objective to phase out all LG4C units over the next fifteen years. SP AusNet's NPV analysis for the redevelopment of the 66kV switchyard at RWTS indicates that the upfront replacement option is marginally cheaper than the 'Deferred replacement' option, primarily due to the inclusion of a capex cost for the upfront replacement of a number of CTs and an unspecified 'inefficiency factor' included in the deferral option only.[552]

Despite the questionable need for replacement of 66kV CBs at RWTS based on asset condition, and the marginal NPV result in favour of the upfront replacement option, the AER considers that replacement of these units may be required given:

- the opportunity to release additional spare 66kV (LG4C) CBs in relatively good condition for use in maintenance programs elsewhere on the system (cl. 6A.6.7(e)(7))
- the relatively small number of 66kV CBs at RWTS
- the fact that SP AusNet has demonstrated a clear need for its proposed replacement of all other assets at RWTS as part of this project.

This assessment should be considered in conjunction with the AER's conclusions regarding SP AusNet's proposed 'Replacement of 66kV CBs' project at section 4.6.4 of this draft decision.

In summary, on the balance of the information provided by SP AusNet, the AER considers that SP AusNet has demonstrated that the capex associated with the RWTS project reasonably reflects prudent and efficient expenditure required to meet the capex objectives in cl. 6A.6.7(e)(7) of the NER. On this basis the AER has not made any further adjustments to SP AusNet's proposed forecast capex allowance at RWTS.

[551] SP AusNet, RWTS 220kV Switchyard Eco Eval Summary.xls, 6 June 2007.

[552] SP AusNet, RWTS 66kV Eco Eval Summary.xls, 6 June 2007. The AER notes that the CT risk model outputs do not contain a relative failure risk ranking for these ('Tyree and Plessey Ducon') CTs. The 'inefficiency factor' or 'cost penalty' is applied by SP AusNet as a percentage of capex costs for the deferred replacement options in the NPV analyses for a number of station projects. It is intended to capture the additional costs associated with staged replacement and multiple design and project management related expenditures.

B.2.4 Refurbishment of Glenrowan Terminal Station

SP AusNet's cost information templates indicate that the 'Refurbishment of Glenrowan Terminal Station' project ('GNTS') has a forecast capex cost of $21.3m ($m, 2007-08) expected to be incurred over the period 2011-12 – 2013-14.

The scope of the GNTS project involves replacement of one 220/66kV transformer, as well as redevelopment of the 220kV and 66kV switchyards.

The asset failure risk rankings of the specific assets proposed by SP AusNet for replacement as part of the GNTS project (Transformers, CBs, CTs) are set out in tables B.2.10 – B.2.12 below.

Table B.2.10: GNTS – Outputs from Transformer risk model

Power Transformers at GNTS	**Ranking in risk model**			
	>39	30-39	20-29	<20
Units proposed by SP AusNet for replacement		**4**	**2**	
Type of units proposed				
220/66kV		4	2	

Table B.2.11: GNTS – Outputs from CB risk model

Circuit Breakers at GNTS	**Ranking in risk model (MTBF yrs)**				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement	**8**			**7**	
Type of units proposed					
220kV CBs	8				
66kV CBs				6	
66kV Capacitor bank CBs				1	

Table B.2.12: GNTS – Outputs from CT risk model

Current Transformers at GNTS	**Ranking in risk model (Life expectancy)**					
	0-8 yrs	9-10 yrs	11-12 yrs	13-15 yrs	16-20 yrs	> 21yrs
Units proposed by SP AusNet for replacement	**5**	**5**	**4**	**9**	**4**	
Type of units proposed						
220kV CTs	2	5	4	9	4	
Other / Voltage not specified	3					

The outputs of the transformer risk model (table B.2.10) indicate that the need for replacement of the 'No.1' 220/66kV transformer at GNTS (six single-phase units) is

marginal based on the risk of failure alone (relative failure risk ranking of between 22 and 36). SP AusNet's documentation relating to the GNTS project indicates that the primary driver for replacement of the 'No.1' unit at GNTS is to coordinate with VENCorp's augmentation plans at the station in 2012.[553] SP AusNet presented an NPV analysis with various options relating to an integrated replacement of transformers at Glenrowan and Bendigo terminal stations.

On balance the AER considers that although the 'No. 1' transformer at GNTS is in relatively good condition, SP AusNet's proposed replacement reasonably reflects prudent and efficient capex, given:

- the opportunity to release six spare single phase 220/66kV units in relatively good condition for use elsewhere on the network
- the opportunities for efficiencies to be captured by coordinating the transformer replacement with other planned works at GNTS (in particular the 220kV switchyard) and the planned augmentation at GNTS.

This assessment should be considered in conjunction with PB's analysis and the AER's conclusions with respect to SP AusNet's proposed 'Transformer replacement' program at section B.1.3 (appendix B.1) of this draft decision.

In relation to the 220kV switchyard at GNTS, the AER considers that the CB risk model outputs (table B.2.11) provided by SP AusNet clearly support the proposed replacement of the 220kV CBs at GNTS given that all of the 220kV CBs (6 bays) have been assigned a 'Very high' risk of failure. Although there are a number of 220kV CTs proposed for replacement at GNTS with a relatively long life expectancy in table B.2.12 (between 13 and 20 years), the AER considers that the replacement is justified as part of the 220kV switchyard redevelopment. Given the relatively small unit cost of 220kV CTs (relative to 220kV CBs) the AER considers that there are reasonable opportunities for SP AusNet to capture economic efficiencies by packaging the 220kV switchyard work together at GNTS. This is confirmed by SP AusNet's NPV analysis for the redevelopment of the 220kV switchyard at GNTS, which indicates that the 'Brownfield replacement' option is significantly cheaper than the targeted replacement option.[554]

In relation to SP AusNet's proposed redevelopment of the 66kV switchyard at GNTS, table B.2.12 indicates that all of the 66kV CBs (LG4C type) proposed for replacement by SP AusNet at GNTS have been assigned a 'Medium/Low' risk ranking, corresponding to an MTBF of between 19.38 and 29.82 yrs. The primary driver for replacement appears to be SP AusNet's strategic objective to phase out all LG4C units over the next fifteen years. SP AusNet has not presented an economic analysis justifying redevelopment of the 66kV switchyard at GNTS. Given that the 66kV CBs at GNTS have a relatively low risk of failure, and the fact that the 66kV switchyard makes up a significant proportion of the assets at GNTS, the AER is not satisfied that SP AusNet's proposed redevelopment of the 66kV switchyard at GNTS reasonably

[553] SP AusNet, Glenrowan Terminal Station Redevelopment, 16 October 2006, p.4.

[554] SP AusNet, GNTS 220kV summary.xls, 6 June 2007.

reflects prudent and efficient expenditure required to meet the capex objectives. In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment of $4.92m to SP AusNet's proposed forecast capex allowance for works at GNTS to remove the cost associated with redevelopment of the 66kV switchyard,[555] as set out in table B.2.13.

Table B.2.13: AER's conclusion – Refurbishment of GNTS ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	0.00	0.00	0.00	0.43	6.82	14.07	21.32
AER's adjustment	0.00	0.00	0.00	0.00	-2.46	-2.46	-4.92
AER's conclusion	0.00	0.00	0.00	0.43	4.37	11.62	16.41

B.2.5 Refurbishment of Keilor Terminal Station

SP AusNet's cost information templates indicate that the 'Refurbishment of Keilor Terminal Station' project ('KTS') has a forecast capex cost of $39.6m ($m, 2007-08) expected to be incurred over the period 2008-09 – 2012-13.

The scope of the KTS project involves redevelopment of the 220kV, 66kV and 500kV switchyards. SP AusNet has presented four separate NPV analyses for the KTS redevelopment, including:

1) redevelopment of the 220kV switchyard and the 66kV switchyard (combined),
2) redevelopment of the 500kV switchyard, and
3) the required secondary works for all three switchyards (combined).[556]

The asset failure risk ranking of the specific assets proposed by SP AusNet for replacement as part of the KTS project (CBs, CTs) are set out in tables B.2.14 – B.2.15 below.

[555] The total capex cost for replacement of the 220kV switchyard and the 220/66kV transformer in SP AusNet's NPV analyses is $16.41m. Therefore given that SP AusNet has not provided an NPV analysis for the replacement of the 66kV switchyard, the AER has assumed that the difference between the total project cost ($21.32m) and the cost of these specific elements ($16.41m) represents the proposed capex cost for the replacement of the 66kV switchyard, of $4.92m.

[556] SP AusNet, KTS Station Refurbishment Eco Eval..xls, 6 June 2007.

Table B.2.14: KTS – Outputs from CB risk model

Circuit Breakers at KTS	Ranking in risk model (MTBF yrs)				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement	**23**		**6**	**10**	
Type of units proposed					
220kV CBs	17		6		
500kV CBs	6				
66kV CBs				10	

Table B.2.15: KTS – Outputs from CT risk model

Current Transformers at KTS	Ranking in risk model (Life expectancy)					
	0-8 yrs	9-10 yrs	11-12 yrs	13-15 yrs	16-20 yrs	> 21yrs
Units proposed by SP AusNet for replacement	**16**	**11**	**17**	**12**	**8**	
Type of units proposed						
220kV CTs	1	6	14	11	7	
500kV CTs	11	4	3	1	1	
Other / Voltage not specified	4	1				

The AER considers that the CB risk model outputs (table B.2.14) provided by SP AusNet support the proposed replacement of the 220kV CBs at KTS, given that a large proportion of the 220kV CBs have been assigned a 'Very high' risk of failure. Although there are a significant number of 220kV CTs proposed for replacement at KTS with a relatively long life expectancy in table B.2.15 (between 13 and 20 years), the AER considers that the replacement of 220kV CTs is justified as part of the 220kV switchyard redevelopment. Given the relatively small unit cost of 220kV CTs (relative to 220kV CBs) the AER considers that there are reasonable opportunities for SP AusNet to capture efficiencies by packaging the 220kV switchyard work together at KTS.

The combined NPV analysis for the 220kV and 66kV switchyards indicates that the 'Brownfield replacement' option is marginally cheaper than both the targeted and the deferred replacement options due to higher refurbishment costs for the latter, particularly in relation to the 220kV switchyard.[557] Given the relatively poor condition of many of the 220kV CBs at KTS, the AER considers that the need for refurbishment under a deferral option is not unreasonable. Although it is difficult to make a firm conclusion given that the two switchyards have been combined into a single NPV analysis, on the basis of the available information the AER is satisfied that the proposed redevelopment of the 220kV switchyard reasonably reflects prudent and efficient capex in accordance with the NER.

[557] ibid.

With respect to SP AusNet's proposed redevelopment of the 500kV switchyard, the AER considers that the CB risk model outputs indicate a clear need to replace 500kV CBs at KTS, given that all six units have been assigned a 'Very high' failure risk (table B.2.14). Further, the relative condition of a significant number of the 500kV CTs at KTS also supports the need for redevelopment of the 500kV switchyard. SP AusNet's NPV analysis for the 500kV switchyard redevelopment indicates that the 'Brownfield option' is the least-cost alternative.[558] On this basis the AER is satisfied that the proposed capex associated with the 500kV switchyard redevelopment at KTS reasonably reflects the capex likely to be incurred by a prudent and efficient TNSP.

In relation to the SP AusNet's proposed redevelopment of the 66kV switchyard at KTS, table B.2.14 indicates that all of the 66kV CBs (LG4C type) proposed for replacement by SP AusNet at KTS have been assigned a 'Medium/Low' risk ranking. The primary driver for replacement appears to be SP AusNet's strategic objective to phase out all LG4C units over the next fifteen years. SP AusNet's combined 220/66kV switchyard NPV analysis indicates that upfront replacement is the least-cost alternative. However it is difficult to make a firm conclusion with respect to the 66kV switchyard redevelopment given that the two switchyards have been combined into a single NPV analysis. In addition, it appears that SP AusNet has not considered the extent to which the inclusion of the associated 66kV secondary works impacts its options analysis for the 66kV switchyard redevelopment.

It is noted that SP AusNet has included a 'cost inefficiency' factor of 29% for staged replacement of the 66kV switchyard at KTS, which significantly impacts the NPV analysis.[559] Based on the information provided, the AER considers that SP AusNet has not demonstrated that such a significant inefficiency factor is likely for the 66kV works under the deferral option at KTS. The AER notes that the inefficiency factor included by SP AusNet in its NPV analyses for other station projects ranges between 15-20%.

In summary, based on the information provided by SP AusNet the AER is not satisfied that redevelopment of the 66kV switchyard at KTS reasonably reflects prudent and efficient capex required to meet the capex objectives over the forthcoming regulatory control period, due to the following:

- The relatively good condition of the 66kV CBs at KTS.
- The ambiguity of the NPV analyses presented by SP AusNet for its proposed works at KTS in terms of a justification for the 66kV switchyard in isolation.
- SP AusNet has not justified the 29% cost inefficiency associated with the deferral option for the 66kV switchyard.

In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))

[558] ibid.

[559] ibid.

- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment of $5.2m to remove the allowance for redevelopment of the 66kV switchyard at KTS, as set out in table B.2.16.[560]

Table B.2.16: AER's conclusion – Refurbishment of KTS ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	15.14	12.22	0.25	3.92	8.09	0.00	39.62
AER's adjustment	-1.56	-3.64	0.00	0.00	0.00	0.00	-5.20
AER's conclusion	13.58	8.58	0.25	3.92	8.09	0.00	34.42

B.2.6 Refurbishment of Hazelwood Terminal Station

SP AusNet's cost information templates indicate that the 'Refurbishment of Hazelwood Terminal Station' project ('HWTS') has a forecast capex cost of $19.4m ($m, 2007-08) expected to be incurred over the period 2009-10 – 2011-12.

The scope of the HWTS project involves refurbishment of the 500kV switchyard.

The asset failure risk ranking of the specific assets proposed by SP AusNet for replacement as part of the HWTS project (CBs, CTs) are set out in tables B.2.17 – B.2.18 below.[561]

[560] The AER's adjustment in table B.2.16 is based on SP AusNet's NPV analysis for the 220/66kV switchyard redevelopment at KTS, which indicates that the capital cost for replacement of 66kV assets under the 'brownfield' replacement option is $5.2m. The AER has not made a downward adjustment for secondary capital costs associated with the 66kV switchyard, given that 75% of the bays to be replaced at KTS are at the 220kV and 500kV level.

[561] Note that SP AusNet has proposed replacement of a number of other CTs at HWTS as part of the 'Replacement of post-type CTs' project. The CTs proposed for replacement shown in table B.2.18 only relate to the HWTS refurbishment project. The AER's assessment of the 'Replacement of post-type CTs' project is discussed at Appendix B.1 (section B.1.6) of this draft decision.

Table B.2.17: HWTS – Outputs from CB risk model

Circuit Breakers at HWTS	Ranking in risk model (MTBF yrs)				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement	**8**				
Type of units proposed					
500kV CBs	8				

Table B.2.18: HWTS – Outputs from CT risk model

Current Transformers at HWTS	Ranking in risk model (Life expectancy)					
	0-8 yrs	9-10 yrs	11-12 yrs	13-15 yrs	16-20 yrs	> 21yrs
Units proposed by SP AusNet for replacement	**8**	**1**	**5**	**6**	**5**	**1**
Type of units proposed						
500kV CTs	2	1	4	5	4	1
Other / Voltage not specified	6		1	1	1	

The outputs of the CB risk model (table B.2.17) indicate a clear need for replacement of the 500kV CBs at HWTS, given that all eight units proposed for replacement have been assigned a 'Very high' failure risk ranking. The need for station-wide 500kV CT replacement appears more marginal based on the CT risk model outputs in table B.2.18. However given the relatively small cost of 500kV CTs (relative to 500kV CBs) and the opportunities to capture reasonable efficiencies by combining replacement of CBs and CTs at HWTS, the AER is satisfied that the proposed capex cost associated with replacement of assets within the 500kV switchyard reasonably reflects prudent and efficient capex. The AER expects that the redevelopment of the 500kV switchyard will release a significant number of 500kV CTs (5-10) for use as spares elsewhere on the system.

On this basis the AER is satisfied that the proposed capex associated with the 500kV switchyard redevelopment at HWTS is prudent and efficient, and has made no adjustment to SP AusNet's forecast capex allowance.

B.2.7 Refurbishment of Geelong Terminal Station

SP AusNet's cost information templates indicate that the 'Refurbishment of Geelong Terminal Station' project ('GTS') has a forecast capex cost of $28.5m ($m, 2007-08) expected to be incurred over the period 2008-09 – 2010-11.

The scope of the GTS project involves replacement of two 220/66kV transformers, as well as refurbishment of the 220kV and 66kV switchyards.

SP AusNet has presented two separate NPV analyses for its proposed works at GTS:

1) Redevelopment of the 220kV switchyard.

2) Redevelopment of the 66kV switchyard and replacement of two 220/66kV transformers (combined).

The asset failure risk ranking of the specific assets proposed by SP AusNet for replacement as part of the GTS project (Transformers, CBs, CTs) are set out in tables B.2.19 – B.2.21 below.

Table B.2.19: GTS – Outputs from Transformer risk model

Power Transformers at GTS	**Ranking in risk model**			
	>39	30-39	20-29	<20
Units proposed by SP AusNet for replacement	**2**			
Type of units proposed				
220/66kV	2			

Table B.2.20: GTS – Outputs from CB risk model

Circuit Breakers at GTS	**Ranking in risk model (MTBF yrs)**				
	Very high	High	Medium	Med/Low	Low
	<8.81 yrs	8.81 - 12.92 yrs	12.92 - 19.38 yrs	19.38 - 29.82 yrs	29.82 - 38.76 yrs
Units proposed by SP AusNet for replacement		**5**		**11**	
Type of units proposed					
220kV CBs		5			
66kV CBs				10	
66kV Capacitor bank CBs				1	

Table B.2.21: GTS – Outputs from CT risk model

Current Transformers at GTS	**Ranking in risk model (Life expectancy)**					
	0-8 yrs	9-10 yrs	11-12 yrs	13-15 yrs	16-20 yrs	> 21yrs
Units proposed by SP AusNet for replacement	**13**	**6**	**8**	**3**	**1**	**1**
Type of units proposed						
220kV CTs	13	6	8	3	1	1

SP AusNet advises that the 220/66kV transformers are proposed for replacement later in the forthcoming regulatory control period.[562] The outputs of the transformer risk model (see table B.2.19) marginally support the need for replacement of the 'No.1' and 'No.3' transformers, as both have been assigned a relatively high risk ranking of 42. It is difficult to make a firm conclusion as to whether the replacement of these two transformers is economically justified in isolation given that SP AusNet has combined the transformer replacements with the 66kV switchyard into a single NPV analysis.

[562] SP AusNet, GTS Redevelopment Summary Sheet v2, 2 November 2006.

Despite the lack of a clear economic justification in SP AusNet's documentation for upfront replacement of these two transformers, on balance the AER considers that the associated capex is reasonably prudent and efficient, given:

- the relatively high risk ranking of the two units
- the opportunity to release spare 220/66kV units in serviceable condition for use elsewhere on the network
- the opportunities for efficiencies to be captured by coordinating the transformer replacement with other planned works at GTS (in particular the 220kV switchyard).

This assessment should be considered in conjunction with PB's analysis and the AER's conclusions with respect to SP AusNet's proposed 'Transformer replacement' program at section B.1.3 (appendix B.1) of this draft decision.

The AER considers that the CB and CT risk model outputs (tables B.2.20 – B.2.21) indicate a clear need to address issues associated with the condition of the 220kV switchyard at GTS. All of the 220kV CBs (5 bays) have been assessed as having a 'High' risk of failure, and the majority of 220kV CTs at GTS have a life expectancy of ten years or less. However given that there are a low number of 220kV CB bay replacements relative to 220kV CT replacements, the economic justification for redevelopment of the 220kV switchyard appears more marginal than many of the other station projects reviewed.

SP AusNet's NPV analysis for the proposed 220kV switchyard redevelopment indicates that the upfront targeted replacement option is only marginally (3%) cheaper than the deferred replacement option.[563] However SP AusNet advises that there are a number of technical issues associated with refurbishment of the 220kV CBs that are not captured in the quantitative CB risk model. These issues – associated with the low likelihood of significant extension of CB asset life – tend to qualitatively disadvantage the deferral option. Given similar issues encountered during the HWPS detailed project review,[564] the AER considers that the technical issues identified by SP AusNet with respect to refurbishment of 220kV CBs are likely to add weight to the risk-based and economic justification for its proposed redevelopment of the 220kV switchyard at GTS. On this basis the AER has not made any adjustments to SP AusNet's forecast capex allowance for the redevelopment of the 220kV switchyard at GTS.

In relation to SP AusNet's proposed redevelopment of the 66kV switchyard at GTS, table B.2.20 indicates that all of the 66kV CBs (LG4C type) proposed for replacement by SP AusNet at GTS have been assigned a 'Medium/Low' risk ranking. The primary driver for replacement appears to be SP AusNet's strategic objective to phase out all LG4C units over the next fifteen years. On the basis of the risk model outputs, the AER is not satisfied that a clear need has been demonstrated.

[563] SP AusNet, GTS 220kV (Stages 1 2) Summary, 25 May 2007. The AER notes that the scope of the 'Deferred replacement' option involves upfront replacement of high-risk CTs in 2007 and refurbishment of CBs in 2009/10 to defer CB replacements until 2018.

[564] See section B.1.1 (appendix B.1) of this draft decision for details.

It is difficult to make a firm conclusion as to whether the redevelopment of the 66kV switchyard at GTS is economically justified in isolation given that SP AusNet has combined the transformer replacements with the 66kV switchyard into a single NPV analysis. It is noted however that SP AusNet's NPV analysis includes significant additional costs associated with the deferral option for the 66kV works, including significant additional 66kV CB refurbishment costs (a 'major overhaul') and a 20% 'cost penalty' due to:

> …inefficiencies associated with multiple mobilisations, design activities, project management etc.[565]

The AER considers that the extent of refurbishment costs included by SP AusNet in the deferral option is questionable given the relatively good condition of the assets. Nuttall Consulting reviewed the AER's analysis and SP AusNet's documentation relating to its proposed replacement of 66kV LG4C CBs across its station projects, and notes that:

> …in some cases a deferral option requires an expensive overhaul/refurbishment of the *LG4C* breakers; in others the overhaul is not required. On this matter, it is not clear why this overhaul is required at all, noting that the risk model indicates they are in relatively good condition.[566]

In addition, the AER considers that although a 'cost inefficiency' factor for staged works may be justified in principle, SP AusNet has not demonstrated that its inclusion of a 20% inefficiency factor in the cost estimates for the deferral option at GTS represents a reasonable assumption.

On the basis of the available information the AER is not satisfied that SP AusNet's proposed capex associated with the replacement of 66kV (LG4C) CBs at GTS reasonably reflects prudent and efficient capex required to meet the capex objectives over the forthcoming regulatory control period. In making this assessment the AER has taken into account:

- benchmark capex that would be incurred by an efficient TNSP over the forthcoming regulatory control period (cl. 6A.6.7(e)(4))
- the substitution possibilities between opex and capex (cl. 6A.6.7(e)(7)).

On this basis the AER has made a downward adjustment of $5.4m to SP AusNet's proposed forecast capex allowance for works at GTS to remove the cost associated with redevelopment of the 66kV switchyard,[567] as set out in table B.2.22.

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[565] SP AusNet, GTS 66kV Stage 2 Summary, 25 May 2007.

[566] Nuttall Consulting, *Review of the AER's adjustments to SP AusNet's proposed forecast capex allowance,* 22 August 2007, p.3.

[567] The total capex cost of $5.4m for replacement of the 66kV switchyard at GTS was taken from SP AusNet's NPV analysis for the 66kV switchyard ('Option 3'), based on a capital cost of $0.357m for each of the ten 66kV (LG4C) CB bays at GTS and removal of capex associated with a 66kV capacitor bank CB replacement ($1.839m) scheduled for 2011. The AER has calculated the amount of $0.357m by taking the average cost per 66kV bay replacement presented by SP AusNet in its NPV analyses for works at four metro stations (BLTS, TTS, RWTS and KTS).

Table B.2.22: AER's conclusion – Refurbishment of GTS ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	10.42	5.90	12.17	0.00	0.00	0.00	28.50
AER's adjustment	-2.20	0.00	-3.21	0.00	0.00	0.00	-5.41
AER's conclusion	8.23	5.90	8.96	0.00	0.00	0.00	23.09

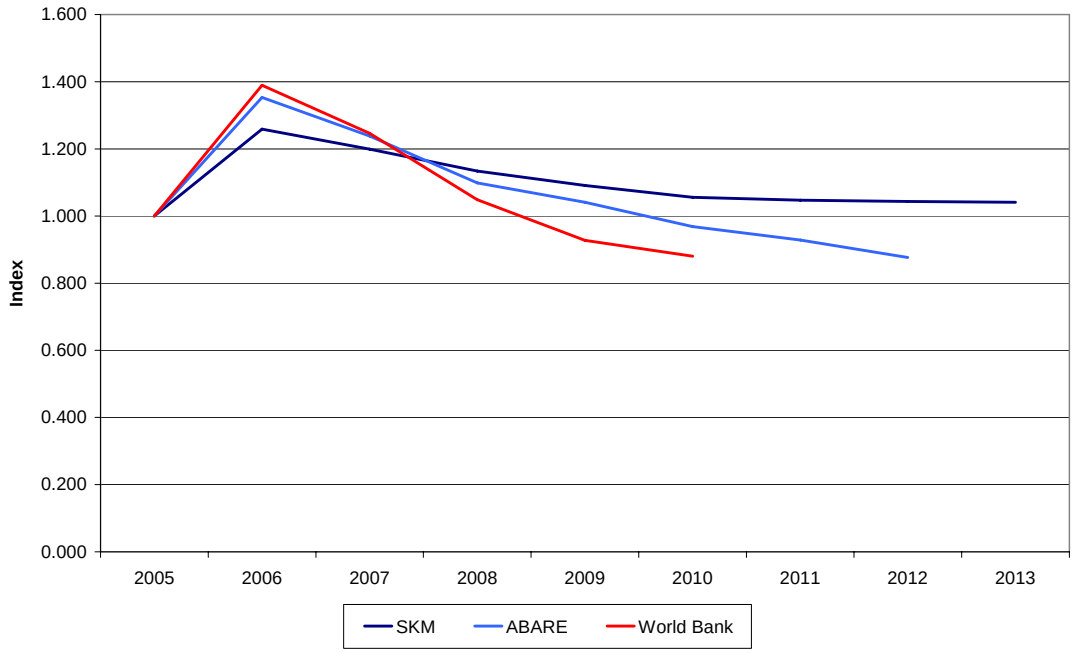
Appendix B.3 Labour and materials escalations

This appendix sets out the AER's detailed analysis and findings with respect to SP AusNet's proposed real capex cost escalations. The AER has undertaken a detailed review on the reasonableness of the observations / projections contained in the SKM report, given that the report was submitted by SP AusNet in support of its proposal.

B.3.1 Materials price escalations

In order to undertake an assessment of SKM's observations / projections for base metal prices, the AER has gathered data from two reputable independent sources – the Australian Bureau of Agricultural and Resource Economics (ABARE)[568] and the World Bank.[569] SKM's observations / projections for aluminium, copper and steel (base year 2005, nominal terms) are presented alongside the ABARE and World Bank data in figures B.3.1 – B.3.3 below.[570]

Figure B.3.1: Aluminium price index 2005-2013 (nominal)



[568] ABARE, *Australian Commodities: Volume 14,* No. 1, March quarter 07.

[569] World Bank, *The outlook for metals markets: Prepared for G20 Deputies meeting Sydney 2006,* Washington, September 2006.

[570] SKM, *Escalation Factors affecting Capital Expenditure Forecasts*, pp.48-50. SKM advises that it has used data from a number of sources (including ABARE, the IMF, the World Bank, and Wachovia Corporation) to develop its base metal price projections. The data in figures B.3.1 – B.3.3 relates to the year in which it appears (ie. the data is not lagged).

Figure B.3.2: Copper price index 2005-2013 (nominal)

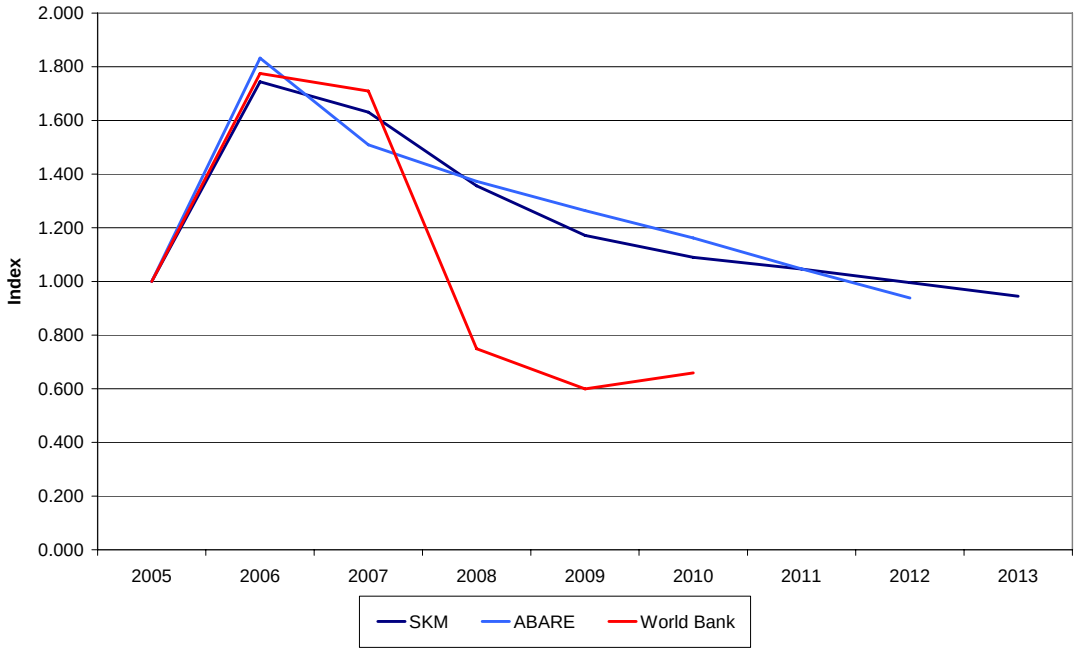
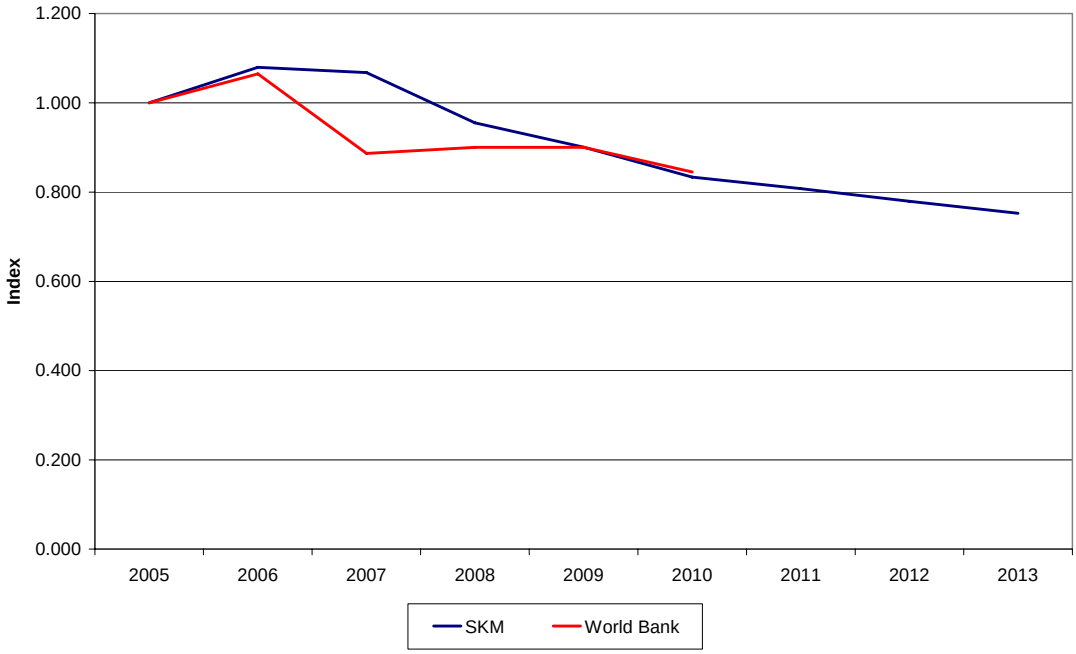


Figure B.3.3: Steel price index 2005-2013 (nominal)



Based on the figures presented above, the AER considers that SKM's observations / projections for base metal prices over the period 2005-2013 are reasonably confirmed by independently sourced data.[571] The data confirms the AER's understanding that base metals prices have peaked (in 2006-07), and are projected to return to lower levels over the period 2007-2013.

B.3.2 Labour cost escalations

SKM states that it has developed its labour cost forecasts using data from the Australian Treasury with a differentiation between 'general labour' (design, project management and approvals) and 'site labour' (on-site construction). SKM considers that the majority of work undertaken by a utility can be categorised as site labour.[572]

The AER has assessed SKM's labour cost observations / projections over the period 2005-2013 against the labour forecasts of two independent sources – BIS Shrapnel[573] and Econtech.[574] Figure B.3.4 below indicates that SKM's observations / projections for labour cost growth over the period 2005-2013 are broadly in line with BIS Shrapnel and Econtech.[575]

[571] The AER has placed more weight on the ABARE data for comparative purposes given its relative specialisation and expertise in this area.

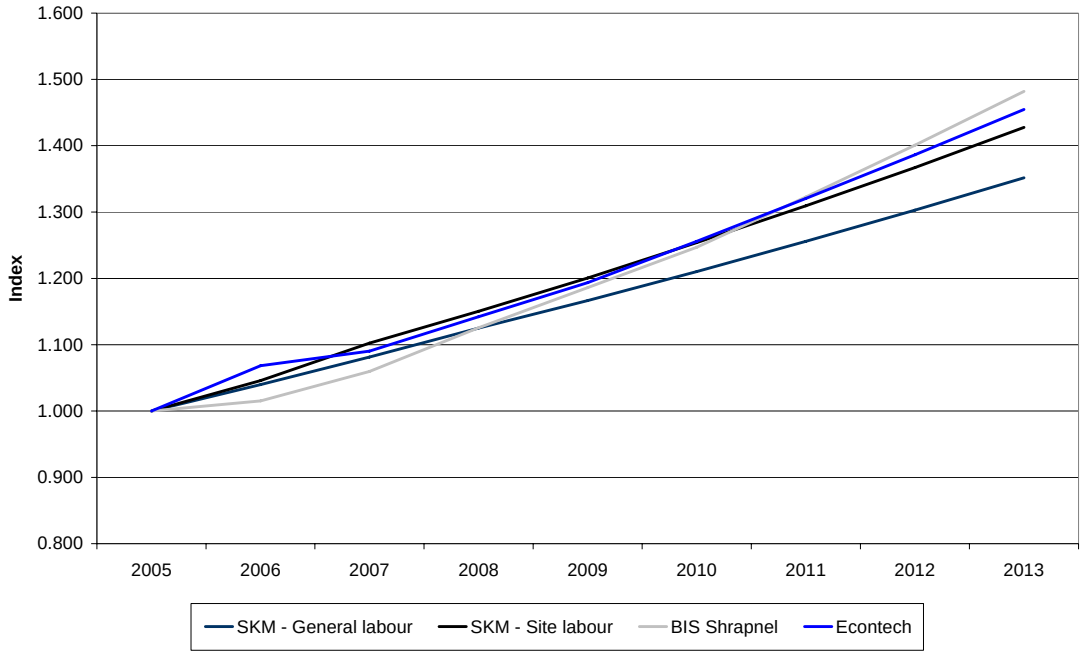
[572] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* p.30.

[573] BIS Shrapnel, *Outlook for Wages to 2012/13: Electricity, Gas and Water Sector, Australia and Victoria*, March 2007. SP AusNet submitted this report in support of its proposed real labour escalations for opex – see section 6.6.1 of this draft decision for details.

[574] Econtech, *Labour costs growth forecasts,* 13 August 2007. The AER engaged Econtech to independently develop labour cost forecasts for the Victorian utilities sector over the forthcoming regulatory control period – see section 6.6.1 of this draft decision for details.

[575] For comparative purposes, the Econtech data presented is a composite index of Victorian labour cost growth rates for Construction (88%) and Utilities (12%). These proportions were sourced from the SKM report (p.36) for 'Substation components', where the same proportions are assumed for 'site labour' (88%) and 'general labour' (12%). The AER considers this to be a reasonable assumption. It was not possible to develop a similar composite index with the BIS Shrapnel forecasts as the data was not available.

Figure B.3.4: Labour cost escalations (nominal)



SKM's projections for 'general labour' cost growth are significantly lower than the three other data sets presented in figure B.3.4. However given that SKM does not consider 'general labour' to be significant cost driver in transmission equipment (eg. just 12% of labour costs in substation costs), the lower forecast growth rate is not expected to skew the results.

Table B.3.1 below contains the labour cost escalations (in real terms) for SKM, BIS Shrapnel and Econtech.

Table B.3.1: Labour cost escalations 2005-2013 (%real)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
SKM - General Labour	1.000	1.007	1.022	1.037	1.049	1.062	1.075	1.088	1.101	1.21%
SKM - Site Labour	1.000	1.013	1.042	1.060	1.080	1.100	1.120	1.141	1.163	1.91%
BIS Shrapnel	1.000	0.984	0.996	1.027	1.052	1.081	1.114	1.143	1.172	2.02%
Econtech*	1.000	1.035	1.028	1.052	1.069	1.092	1.120	1.150	1.180	2.10%

* Composite index of Construction (88%) and Utilities (12%) – see above.

Based on a comparison of labour cost growth rates from the various sources in table B.3.1, the AER considers that SKM's observations / projections reasonably reflect a realistic expectation of the costs that SP AusNet will require to meet the capex objectives.

As required by cl. 6A.6.7(e)(8) of the NER, the AER has considered whether the total labour costs included in SP AusNet's capex forecasts for the forthcoming regulatory control period are consistent with the incentives provided by the STPIS discussed in chapter 7 of this draft decision. No inconsistencies have been identified.

B.3.3 Lag between base metals prices and prices for transmission equipment

SKM states in its report that:

> …there appears to be a significant time lag between the rapid increases in commodity prices (which occurred for copper and aluminium between September / December 2003 and June 2005) and the time at which finished product prices began to rise.[576]

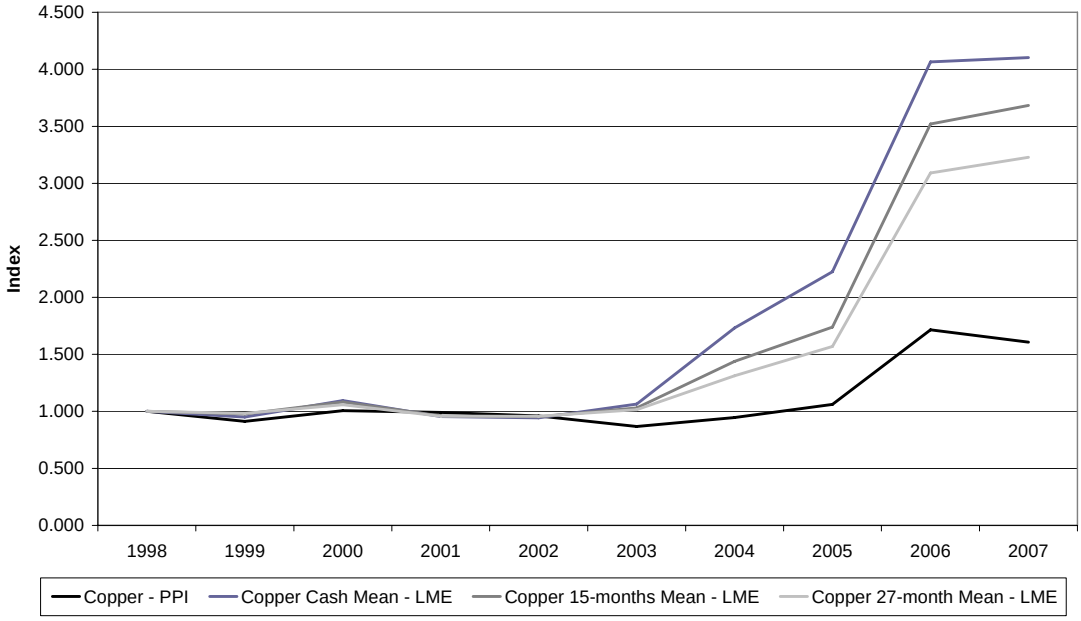
On this basis SKM states that it has applied a lag of between 1-2 years to its base metal price data in arriving at its transmission equipment price projections. The AER has examined SKM's claim of a time lag by observing actual data from two independent sources:

- movements in base metal prices – sourced from the London Metal Exchange (LME)[577], and
- movements in the 'Producer Price Index' (PPI) for metals in manufactured goods – sourced from the Australian Bureau of Statistics (ABS).

[576] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* pp.14-15.

[577] The AER has obtained historical data directly from the LME.

Figure B.3.5: LME Copper price indices (Cash, 15-month, 27-month) and PPI Copper (ABS) – 1998-2007



Sources: LME; [578] and ABS[579]

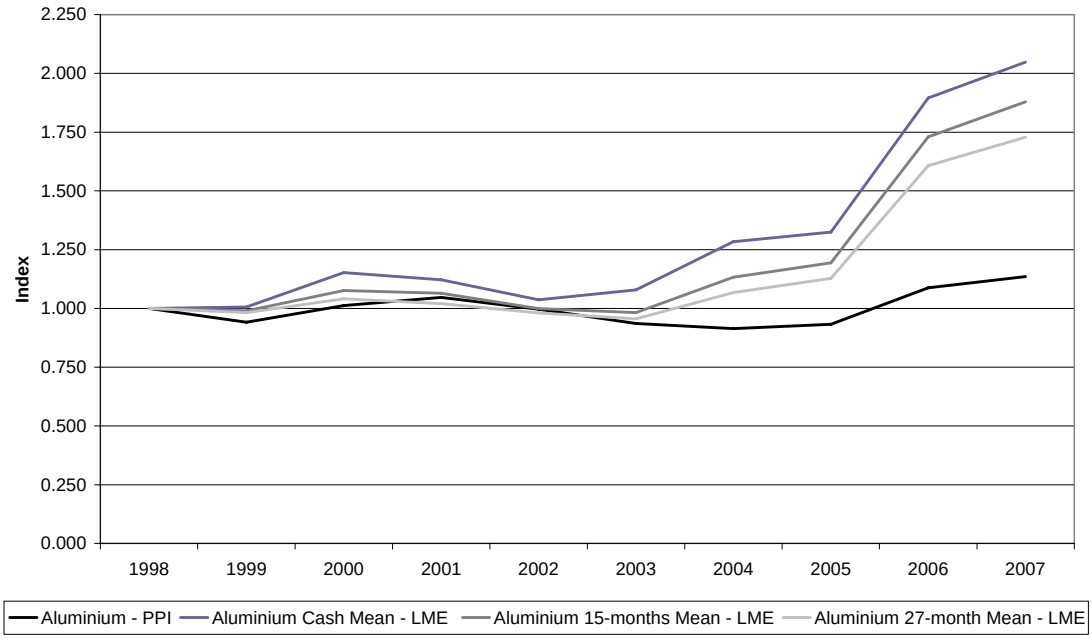
As figure B.3.5 illustrates, LME base copper prices appeared to accelerate at a much faster rate than the PPI-Copper in Power Transformers ('Copper PPI') between the boom years 2003-2006. For example, between 2003 and 2005 the LME copper price (cash mean) rose by around 110% while the Copper PPI rose by only 17%. It is notable that growth in the Copper PPI accelerated in 2006 (89%), slightly outpaced growth in the LME copper price (82%), and that both indices displayed relatively flat or declining growth rates in the first half of 2007.

Figure B.3.6 plots LME base aluminium prices against PPI-Aluminium in Fabricated Metal Products Industry ('Aluminium PPI') over the period 1998 to 2007.

[578] The London Metal Exchange Limited (LME), Average Official and Settlement Prices US$/TONNE for Copper. The LME monthly (average) data is converted to annual data by taking the average of twelve monthly averages (Jan-Dec). The data for 2007 is the average of six monthly averages (Jan-June 2007).

[579] ABS <www.abs.gov.au>, 6427.0 (Table 47) - Producer Price Indexes, Copper Materials Used in the Manufacture of Electrical Equipment (Power transformers), Australia. The ABS quarterly PPI data is converted to annual data by taking the average of four quarters for each year (Mar-Dec). The data for 2007 is the average of two quarters (March & June 2007).

Figure B.3.6: LME Aluminium price indices (Cash, 15-month, 27-month) and PPI Aluminium (ABS) – 1998-2007



Sources: LME; [580] and ABS[581]

Although the Aluminium PPI is not necessarily a good proxy for aluminium in electrical equipment, the AER considers that it can still provide a useful insight into movements in base aluminium prices vis-à-vis movements in aluminium finished goods prices. As figure B.3.6 indicates, the Aluminium PPI remained flat between the years 2003 and 2005, while the LME aluminium price accelerated. However after 2005 the Aluminium PPI appears to track the LME aluminium price quite closely, albeit at a slower growth rate.

Overall, growth in the PPI appears to track growth in base metals prices quite closely after 2005, possibly indicating a greater flexibility built into contracts after this point in time. The data tends to suggest that any significant lag (ie. >1 year) persistent over the period 2003-2005 may have been transitory, and has since subsided. Further, given that base metals prices are expected to return to around the long-run average over the period 2006-07 – 2013-14, the two indices may begin to track quite closely again (as in the pre-boom period 1998-2002).

Although there are indications of a possible lag between base metal and finished goods prices between the years 2003 and 2005 (as SKM suggests), the AER considers that it is not possible to draw a firm conclusion based on the data set available.

[580] The London Metal Exchange Limited (LME), Average Official and Settlement Prices US$/TONNE for Primary Aluminium. The LME monthly (average) data is converted to annual data by taking the average of twelve monthly averages (Jan-Dec). The data for 2007 is the average of six monthly averages (Jan-June 2007).

[581] ABS (www.abs.gov.au), 6427.0 (Table 30) - Producer Price Indexes, Indexes of Metallic Materials used in the Fabricated Metal Products Industry, Australia. The ABS quarterly PPI data is converted to annual data by taking the average of four quarters for each year (Mar-Dec). The data for 2007 is the average of two quarters (March & June 2007).

The AER has given due consideration to SKM's statement that:

> …contract prices for finished product, such as transformers, cables and conductors, will continue to rise well beyond the predicted peaks in commodity prices and likely into 2008. This view has been reinforced anecdotally through discussions with equipment manufacturers and suppliers.[582]

In the absence of more detailed information (ie. such as data on contract terms, hedging positions of transmission equipment manufacturers, etc), and recognising that the PPI measures do not provide a perfect proxy for the equipment prices that SP AusNet is likely to face, the AER considers it appropriate and reasonable to apply a lag of 1 year between base metals prices and SP AusNet's transmission equipment costs over the forthcoming regulatory control period. In terms of transmission equipment costs, this effectively 'shifts' the boom in materials prices from 2006-07 to 2007-08.

To reflect this outcome, the AER has adopted SKM's 1-year lagged data for each of the three base metals prices (aluminium, copper and steel only) making up transmission equipment costs.[583] The AER has used this data set as a means of comparison with SP AusNet's proposed real capex cost escalations. The AER requested information from SP AusNet on the proportions of different materials (ie. aluminium, copper, steel) making up the materials component of each of its asset classes. In response SP AusNet advises that:

- this level of specific information is not available
- it is satisfied that the SKM projections support its proposed real capex escalations, and therefore the AER may rely upon it in making its assessment.[584]

In the absence of this information specific to SP AusNet's asset classes, the AER has made some reasonable assumptions in comparing the SKM data with SP AusNet's proposal. These assumptions are specified for each of SP AusNet's escalations (by asset class) below.

[582] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* p.16.

[583] In its report (pp.48-50), SKM provides data for Aluminium, Copper, Steel and Oil on a lagged basis (1 and 2 years), however it is not clear in the report whether a 1 or 2 year lag has been applied in its model. SKM then applies, for each type of transmission equipment, weightings (%) for each 'Cost factor' according to the factor's impact on the transmission equipment's costs (p.36). The AER has essentially replicated this process applying a 1 year lag for Aluminium, Copper and Steel (only).

[584] Email, SP AusNet to AER, 18 July 2007.

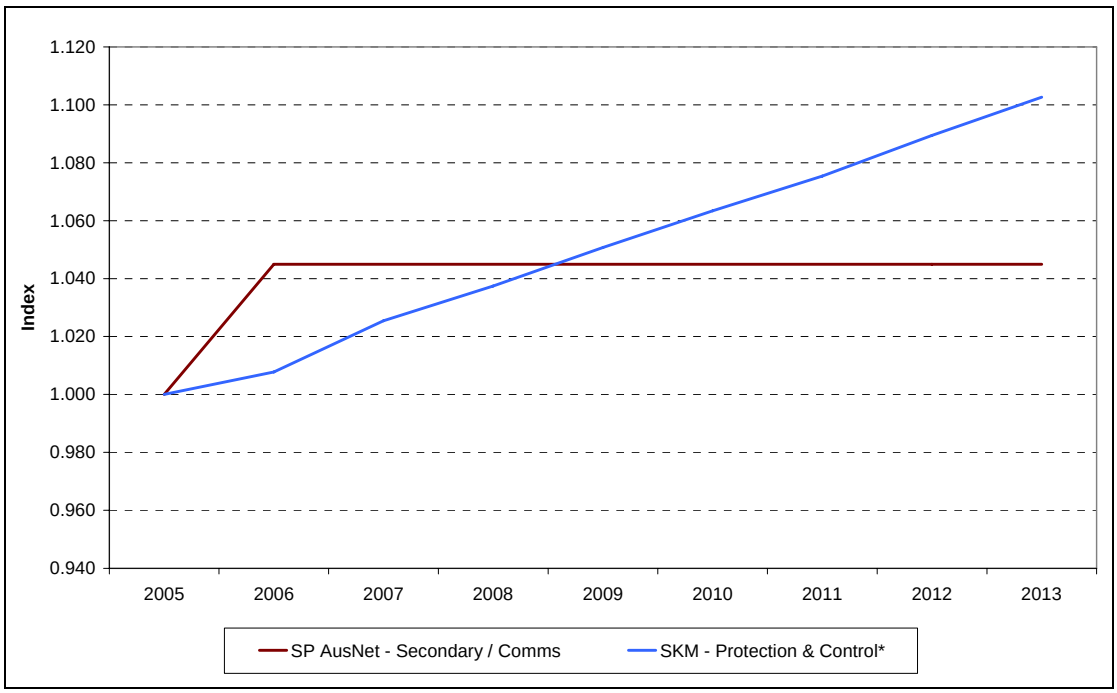
B.3.4 Capex cost escalators

The AER considers that SKM's observations / projections for labour costs and materials prices (lagged 1 year) over the period 2005-2013 are reasonable. However as discussed above, SP AusNet has generated its real capex cost increases internally, using the SKM report to validate its estimates. Therefore a direct comparison of SP AusNet's and SKM's escalators is necessary in order to assess the reasonableness of SP AusNet's proposed escalations.

SP AusNet's proposed escalators are compared against SKM's escalators (with base metals lagged 1 year) for each of SP AusNet's asset classes below. On the basis of these comparisons, the AER has made a number of adjustments to SP AusNet's proposed capex cost escalations. For consistency, the AER's adjustments to the forecast capex allowance for real capex escalations have been made after all of the AER's other project-specific adjustments have been made.

Figure B.3.7 compares SP AusNet's and SKM's real capex cost escalations for Secondary and Communications assets. The AER has applied SKM's escalation for the component 'Protection & Control' lagged one year[585], as a means of comparison with SP AusNet's proposed capex escalations for its Secondary and Communications asset classes.

Figure B.3.7: Secondary and Communications escalations – SP AusNet's proposal and the SKM report (real, 2005)



Note: SP AusNet – Communications: The AER has assumed the same split of materials/labour components as applied by SP AusNet to its Secondary asset class, therefore the escalations for Secondary and Communications are assumed the same.
* SKM data – The AER have applied SKM's escalation for the component 'Protection & Control' lagged one year (there is no lag effect here).

[585] Note that there is no lag effect in the SKM data for the component 'Protection and Control' given that labour is the only cost driver.

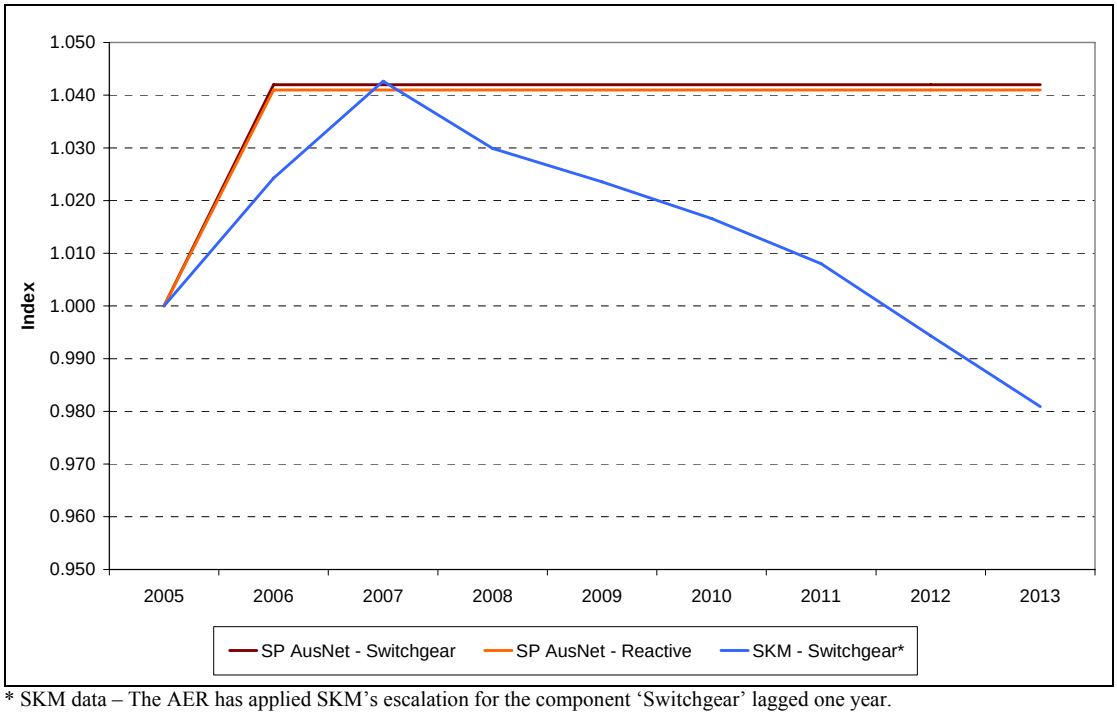
As figure B.3.7 illustrates, SP AusNet may have under-estimated the real cost increases expected for its Secondary and Communications assets over the forthcoming regulatory control period. This is most likely due to the larger increases in real labour costs predicted by SKM. The AER considers that the difference between SP AusNet's and SKM's real escalation for Secondary and Communications (Protection & Control) assets is material – around 6% by 2013. To achieve consistency in cost escalations across the capex program, the AER has made an adjustment to SP AusNet's proposed real escalation to reflect the SKM projections, as set out in table B.3.2.

Table B.3.2: AER's conclusion – escalations for Secondary and Communications asset classes (real, 2007-08)

Secondary & Comms	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.045	1.045	1.045	1.045	1.045	1.045	-
SKM's data	1.037	1.050	1.062	1.075	1.088	1.102	-
AER's conclusion	1.037	1.050	1.062	1.075	1.088	1.102	-
Effect on capex - Secondary ($m)	-0.13	0.12	0.42	0.60	0.47	0.35	1.82
Effect on capex - Comms ($m)	-0.07	0.06	0.20	0.14	0.04	0.12	0.49

Figure B.3.8 compares SP AusNet's and SKM's real capex cost escalations for Switchgear and Reactive plant. The AER has applied SKM's escalation for the component 'Switchgear' lagged one year, as a means of comparison with SP AusNet's proposed capex escalations for its Switchgear and Reactive assets.

Figure B.3.8: Primary plant – Switchgear and Reactive escalations – SP AusNet's proposal and the SKM report (real, 2005)



* SKM data – The AER has applied SKM's escalation for the component 'Switchgear' lagged one year.

As figure B.3.8 illustrates, SP AusNet's proposed escalations for its Switchgear and Reactive asset classes over the forthcoming regulatory control period appear excessive when compared with the SKM data. SKM projects a steady decrease in

switchgear costs between 2007 and 2013, primarily driven by the forecast decline in copper prices, whereas SP AusNet proposes to maintain real switchgear costs at around 4% above CPI for the entire period. Given that SKM's data has been validated against independent sources (see above), the AER is concerned that SP AusNet's proposed escalations for Switchgear and Reactive assets are inefficient, and is not satisfied that they reflect a realistic expectation of the cost inputs that SP AusNet will require to achieve the capex objectives in the forthcoming regulatory control period.

The AER considers that the difference between SP AusNet's and SKM's real escalation for Switchgear and Reactive assets is material – around 6% by 2013. To achieve consistency in cost escalations across the capex program the AER has made an adjustment to SP AusNet's proposed real escalation to reflect SKM's projections, as set out in tables B.3.3 – B.3.4.

Table B.3.3: AER's conclusion – escalations for Switchgear asset class (real, 2007-08)

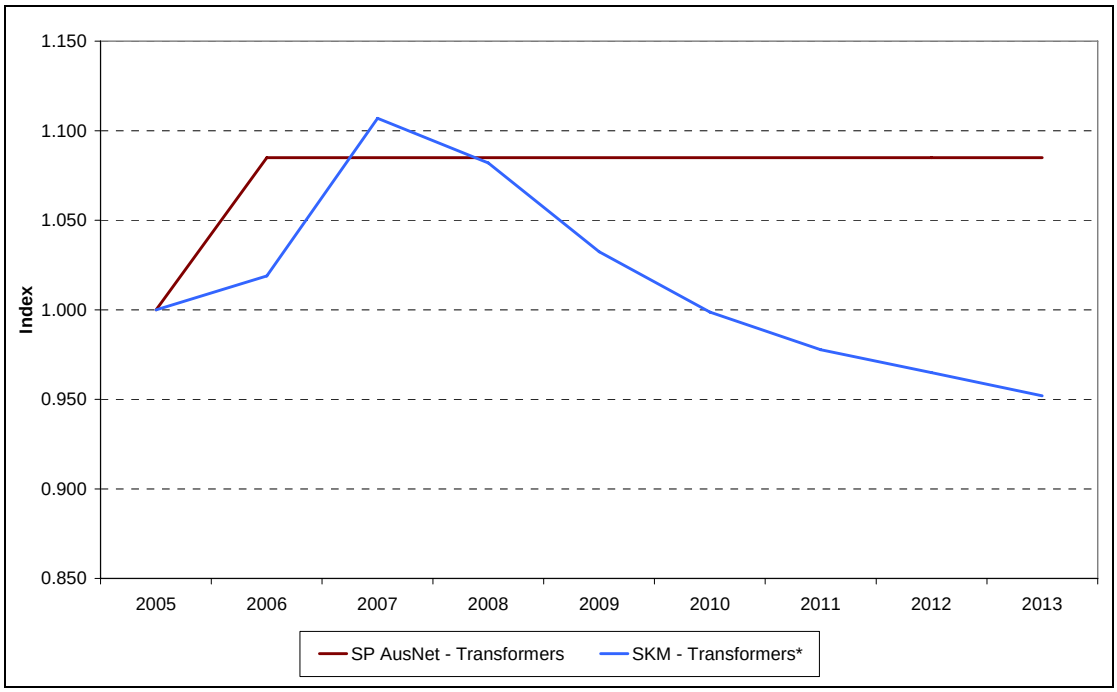
Switchgear	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.042	1.042	1.042	1.042	1.042	1.042	-
SKM's data	1.030	1.024	1.017	1.008	0.994	0.981	-
AER's conclusion	1.030	1.024	1.017	1.008	0.994	0.981	-
Effect on capex - Switchgear ($m)	-0.42	-0.60	-1.06	-0.94	-1.79	-3.41	-8.22

Table B.3.4: AER's conclusion – escalations for Reactive asset class (real, 2007-08)

Reactive	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.041	1.041	1.041	1.041	1.041	1.041	-
SKM's data	1.030	1.024	1.017	1.008	0.994	0.981	-
AER's conclusion	1.030	1.024	1.017	1.008	0.994	0.981	-
Effect on capex - Reactive ($m)	-0.01	-0.14	-0.15	-0.24	-0.18	-0.55	-1.27

Figure B.3.9 compares SP AusNet's and SKM's real capex cost escalations for Transformers. The AER has applied SKM's escalation for the component 'Transformers' lagged one year, as a means of comparison with SP AusNet's proposed capex escalations for its Transformers asset class.

Figure B.3.9: Transformers escalations – SP AusNet's proposal and the SKM report (real, 2005)



*SKM data – The AER has applied SKM's escalation for the component 'Transformers' lagged one year.

As figure B.3.9 illustrates, SP AusNet's proposed escalations for its Transformer asset class over the forthcoming regulatory control period appear excessive when compared with the SKM data. SKM projects a steady decrease in transformer costs between 2007 and 2013, driven by the forecast decline in copper and steel prices, whereas SP AusNet proposes to maintain real switchgear costs at around 8.5% above CPI for the entire period. Given that SKM's data has been validated against independent sources (see above), the AER is not satisfied that SP AusNet's proposed escalations for its Transformers asset class reflect a realistic expectation of the cost inputs that SP AusNet will require to meet the capex objectives in the forthcoming regulatory control period..

Further, the AER considers that the difference between SP AusNet's and SKM's real escalation for Switchgear and Reactive assets is material – around 13% by 2013. To achieve consistency in cost escalations across the capex program the AER has made an adjustment to SP AusNet's proposed real escalation to reflect the SKM projections, as set out in table B.3.5.

Table B.3.5: AER's conclusion – escalations for Transformers asset class (real, 2007-08)

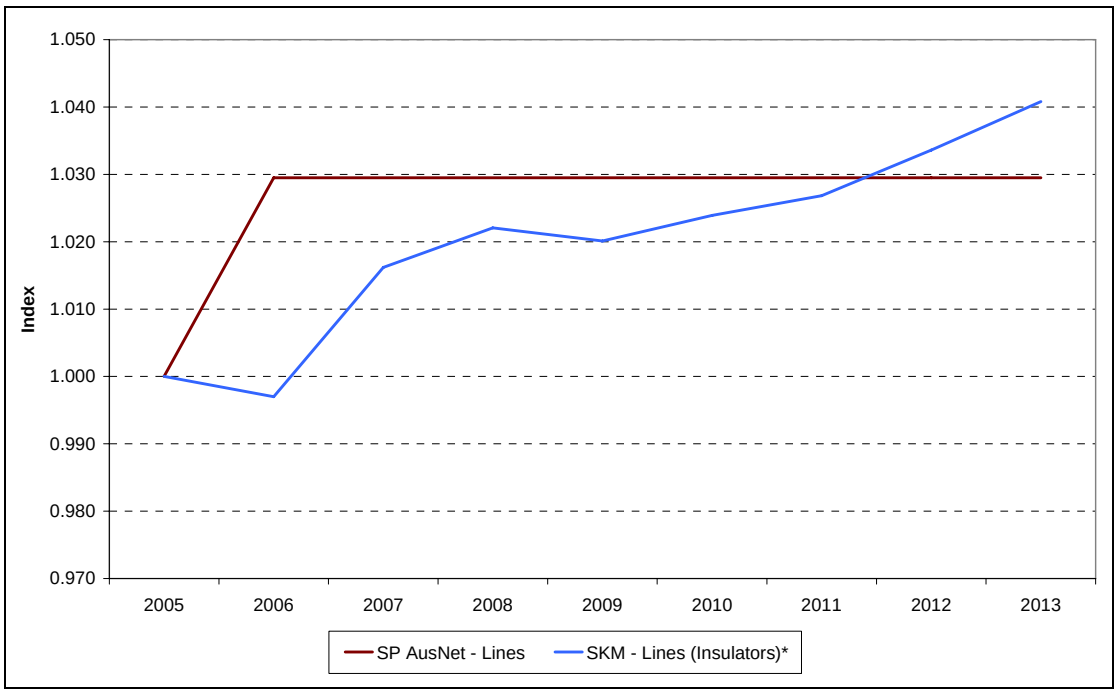
Transformers	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.085	1.085	1.085	1.085	1.085	1.085	-
SKM's data	1.082	1.032	0.999	0.978	0.965	0.952	-
AER's conclusion	1.082	1.032	0.999	0.978	0.965	0.952	-
Effect on capex - Transformers ($m)	-0.02	-0.26	-0.98	-1.82	-1.45	-1.06	-5.60

Figure B.3.10 compares SP AusNet's and SKM's real capex cost escalations for Lines assets. The AER has applied SKM's escalation for the component 'Insulators' lagged

one year, as a means of comparison with SP AusNet's proposed capex escalations for its Lines asset class – given that around 95% of SP AusNet's proposed capex associated with its Lines asset class relates to work on insulators.

In doing so, the AER has made an adjustment to SKM's weightings applied to the 'Insulators' component[586] – Steel (10%) has been included as a delayed cost factor in place of a proportion of the cost factor for CPI (10%). This adjustment has been made based on information contained in SP AusNet's documentation.[587]

Figure B.3.10: Lines escalations – SP AusNet's proposal and the SKM report (real, 2005)



*SKM data – The AER has applied SKM's escalation for the component 'Insulators' lagged one year, and adjusted to include a 10% steel component.

As figure B.3.10 illustrates, SP AusNet's proposed real capex escalation for its Lines asset class is largely validated by the SKM data. Moreover the AER considers that the difference between SP AusNet's and SKM's real escalation for Lines (Insulators) assets is immaterial over the entire period 2005-2013. On this basis the AER has made no adjustment to SP AusNet's proposed real escalation, as set out in table B.3.6.

[586] SKM, *Escalation Factors affecting Capital Expenditure Forecasts,* p.37

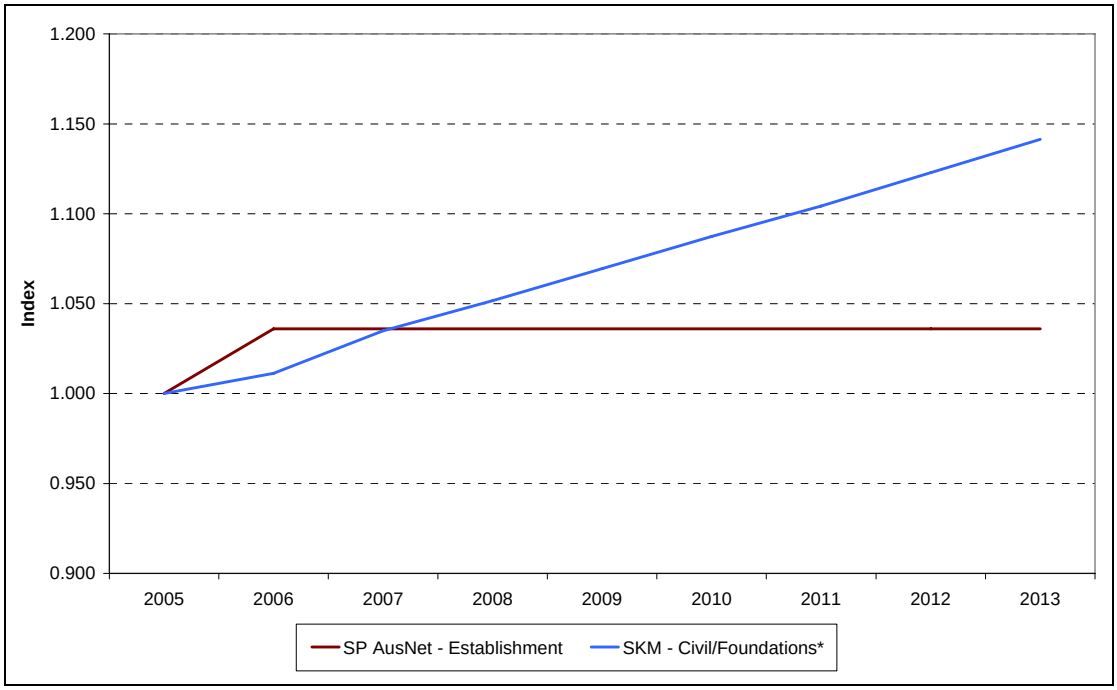
[587] SP AusNet, *Rationale for Escalation of Project Costs*. SP AusNet advises in relation to its proposed materials escalation of its Lines asset class that 'Components mainly silicon composites with steel fittings so modest increases are expected'. On this basis the AER considers it reasonable to use SKM's escalation for 'Insulators' as a comparison, adjusted to incorporate a steel component of 10%.

Table B.3.6: AER's conclusion – escalations for Lines asset class (real, 2007-08)

Lines	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.030	1.030	1.030	1.030	1.030	1.030	-
SKM's data	1.022	1.020	1.024	1.027	1.034	1.041	-
AER's conclusion	1.030	1.030	1.030	1.030	1.030	1.030	-
Effect on capex - Lines ($m)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure B.3.11 compares SP AusNet's and SKM's real capex cost escalations for Establishment assets. The AER has applied SKM's escalation for the component 'Civil/Foundations' lagged one year[588] as a means of comparison with SP AusNet's proposed capex escalations for its Establishment asset class.

Figure B.3.11: Establishment escalations – SP AusNet's proposal and the SKM report (real, 2005)



*SKM data – The AER has applied SKM's escalation for the component 'Civil/Foundations' lagged one year (there is no lag effect here).

As figure B.3.11 illustrates, SP AusNet may have under-estimated the real cost increases expected for its Establishment assets over the forthcoming period. This is most likely due to the larger increases in real labour costs predicted by SKM. The AER considers that the difference between SP AusNet's and SKM's real escalation for Establishment assets is material – over 10% by 2013. To achieve consistency in cost escalations across the capex program the AER has made an adjustment to SP AusNet's proposed real escalation to reflect the SKM projections, as set out in table B.3.7.

[588] Note that there is no lag effect in the SKM data for the component 'Civil/Foundations' given that labour is the only cost driver.

Table B.3.7: AER's conclusion – escalations for Establishment asset class (real, 2007-08)

Establishment	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	1.036	1.036	1.036	1.036	1.036	1.036	-
SKM's data	1.052	1.069	1.086	1.104	1.122	1.140	-
AER's conclusion	1.052	1.069	1.086	1.104	1.122	1.140	-
Effect on capex - Establishment ($m)	0.34	0.78	1.14	1.25	0.94	1.63	6.09

B.3.5 AER's conclusions

In summary, the AER considers that SP AusNet's proposed real capex cost escalations over the forthcoming regulatory control period are not fully supported by the data in the SKM report. In particular when compared against the SKM data (lagged 1 year) the AER considers that:

- SP AusNet's proposed real cost escalations for its Switchgear, Reactive and Transformers asset classes do not reasonably reflect prudent and efficient capex costs,
- SP AusNet's proposed real cost escalations for its Secondary, Communications and Establishment asset classes appear to have been under-estimated, and
- SP AusNet's proposed real cost escalations for its Lines asset class reasonably reflects prudent and efficient capex costs.

On the basis that the SKM data (lagged 1 year) represents a reasonable basis of comparison, the AER considers that $6.70m of SP AusNet's proposed real capex cost escalations do not reasonably reflect a realistic expectation of the cost inputs required to meet the capex objectives (cl. 6A.6.7(c)(3)). The AER's adjustments to the proposed forecast capex allowance for each of SP AusNet's asset classes is set out in table B.3.8 below.

It is important to note that, for consistency, the AER's adjustments to the forecast capex allowance for real capex escalations have been made after all of the AER's other project-specific adjustments have been made.

Table B.3.8: AER's conclusions – real capex cost escalations ($m, 2007-08)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal (adjusted)*	3.99	4.23	5.25	4.62	3.76	4.67	26.53
AER's adjustments							
Secondary	-0.13	0.12	0.42	0.60	0.47	0.35	1.82
Switchgear	-0.42	-0.60	-1.06	-0.94	-1.79	-3.41	-8.22
Transformers	-0.02	-0.26	-0.98	-1.82	-1.45	-1.06	-5.60
Reactive	-0.01	-0.14	-0.15	-0.24	-0.18	-0.55	-1.27
Lines	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Establishment	0.34	0.78	1.14	1.25	0.94	1.63	6.09
Communications	-0.07	0.06	0.20	0.14	0.04	0.12	0.49
AER's total adjustments	**-0.31**	**-0.05**	**-0.44**	**-1.00**	**-1.99**	**-2.91**	**-6.70**
AER's conclusion	3.69	4.18	4.81	3.62	1.78	1.76	19.83

* For consistency, SP AusNet's proposed escalators have been applied to the forecast capex allowance by asset class, after all of the AER's other adjustments.

Appendix C: Service target performance incentives

C.1 Service performance parameter definitions

Parameter 1: Transmission circuit availability

Sub-parameters	Total circuit availability Transmission circuit availability (peak critical) Transmission circuit availability (peak non-critical) Transmission circuit availability (intermediate critical) Transmission circuit availability (intermediate non-critical)
Unit of measure	Percentage of total possible hours available
Source of data	TNSP outage reports and system for circuit availability* Agreed list of critical circuits and plant* A circuit element is an item of primary transmission equipment including a line (whether overhead and/or underground), power transformer, phase shifting transformer, static var compensator, bus or line reactor, capacitor bank and voltage regulator, but does not include individual circuit breakers and isolators. It also does not include secondary transmission equipment such as protection equipment. SP AusNet has provided a list of circuit elements. New circuit elements are added when they are placed in service A peak period applies from the first Monday in November immediately preceding the 20th day of November, through to the first Friday in March, immediately after the 11th of March. The peak period applies on weekdays between the hours of 1100 and 2200. Public holidays, weekends and any time between the hours of 2201 and 0659 are considered off-peak* An intermediate period applies from the 1st of June through to the 31st of August inclusive, between the hours of 0700 and 2200. All weekends, public holidays and any time between the hours of 2201 and 1059 are considered off-peak* An off-peak period is all other times (that are not a peak or intermediate period)*

Definition/formula	Formula: $\frac{\text{No. hours per annum defined (critical / non – critical) circuits are available} \times 100}{\text{Total possible number of defined circuit hours}}$ Definition: The actual circuit hours available for defined (critical/non critical) transmission circuits divided by the total possible defined circuit hours available Note that there will be an annual review of the nominated list of critical circuits/system components
Inclusions	'Circuits' includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system (SP AusNet to provide lists) Circuit 'unavailability' to include outages from all causes including planned, forced and emergency events, including extreme events
Exclusions	Unregulated transmission assets Connection assets Exclude from 'circuit unavailability' any outages shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation (TNSP to provide lists) Exclude from 'circuit availability (peak critical)' and 'circuit availability (peak non-critical)' any outages of shunt reactors* Outages to control voltages within required limits, both as directed by NEMMCO and where NEMMCO does not have direct oversight of the network (in both cases only where the element is available for immediate energisation if required)* Fault-level mitigation works, except for that associated with JLTS 220 kV Fault Limiting Reactors and Fault Level Mitigation Works at JLTS and MWTS; and WMTS 66 kV Bus Tie Series Fault Limiting Reactor* Force majeure events

Parameter 2: Loss of supply event frequency

Sub-parameters	Number of events greater than 0.05 system minutes per annum Number of events greater than 0.3 system minutes per annum
Unit of measure	Number of events per annum
Source of data	TNSP outage reports and system for circuit availability
Definition/formula	System minutes are calculated for each supply interruption by the "Load Integration Method" using the following formula:* Formula: System minute = $\frac{\Sigma \text{ (MWh unsupplied x 60)}}{\text{MW peak demand}}$ where: MWh unsupplied is the energy not supplied as determined by using NEM metering and substation load data. This data is used to estimate the profile of the load over the period of the interruption by reference to historical load data Period of the interruption starts when a loss of supply occurs and ends when SP AusNet offers supply restoration to the customer MW peak demand means the maximum amount of aggregated electricity demand recorded at entry points to the SP AusNet transmission network and interconnector connection points at any time previously The performance parameter applies to exit points only An interruption >Y system minute(s) also registers as a >X system minute(s) event
Inclusions	All unplanned outages exceeding the specified impact (that is, 0.05 system minutes and 0.3 system minutes) All parts of the regulated transmission system Extreme events Forced outages where notification to affected customers is less than 24 hours (except where NEMMCO reschedules the outage after notification has been provided)

Exclusions	Unregulated transmission assets (e.g. some connection assets) Successful reclose events (less than 1 minute duration) Any outages shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation Planned outages Force majeure events

Parameter 3: Average outage duration

Sub-parameters	Total average outage duration Transmission lines Transmission transformers
Unit of measure	Minutes
Source of data	TNSP outage reports and system
Definition/formula	Formula: $\frac{\text{Aggregate minutes duration of all unplanned outages}}{\text{Number of events}}$ Definition: The cumulative summation of the outage duration time for the period, divided by the number of outage events during the period The start of each outage event is the time of the interruption of the first circuit element. The end of each outage event is the time that the last circuit element was restored to service* The impact of each event is capped at 7 days*
Inclusions	Faults on all parts of the regulated transmission system (connection assets, interconnected system assets) All forced and fault outages whether or not loss of supply occurs
Exclusions	Planned outages

	Momentary interruptions (duration of less than one minute) Force majeure events
Note:	Items marked * were not included in SP AusNet's parameter definitions in Appendix B of the Service target performance incentive scheme and were to be included in the transmission determination

C.2 Definition of force majeure[589]

For the purpose of applying the service target performance incentive scheme, force majeure event means any event, act or circumstance or combination of events, acts and circumstances which (despite the observance of good electricity industry practice) is beyond the reasonable control of the party affected by any such event, which may include, without limitation, the following:

- fire, lightning, explosion, flood, earthquake, storm, cyclone, action of the elements, riots, civil commotion, malicious damage, natural disaster, sabotage, act of a public enemy, act of God, war (declared or undeclared), blockage, revolution, radioactive contamination, toxic or dangerous chemical contamination or force of nature
- action or inaction by a court, government agency (including denial, refusal or failure to grant any authorisation, despite timely best endeavour to obtain same)
- strikes, lockouts, industrial and/or labour disputes and/or difficulties, work bans, blockades or picketing
- acts or omissions (other than failure to pay money) of a party other than the TNSP which party either is connected to or uses the high voltage grid or is directly connected to or uses a system for the supply of electricity which in turn is connected to the high voltage grid
- where those acts or omissions affect the ability of the TNSP to perform its obligations under the service standard by virtue of that direct or indirect connection to or use of the high voltage grid.

In determining what force majeure events should be excluded the AER will consider the following:

- Was the event unforeseeable and its impact extraordinary, uncontrollable and not manageable?
- Does the event occur frequently? If so how did the impact of the particular event differ?
- Could the TNSP, in practice, have prevented the impact (not necessarily the event itself)?
- Could the TNSP have effectively reduced the impact of the event by adopting better practices?

[589] AER, First proposed service target performance incentive scheme, Appendix D.

C.3 Calculation of performance

The following tables and figures represent the scale of the financial penalty or reward (y-axis) resulting from SP AusNet's performance parameters (x-axis). Tables C.1 – C.9 show the set of linear equations that are represented in Figures C.1 – C.9.

The final s-factor result for each calendar year should be determined by the following formula:

$$S_{ct} = S_1 + S_2 + S_3 + S_4 + S_5 + S_6 + S_7 + S_8 + S_9$$

Where:

S_{ct} = the total service standards factor (s – factor)

ct = the time period/calendar year

S_1 = s-factor for circuit availability - total

S_2 = s-factor for circuit availability – peak critical

S_3 = s-factor for circuit availability – peak non - critical

S_4 = s-factor for circuit availability – intermediate critical

S_5 = s-factor for circuit availability – intermediate non-critical

S_6 = s-factor for loss of supply events > 0.05 system minutes

S_7 = s-factor for loss of supply events > 0.3 system minutes

S_8 = average outage duration – lines (capped 7 days)

S_9 = average outage duration – transformers (capped 7 days)

C.4 Parameters, targets, caps, and collars

Figure C.1 Circuit Availability - Total

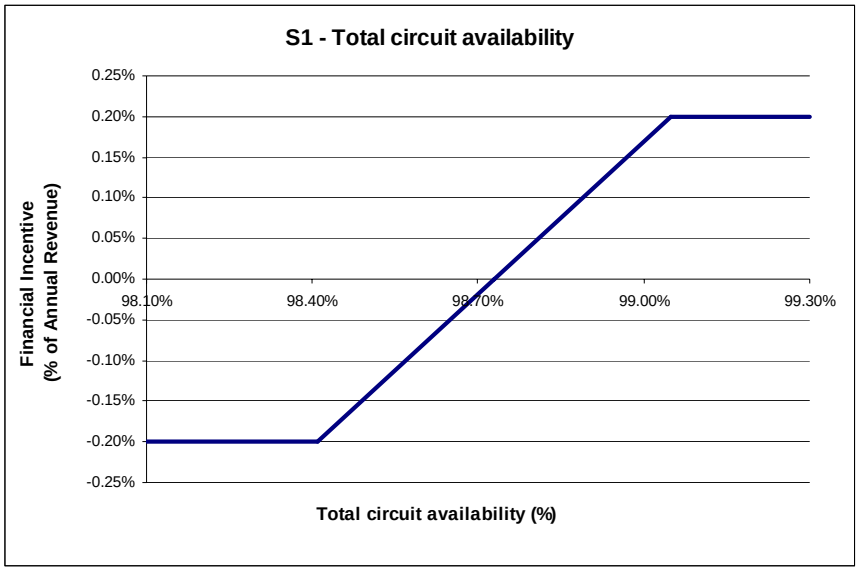


Table C.1 Circuit Availability - Total

Performance Targets	*Collar*	*Target*	*Cap*
Total circuit availability	98.41%	98.73%	99.05%
Measure Weighting	-0.20%	0.00%	0.20%

Figure C.2 Circuit Availability – Peak Critical

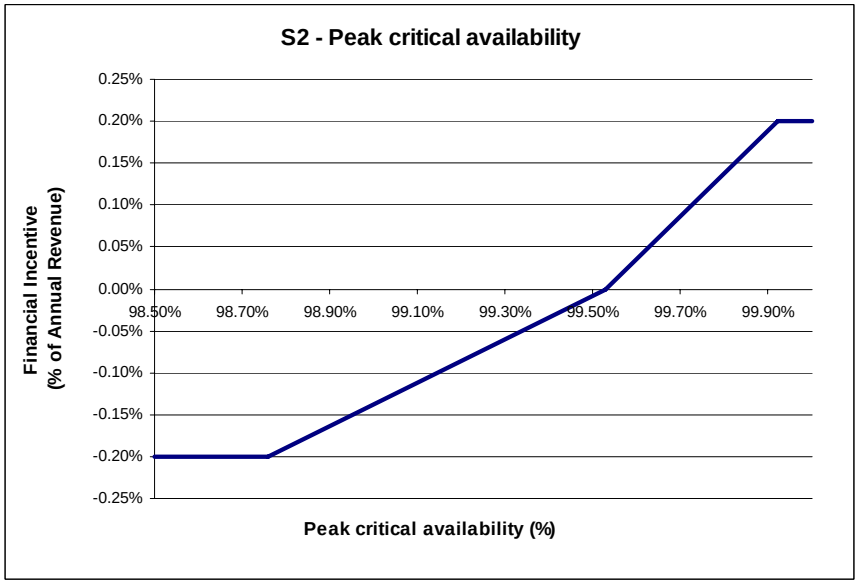


Table C.2 Circuit Availability – Peak Critical

Performance Targets	*Collar*	*Target*	*Cap*
Peak critical availability	98.76%	99.53%	99.92%
Measure Weighting	-0.2000%	0.00%	0.2000%

Figure C.3 Circuit Availability – Peak Non – Critical

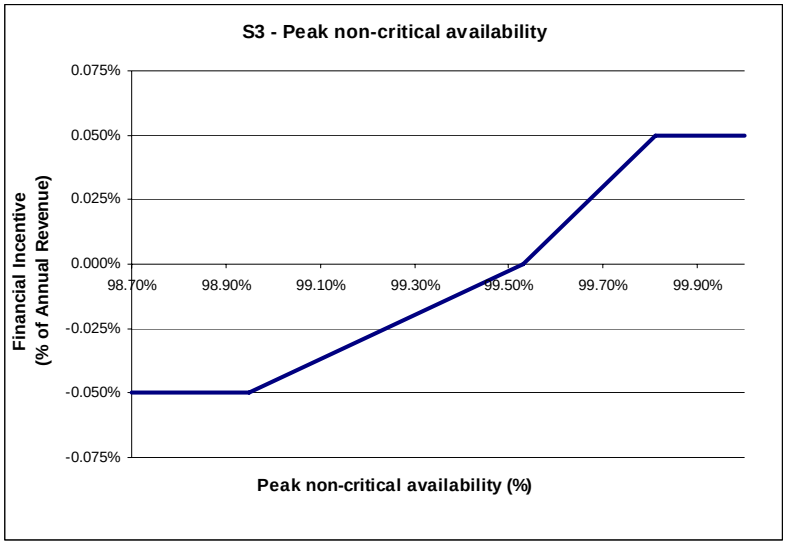


Table C.3 Circuit Availability – Peak Non - Critical

Performance Targets	*Collar*	*Target*	*Cap*
Peak non-critical availability	98.95%	99.53%	99.81%
Measure Weighting	-0.0500%	0.00%	0.0500%

Figure C.4 Circuit Availability – Intermediate Critical

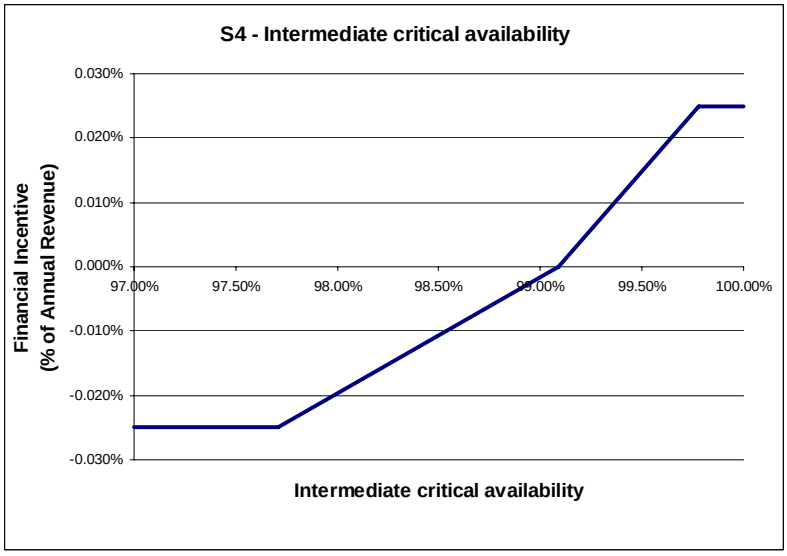


Table C.4 Circuit Availability – Intermediate Critical

Performance Targets	*Collar*	*Target*	*Cap*
Intermediate critical availability	97.71%	99.09%	99.78%
Measure Weighting	-0.0250%	0.00%	0.0250%

Figure C.5 Circuit Availability – Intermediate Non – Critical

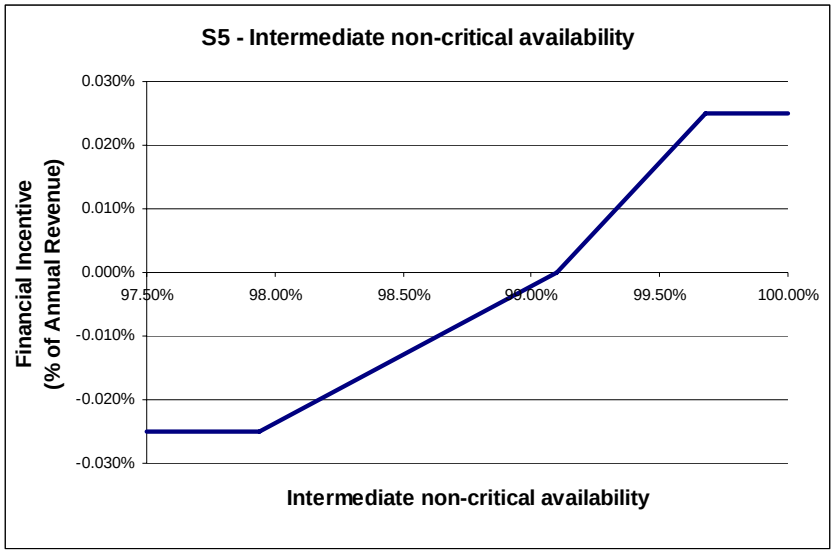


Table C.5 Circuit Availability – Intermediate Non – Critical

Performance Targets	*Collar*	*Target*	*Cap*
Intermediate non-critical availability	97.94%	99.10%	99.68%
Measure Weighting	-0.0250%	0.00%	0.0250%

Figure C.6 Loss of supply events > 0.05 system minutes

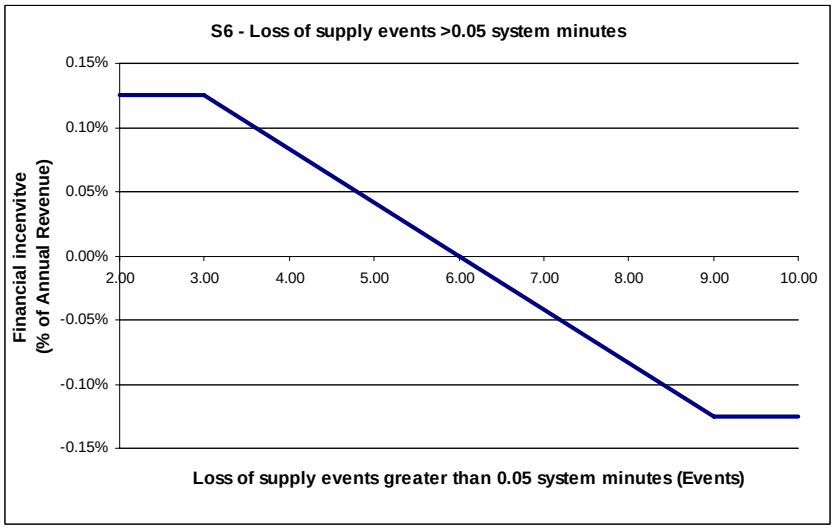


Table C.6 Loss of supply events > 0.05 system minutes

Performance Targets	*Collar*	*Target*	*Cap*
Average outage restoration time	9.00	6.00	3.00
Measure Weighting	-0.125%	0.000%	0.125%

Figure C.7 Loss of supply events > 0.3 system minutes

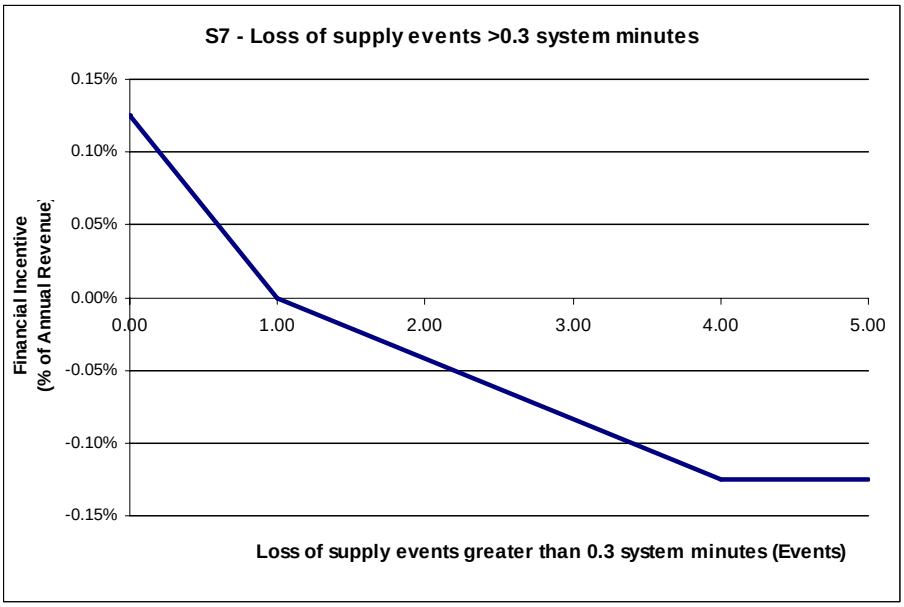


Table C.7 Loss of supply events > 0.3 system minutes

Performance Targets	*Collar*	*Target*	*Cap*
Average outage restoration time	4.00	2.00	0.00
Measure Weighting	-0.125%	0.000%	0.125%

Figure C.8 Average outage duration – lines (capped 7 days)

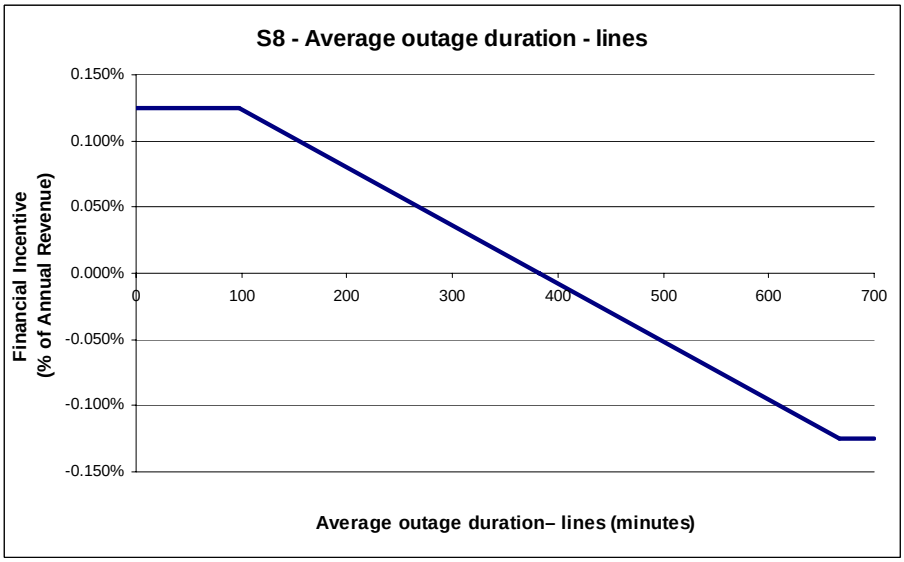


Table C.8 Average outage duration – lines (capped 7 days)

Performance Targets	*Collar*	*Target*	*Cap*
Average outage duration – lines (mins)	667.00	382.00	98.00
Measure Weighting	0.125%	0.00%	0.125%

Figure C.9 Average outage duration – transformers (capped 7 days)

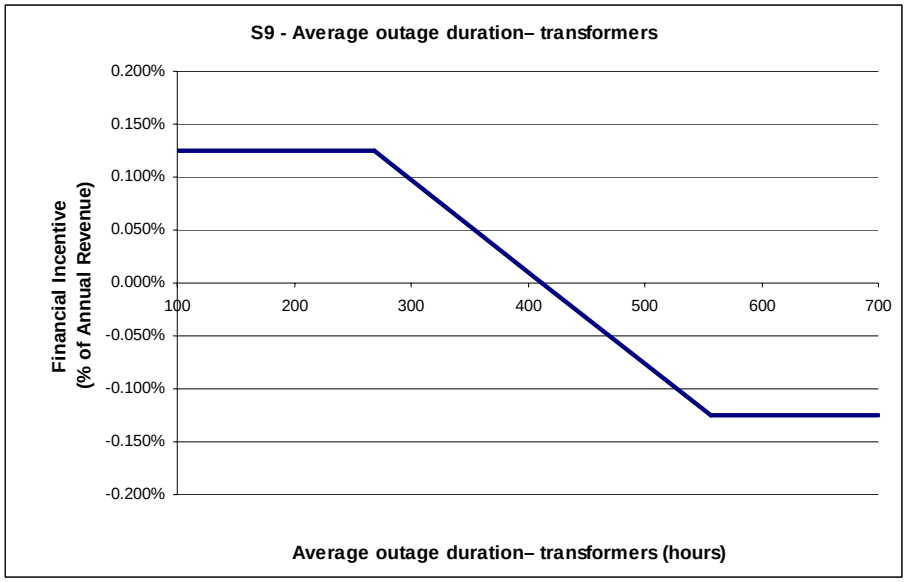


Table C.9 Average outage duration – transformers (capped 7 days)

Performance Targets	*Collar*	*Target*	*Cap*
Average outage duration– transformers (minutes)	556.00	412.00	268.00
Measure Weighting	0.125%	0.00%	0.125%

Appendix D: Changes required to SP AusNet's negotiating framework

As required by cl. 6A.12.1(d) of the NER, this section sets out the changes required and matters to be addressed before SP AusNet's proposed negotiating framework will be approved by the AER. Required changes are shown in **bold** and ~~**strikethrough**~~.

…

SP AusNet Proposed Negotiating Framework 2008/09 – 2013/14

1 Introduction

The National Electricity Rules (the Rules) require certain *transmission services* (*negotiated transmission services*) to be provided on terms and conditions of access that are negotiated between the *Transmission Network Service Provider* (TNSP) and the *Service Applicant*. Each TNSP is required to prepare a *negotiating framework*, which sets out the procedure to be followed during negotiations. The *negotiating framework* must comply with and be consistent with:

- the applicable requirements of a transmission determination applying to the provider; and
- the minimum requirements for a negotiating framework, which are set out in cl. 6A.9.5(c).

Clause 6A.10.1(c) requires each TNSP to submit its proposed *negotiating framework* to the Australian Energy Regulator (AER) at the same time that it submits its *Revenue Proposal*. This document is SP AusNet's proposed *negotiating framework*, and applies for the period 1 April 2008 to 31 March 2014.

Note: Italicised terms used in this document have the same meaning as given to those terms in the National Electricity Rules (the Rules). For ease of reference, the definitions of these terms are provided in Appendix 1 to this document.

2 Obtaining Access to the Victorian Transmission Network

SP AusNet owns a *transmission network* in the State of Victoria and is therefore a *Transmission Network Service Provider* as defined by the Rules. SP AusNet provides and offers *connection services* to *Network Users*.

In Victoria, two organisations – SP AusNet and VENCorp – together fulfil the function of *Local Network Service Provider* as defined in the Rules. The respective roles of SP AusNet and VENCorp in respect of the Rules are set out in chapter 9 of the Rules and in Licences administered by the Essential Services Commission (ESC). These licences may be viewed on the website of the ESC (http://www.esc.vic.gov.au/).

VENCorp has primary responsibility in relation to use of the *transmission network* by the applicant, and consideration of the impact of a proposal to connect on the overall *transmission network* (shared network services – also referred to as use of system services).

In respect of enquiries for connection to the network, SP AusNet has primary responsibility for assessing and advising an applicant regarding the *connection assets* at the physical interface with the network (network exit services and network entry services).

This *negotiating framework*, therefore, has application only to proposed connection assets which are *negotiated transmission services*.

3 Objectives of Negotiation

The principal objective of negotiation is the completion of an Offer to Connect in respect of *connection services* required by the *Connection Applicant*, and execution of the *connection agreement*. Cl. 5.3.6**~~(g)~~(f)** of the Rules provides:

"Both the *Network Service Provider* and the *Connection Applicant* are entitled to negotiate with each other in respect of the provision of *connection* and any other matters relevant to the provision of *connection* and, if negotiations occur, the *Network Service Provider* and the *Connection Applicant* must conduct such negotiations in good faith".

For its part, SP AusNet shall negotiate in good faith **the terms and conditions of access for the provision of negotiated transmission services**, having regard to, amongst other things, all relevant provisions of cl. 5.3.6 of the Rules, including the following obligations (paraphrased) placed on SP AusNet as *Network Service Provider*:

- use reasonable endeavours to provide the *Connection Applicant* with an Offer to Connect in accordance with the reasonable requirements of the *Connection Applicant*, including without limitation, the location of the proposed *connection point* and the level of power transfer capability that the (connection) *network* will provide;
- make an Offer to Connect (which includes proposed terms and conditions for *connection* to the *network,* and define the basis for determining service charges) within a defined time-frame, unless otherwise agreed; and
- make an Offer to Connect that is fair and reasonable, and consistent with safe and reliable operation of the power system in accordance with the Rules.

4 New Connections

SP AusNet's Connection Application Process is a two-stage process.

The first stage (Connection Enquiry) is initiated when an intending *Connection Applicant* submits a connection enquiry as described in cl. 5.3.2 of the Rules. SP AusNet will respond to the enquiry in respect of its primary responsibilities,

however the *Network User* must separately submit a Connection Enquiry to VENCorp to obtain advice in respect of that organisation's primary responsibilities.

In response to the connection inquiry SP AusNet will outline details of:

- the expected process to progress a connection application;
- SP AusNet's standard connection agreement and pricing schedule;
- a preliminary program;
- any additional information that may be required to process a connection application, should the proponent wish to proceed with a connection application;
- an estimate of the connection application charges that will be required to process a connection application;
- a definition of the boundaries of contestable and non-contestable assets; and
- any other authorities that also must notified for the applicant to connect.

SP AusNet's *preliminary program* (subject to Cl. 5.3.3 (b) of the Rules) provided in response to the *connection enquiry* will include milestones for provision of an *offer to connect* and for execution of a *connection agreement*.

Intending *Connection Applicants* should note that SP AusNet must, in progressing a Connection Enquiry, and subject to its obligations relating to *confidential information*, disclose details of the proposal to VENCorp, and where necessary may also disclose details to other *Network Service Providers* (where their terms and conditions of connections agreements with those *Network Service Providers* will be affected) and to *NEMMCO*. SP AusNet does not take any responsibility for information provided by a *Connection Applicant* under a Connection Enquiry that SP AusNet discloses to VENCorp and other *Network Service Providers,* or *NEMMCO*.

The treatment of *confidential information* is discussed in Section 8 of this document.

The first stage of the Connection Application Process (Connection Enquiry) concludes with an understanding between SP AusNet and the *Connection Applicant* concerning the broad scope of the required *connection services*, other *Network Service Providers* who must be involved in assessment of an *application to connect*, broad issues arising for SP AusNet relevant to the *Connection Point*, and a preliminary program relating to the connection proposal.

Following completion of the first stage, the *Connection Applicant* may proceed to the second stage, by making an *application to connect*. Where, in the opinion of the *Network User,* the *connection services* satisfy the definition of *negotiable services,* the *Network User* may initiate negotiation in accordance with this *negotiating framework* by completing and submitting the "Application to Connect" to this effect.

The *Network user* is responsible for contacting VENCorp regarding the new service proposal and making a separate A*pplication to Connect* to VENCorp to cover any shared network augmentations that may be required.

If SP AusNet's view is that the *connection services* are not *negotiable services* it shall inform the *Network User*, and advise its reasons, in writing within 5 *business days*.

4.1 Augmentations to Existing Connections

By prior arrangement with SP AusNet, network users wishing to augment an existing connection and may in a "one step process" submit a combined connection enquiry and *application to connect* to request SP AusNet make an offer to increase the performance of an existing connection. This request for offer will be considered as a connection application as defined in the rules. All information that would normally be required to be provided in both the connection enquiry stage and *application to connect* stage must be provided in the *application to connect* prior to commencement of processing.

As noted in the previous section a *Network User* must also separately make an *application to connect* to VENCorp.

5 Connection Application

A *Network User* who requires SP AusNet to make an offer to connect in accordance with this *negotiating framework* must make an *application to connect.* The *application to connect* will also be considered as a request for offer as defined under SP AusNet's transmission licence.

In accordance with the rules, SP AusNet will respond to the *application to connect* in respect of its primary responsibilities, however, the *Network User* must separately make an *application to connect* to VENCorp to obtain advice in respect of that organisation's primary responsibilities.

5.1 Timeframe for negotiation

SP AusNet's *preliminary program* (subject to Cl. 5.3.3 (b) of the Rules) provided in response to the connection enquiry will include milestones for provision of an offer to connect and for execution of a *connection agreement*.

SP AusNet is required by its Licence to make an offer to connect within 65 business days of receiving all necessary information to process an *application to connect*. The information requirements SP AusNet would typically include the following (subject to SP AusNet's satisfaction):

- Single Line Diagram;
- Site Layout;
- required ratings;
- Protection and Control requirements; and
- plant life.

Having regard to this constraint, SP AusNet undertakes to provide a reasonable period of time in its preliminary program for commencing, progressing and finalising

negotiations with the *Network User* for the provision of *negotiable services.* The preliminary program may be varied by agreement of the parties at the commencement of negotiation.

During the negotiation SP AusNet and the intending *Network User* must use their reasonable endeavours to adhere to the time periods set for provision of the offer to connect and for execution of the *connection agreement*.

5.2 Fees for Connection Services

SP AusNet will charge an application fee to process an *application to connect*. The minimum fee for an *application to connect* is $10,000. SP AusNet will not incur costs above $10,000 unless the *Connection Applicant* agrees to pay the additional costs.

SP AusNet may agree an alternative arrangement with the *Connection Applicant* to recover **or refund** connection application fees. In all instances, the agreed charging arrangements will be consistent with the applicable AER *cost allocation guidelines* and *Negotiated Transmission Service Criteria,* and will only cover SP AusNet's reasonable direct expenses incurred in processing the application to provide the *negotiated transmission servic*e, in accordance with the requirements of cl. 6A.9.5(c)(7).

6 Service Level Requirements and SP AusNet's charges

The *Connection Applicant* is required to specify its service level requirements as part of the *application to connect*.

SP AusNet will provide a scope of works to the *Connection Applicant* detailing the electrical layout, major plant items and activities necessary to meet the *Connection Applicant's* service level requirements. SP AusNet will also provide a description to the *Connection Applicant* of the nature of the *connection* service that is the subject of negotiation, including details of the service that SP AusNet will provide to the *Connection Applicant*.

The price (charges) for the new or augmented services must be in accordance with the principles set out in cl. 6A.9.1 of the Rules. Accordingly, SP AusNet's Offer to Connect will include charges which are "based on the costs incurred in providing that service, determined in accordance with the principles and policies set out in the Cost Allocation Methodology" (as per cl. 6A.9.1(1) of the NER), and taking into account all other principles in cl. 6A.9.1 that are applicable. SP AusNet and the *Connection Applicant* may agree to an alternative scope of works and price through the negotiation process.

SP AusNet will also provide information and meet with the *Connection Applicant t*o explain and substantiate the proposed scope of work on request from the *Connection Applicant*.

Supplementary information provided by SP AusNet in these circumstances may include information about timing of works activities.

7 Provision of Information

By entering into the negotiation process, SP AusNet and the *Connection Applicant* each agree to provide to the other party all such commercial information as the other party may reasonably require, to enable that party to engage in effective negotiation with the other party, for the provision of the *negotiable services* ~~**as to the price at which the negotiated service is to be provided**~~ including cost information.

SP AusNet's information provision obligations include that SP AusNet shall identify and inform the *Connection Applicant* of the reasonable costs, and/or the increase or decrease in costs (as appropriate), of providing the *negotiable services*. SP AusNet must demonstrate to the *Connection Applicant*, ~~**upon request**~~, that its charges for providing those negotiable services reflect those costs, and/or cost increment or decrement (as appropriate).

In accordance with cl. 6A.9.5(c)3(i) of the rules, SP AusNet will provide cost information to assist the *Connection Applicant* that will be itemised into a breakdown of incremental costs to provide the network services. The typical cost breakdown structure will be as follows:

- Project Establishment;
- Project Management;
- Project Closeout;
- Design;
- Procurement;
- Installation;
- Civil Works;
- Dismantling;
- Contingency;
- Finance Charges; and
- Specific allowance for defined project risks.

The purpose of providing this information is to demonstrate to the *Connection Applicant* that SP AusNet's charges are fair and reasonable in accordance with 6A.9.5(c)~~1~~**(3)**(ii).

Either party may determine that, in its opinion, information requested by the other party is not reasonably required by that party for the effective negotiation of provision of the *negotiable services*. If, in these circumstances, the requesting party maintains its request for the subject information then the parties shall meet and the requesting party will explain the need for the subject information and how it intends to use the information in the negotiation process. If the parties then fail to agree on whether the information is reasonably required, the matter shall be referred to the dispute resolution process (as outlined in Section 9 of this document).

8 Confidential Information

All information disclosed to the *Connection Applicant* by SP AusNet shall be treated as *confidential information*. SP AusNet may require the *Connection Applicant* to enter into a confidentiality agreement prior to providing information.

In processing a connection enquiry and *application to connect* SP AusNet must consult with other *Network Service Providers* and *NEMMCO* (as noted in Section 2 of this document) and must therefore disclose information provided by the *Connection Applicant*. Having regard to this obligation the *Connection Applicant* must, upon provision of information to SP AusNet, advise in writing if any of the information is *confidential information* and is not to be disclosed to these other *Network Service Providers* and *NEMMCO*.

Unless advised to the contrary, SP AusNet will consider that the *Connection Applicant* consents to disclosure as outlined in the preceding paragraph.

Neither party shall be required to disclose information which would put it in breach of its obligations relating to *confidential information* set out in cl. 8.6 of the Rules.

9 Dispute Resolution

By entering into the negotiation process, SP AusNet and the Connection Applicant agree that disputes arising during the course of the negotiation shall be dealt with in accordance with Part K of chapter 6A of the NER.

10 Impact on Other Network Users

In accordance with cl. 6A.9.5(c)(8) SP AusNet will determine the potential impact on other *Transmission Network Users* of the provision of the *negotiated transmission service*. There a potential impact is determined, SP AusNet will notify and consult with any affected *Transmission Network Users* and ensure that the provision of the *negotiated transmission services* does not result in non-compliance with any service standards or other obligations in relation to other *Transmission Network Users* under the Rules.

Appendix E: SP AusNet's negotiated transmission service criteria

National Electricity Market Objective

1. 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 *market* objective.

Criteria for terms and conditions of access

Terms and Conditions of Access

2. The *terms and conditions of access* for a *negotiated transmission service* must be fair and reasonable and consistent with the safe and reliable operation of the power system in accordance with the NER.

3. 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*.

4. 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

5. 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*.

6. 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.

7. If the *negotiated transmission service* is a *shared transmission service* that:

(i) exceeds any network performance requirements which it is required to meet under any relevant electricity legislation; or

(ii) exceeds the network performance requirements set out in schedule 5.1a and 5.1 of the NER

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).

8. 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).

9. 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*.

10. 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.

11. 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*.

Criteria for access charges

Access Charges

12. 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 cl.s 5.4A(h) to (j)) on the revenue that is likely to be foregone and the costs that are likely to be incurred by a person referred to in rule 5.4A(h)-(j) where an event referred to in those paragraphs occurs (as appropriate).

Appendix F: Changes required to SP AusNet's pricing methodology

As required by cl. 6A.12.1(e) of the NER, this section sets out the changes required and matters to be addressed before SP AusNet's proposed pricing methodology will be approved by the AER.

…

SP AusNet proposed pricing methodology 2008/09 – 2013/14

F.1 3.5 Application of the Allocation Principles

Omit the paragraph at the top of page 8, and substitute:

> To give effect to the allocation process, assets must be ascribed to the particular *category of prescribed transmission services* in accordance with cl. 6A.23.2 of Part J of the NER and Schedule 6.2 of Part C of the old NER. In the following paragraphs SP AusNet describes how the particular categories of assets have been allocated to *prescribed transmission service categories* by applying the principles set out in cl. 6A.23.2 of Part J of the NER and Schedule 6.2 of Part C of the old NER. As already noted, cl. 6A.23.2(c)(2) defines the resulting amount of the *AARR* allocated to each of the *categories of prescribed transmission services* as the *annual service revenue requirement* (*ASRR*).

F.2 3.5.1 Lines

SP AusNet is required to allocate this category of assets in accordance with Schedule 6.2 of Part C of the old NER. If SP AusNet has already done so, and still wishes to allocate the two line assets listed specifically in its proposal to prescribed exit services, SP AusNet must amend its pricing methodology to state its reasons for doing so.

For example, omit section 3.5.1 and substitute:

> **3.5.1 Lines**
>
> All lines are allocated to *prescribed TUOS services*, with the following exceptions:
>
> - 66kV double circuit lines between East Rowville, Cranbourne and Frankston Terminal Stations; and
> - 66kV double circuit lines between Templestowe Terminal Station and Subs DC, HB, L and WD.

In accordance with Schedule 6.2 of Part C of the old NER, the line assets listed immediately above are allocated to *prescribed exit services*, as **[INSERT REASONS for this specific allocation]**.

F.3 3.5.2 Transformers

SP AusNet is required to allocate this category of assets in accordance with Schedule 6.2 of Part C of the old NER.

Omit section 3.5.2 and substitute:

3.5.2 Transformers

The main system tie transformers are allocated to *prescribed TUOS services*. Connection Transformers are allocated to *prescribed entry services* and *prescribed exit services* in accordance with Schedule 6.2 of Part C of the old NER.

F.4 3.5.3 Switchgear

SP AusNet is required to allocate this category of assets in accordance with Schedule 6.2 of Part C of the old NER. SP AusNet must separately identify which categories of switchgear assets identified fit into prescribed entry and prescribed exit services respectively, in accordance with Schedule 6.2 of Part C of the old NER.

Omit section 3.53 and substitute:

3.5.3 Switchgear

In accordance with Schedule 6.2 of Part C of the old NER, a shallow connection policy is applied in determining the allocation of switchgear. Switchgear assigned to *prescribed entry services* includes **[INSERT ASSETS]**, while switchgear assigned to *prescribed exit services* includes **[INSERT ASSETS]**. The remainder is assigned to *prescribed TUOS services*.

F.5 3.5.5 Reactive Compensation Plant

SP AusNet is required to allocate this category of assets in accordance with Schedule 6.2 of Part C of the old NER.

Omit section 3.5.5 and substitute:

3.5.5 Reactive Compensation Plant

In accordance with Schedule 6.2 of Part C of the old NER, all reactive plant is assigned to *prescribed common transmission services* as it provides equivalent benefit to all users.

Reactive plant will be assigned to *prescribed TUOS services* if the benefits of the reactive plant can be allocated on a locational basis, but cannot be allocated to a particular user or group of users.

Reactive plant at the sub-transmission voltage level will be assigned to *prescribed exit services* if it is clearly evident that the plant has been provided to meet the local reactive requirements of one or more users connected at the relevant substation.

F.6 4.2.2 Shared Exit Services

SP AusNet is required to specify a methodology for allocating costs to new exit customers connecting at a terminal station with one or more existing exit customers.

Omit section 4.2.2 and substitute:

4.2.2 Shared Exit Services

Where more than one exit customer is supplied from a terminal station, shared costs will be allocated under the following methodology:

- Coincident maximum demand (average of 10 highest demand days) will be used to determine the allocation of costs between customers at shared exit terminal stations. Adjustments to the coincident maximum demand will be made where a feeder is shared between two or more customers. This information and any adjustments necessary will be agreed by all customers at the relevant connection point;
- Coincident maximum demand information provided for the allocation will be for the previous financial year. For example, in the calculation of the 2007/08 charges, data from 2006/07 would be used; and
- The proportion of shared costs allocated to a new exit customer must be calculated on the basis of a reasonable estimate of expected demand (over a period of not less than six months), consistent with the terms of the connection agreement between SP AusNet and the new exit customer.

SP AusNet will receive the required information from the relevant *Distribution Network Service Provider* as a percentage split for each shared terminal station. Non-distributor connection customers will have identical consultation opportunities and be subject to identical allocation principles.

An example showing the breakdown of assets undertaken in accordance with cl. 2.2(a)(1) of the interim arrangements at an exit terminal station is illustrated at Appendix 2 attached to this proposed pricing methodology.