Access arrangement draft decision

APA GasNet Australia (Operations) Pty Ltd

2013–17

Part 1

September 2012

AUSTRALIAN ENERGY REGULATOR

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Contents

Shortened forms

Shortened form	Full title
2008-12 access arrangement	Access arrangement for APA GasNet effective from 1 January 2008 to 31 December 2012 inclusive
2008-12 access arrangement period	1 January 2008 to 31 December 2012 inclusive
2013-17 access arrangement period	1 January 2013 to 31 December 2017
2018-22 access arrangement	Access arrangement for APA GasNet effective from 1 January 2018 to 31 December 2022 inclusive
ACCC	Australian Competition and Consumer Commission
access arrangement information	APA GasNet Australia (Operations) Pty Ltd, Access arrangement information, 31 March 2012
access arrangement submission	APA GasNet Australia (Operations) Pty Ltd, Access arrangement submission, 31 March 2012
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMDQ CC	authorised maximum daily quantity credit certificates
APA GasNet	APA GasNet Australia (Operations) Pty Ltd (ACN 083 009 278)
AWOTE	average weekly ordinary time earnings
capex	capital expenditure
CAPM	capital asset pricing model
Code	National Third Party Access Code for Natural Gas Pipeline Systems
CPI	consumer price index
DRP	debt risk premium
ESC	Essential Services Commission (Victoria)
GFC	global financial crisis
GPG	gas powered generation
MRP	market risk premium
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
opex	operating expenditure
ORC	optimised replacement cost
PTRM	post tax revenue model
RAB	regulatory asset base

RFM	roll forward model
RPP	revenue pricing principles
SEAGas	South East Australia Gas
VTS	Victorian transmission system
WACC	weighted average cost of capital
WORM	western outer ring main

Summary

This is the AER's draft decision on APA GasNet's access arrangement for the 2013–17 access arrangement period. It includes the AER's draft decision on reference tariffs as well as terms and conditions for access to APA GasNet's transmission pipelines. In making its draft decision the AER applied the laws and rules governing gas access arrangements.

The draft decision sets out the AER's assessment of APA GasNet's access arrangement proposal, and details a number of revisions that AER requires APA GasNet make to its proposal to make it acceptable under the National Gas Rules. APA GasNet can then lodge a revised proposal following the draft decision, and the AER will make a final decision on the revised proposal.

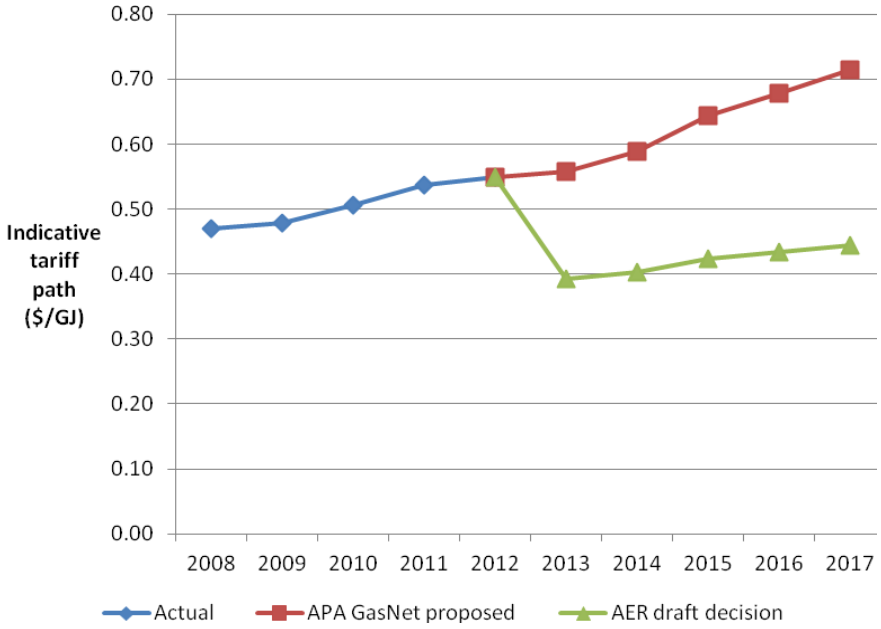
The AER's draft decision

The AER's draft decision on the total expected revenue derived from APA GasNet's reference services is $464.4 million ($nominal). This is 39.3 per cent lower than APA GasNet's proposed revenue over the 2013–17 access arrangement period.

Indicative tariffs

This draft decision will result in: reference tariffs being approximately 34.2 per cent lower on average over the 2013–17 access arrangement period (in nominal dollar terms) compared to APA GasNet's proposed tariffs; and in reference tariffs being 19 per cent lower on average over the 2008–12 access arrangement period. The indicative tariff path arising from the AER's draft decision compared with that in APA GasNet's proposal is shown in Figure 1.

Figure 1 Indicative reference tariff paths for APA GasNet's reference services from 2013 to 2017 ($/GJ, nominal)



Source: AER analysis.

Impact on residential bills

In Victoria, it is estimated that approximately 8 per cent of an average residential gas bill is from gas transmission reference services. Figure 1 shows that the draft decision results in reference tariffs falling compared with the previous access arrangement period. Hence, the AER's draft decision is not expected to contribute to any price increase to an average residential bill over the 2013–17 access arrangement period. If the decrease in transmission tariffs were passed through to consumers, a typical residential bill could be expected to reduce by up to $4 ($nominal) per year. APA GasNet's proposal would have resulted in a $6 ($nominal) per annum increase.

Key differences between the draft decision and APA GasNet's access arrangement proposal

Key differences between the draft decision and APA GasNet's proposal relate to the rate of return, forecast capital expenditure (capex), forecast operating expenditure (opex) and regulatory depreciation.

Rate of return

The rate of return relates to the cost of financing capital assets, such as providing a return on equity and paying interest on loans. The draft decision is to set a rate of return of 7.16 per cent (compared with APA GasNet's proposed 9.06 per cent). While the AER accepts most of APA GasNet's rate of return proposal, it does not accept its proposed 8.5 per cent market risk premium for the cost of equity, or the value of the equity beta proposed by APA GasNet to be applied to the speculative capex account. The AER has adopted a lower rate of 6 per cent for the market risk premium for its draft decision.

Capital expenditure

The draft decision is to approve $153.8 million ($2012) of the $340.8 million ($2012) of capex proposed by APA GasNet (a reduction of approximately 55 per cent). The majority of the difference between the AER's draft decision and APA GasNet's proposal relate to augmentation capex. APA GasNet proposed five augmentation projects. The AER approved two of these projects. The AER considered that the remaining three projects did not comply with the criteria governing capex, including that they did not constitute expenditure that a prudent service provider acting efficiently would incur.

Operating expenditure

The draft decision is to approve $146.5 million of the $182.2 million of opex proposed by APA GasNet (a reduction of approximately 20 per cent). APA GasNet proposed a number of 'step changes' to allow for adjustments to a base level estimate of annual opex. The AER accepted some of these but rejected others where these did not relate to a change in circumstances or did not reflect efficient opex. As with capex, reductions were also made to the proposed labour cost escalators.

Regulatory depreciation

Regulatory depreciation is an allowance for the declining value over time of APA GasNet's pipeline assets. The draft decision is to approve $56.2 million ($nominal) of APA GasNet's proposed $157.5 million ($nominal) (a reduction of approximately 64 per cent). The reduction is necessary in large part because APA GasNet's proposed forecast depreciation approach does not meet the requirement of promoting efficient growth of the market for reference services.

Next steps

APA GasNet is given the opportunity to address this draft decision by submitting a revised access arrangement proposal by 9 November 2012.

The AER invites submissions from interested parties in response to its draft decision and APA GasNet's revised proposal. The deadline for submissions is 7 January 2013. Further information on providing a submission can be found at: http://www.aer.gov.au/node/13556

Once the AER has considered submissions and APA GasNet's revised proposal, it will publish its final decision in March 2013.

1 About the review

The AER is responsible for the economic regulation of covered natural gas distribution and transmission pipelines in all states and territories except Western Australia. The AER is currently conducting a review of the revised access arrangements of the three Victorian gas distribution networks and the Victorian gas transmission network, which is operated by APA GasNet. The National Gas Law (NGL) and National Gas Rules (NGR) provide the overarching regulatory framework for the gas distribution and transmission sectors.

The Victorian gas transmission network is subject to full regulation, which requires the service provider[1] to submit an initial access arrangement to the AER for approval, and to revise it periodically (typically every five years). The access arrangement sets out the terms and conditions on which third parties can access the transmission pipeline.[2]

1.1 Overview of the service provider

The Victorian Transmission System (VTS) transports gas to more than 1.4 million residential consumers and 43 000 industrial and commercial users throughout Victoria. The VTS is 1993 km in length and consists of 45 licensed pipelines and associated facilities supplying the Melbourne metropolitan area, country Victoria, New South Wales and South Australia (see figure 1.1 below). The VTS primarily transports gas from Esso's Longford gas treatment plant in south east Victoria (which processes gas from offshore Bass Strait gas fields), the Otway Basin gas field and underground storage in south west Victoria.

APA GasNet is entirely owned by APA Group (APA). APA is Australia's largest natural gas infrastructure business, owning and operating approximately $9 billion of energy infrastructure assets. APA's pipelines span every Australian state and territory, delivering about half of the nation's gas usage. APA also holds minority interests in a number of energy infrastructure enterprises.

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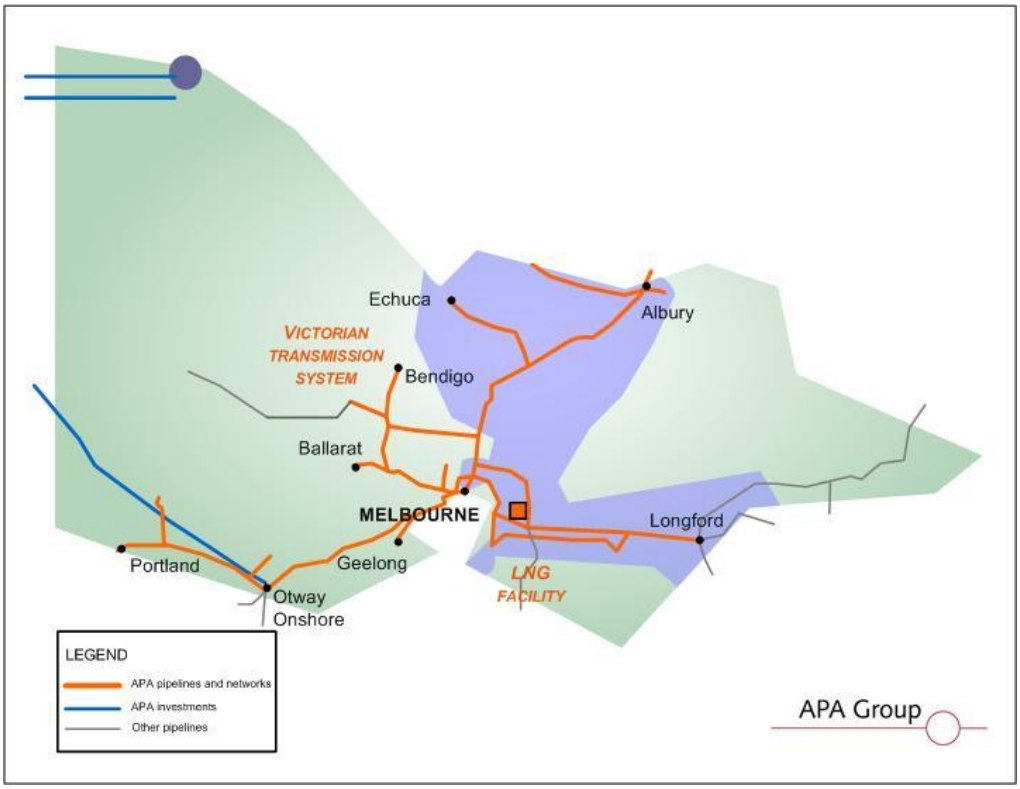
1 Under s. 8 of the NGL a service provider is a person who owns, controls or operates a gas pipeline.

2 In Victoria, the Australian Energy Market Operator manages the Victorian Transmission System, and users are not required to enter into commercial contracts with their transmission network service provider/s. Instead, a user's daily gas flow is determined by its injection bids into the wholesale gas market. The injection bids enter into a market clearing engine, which dispatches the lowest priced injection bids to meet demand. The access arrangement approved by the AER sets the reference tariff that users pay for gas haulage services based on the actual gas flows following this dispatch process.

Figure 1.1 Map of Victorian transmission system



1.1.2 Regulation prior to 1 July 2008

The Australian Competition and Consumer Commission (ACCC) made the previous determination on APA GasNet's access arrangement for the period 1 January 2008 to 31 December 2012. The ACCC made its determination in accordance with the provisions of the National Third Party Access Code for Natural Gas Pipeline Systems.

Responsibility for the regulation of gas transmission networks outside of Western Australia transferred from the ACCC to the AER on 1 July 2008. This current determination process is the first full assessment by the AER of the access arrangements of the Victorian gas transmission under the NGL and the NGR.

1.2 The relevant requirements of the NGL and the NGR

This access arrangement draft decision specifies the amendments that the AER considers are required in order for APA GasNet's access arrangement proposal to be approved. These amendments have been identified by assessing each element of APA GasNet's access arrangement proposal in accordance with the relevant requirements set out in the NGL and the NGR. It is important to recognise that the requirements in the NGL and the NGR relevant to (and accordingly, the assessment required of) a particular element of APA GasNet's access arrangement proposal may differ. For example, the NGR ascribes different levels of discretion—namely full, limited or no discretion—when making certain decisions on an access arrangement proposal. Specifically:

> No discretion
>
> (1) If the Law states that the AER has no discretion under a particular provision of the Law, then the discretion is entirely excluded in regard to an element of an access arrangement proposal governed by the relevant provision.

> Limited discretion
>
> (2) If the Law states that the AER's discretion under a particular provision of the Law is limited, then the AER may not withhold its approval to an element of an access arrangement proposal that is governed by the relevant provision if the AER is satisfied that it:
>
> (a) complies with applicable requirements of the Law; and
>
> (b) is consistent with applicable criteria (if any) prescribed by the Law.
>
> Full discretion
>
> (3) In all other cases, the AER has a discretion to withhold its approval to an element of an access arrangement proposal if, in the AER's opinion, a preferable alternative exists that:
>
> (a) complies with applicable requirements of the Law; and
>
> (b) is consistent with applicable criteria (if any) prescribed by the Law.[3]

For these reasons, each element of APA GasNet's access arrangement proposal has been assessed individually in separate attachments to this draft decision. The requirements relevant to each element are also set out in each of these attachments.

However, there are two overarching requirements that apply to the assessment of APA GasNet's access arrangement proposal as a whole. First, the AER must make an access arrangement decision that is in the long term interests of consumers. Specifically, the AER must do so in a manner that will or is likely to contribute to the NGO.[4] Section 23 of the NGL relevantly provides:

> The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

Consistent with this, r. 100 of the NGR, provides:

> The provisions of an access arrangement must be consistent with:
>
> (a) the national gas objective; and
>
> (b) these rules and the Procedures as in force when the terms and conditions of the access arrangement are determined or revised.

Second, the AER must take into account the revenue and pricing principles (RPP) when exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff, or where it considers appropriate to do so.[5] Section 23 of the NGL relevantly provides:

> (1) The revenue and pricing principles are the principles set out in subsections (2) to (7).
>
> (2) A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in-
>
> (a) providing reference services; and
>
> (b) complying with a regulatory obligation or requirement or making a regulatory payment.

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3 NGR, r. 40.
4 NGL, s. 28(1).
5 NGL, s. 28(2).

(3) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes-

(a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and

(b) the efficient provision of pipeline services; and

(c) the efficient use of the pipeline.

(4) Regard should be had to the capital base with respect to a pipeline adopted-

(a) in any previous-

(i) full access arrangement decision; or

(ii) decision of a relevant Regulator under section 2 of the Gas Code;

(b) in the Rules.

(5) A reference tariff should allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that tariff relates.

(6) Regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in a pipeline with which the service provider provides pipeline services.

(7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a pipeline with which a service provider provides pipeline services.

Ultimately, in order to properly take into account the RPP and to determine whether it will or is likely to contribute to the achievement of the NGO, a holistic assessment of an access arrangement proposal must be undertaken. This is because an access arrangement is a complex instrument that is more than just the sum of its elements or component parts. An access arrangement also represents a balance between the possible outcomes, reflecting the AER's judgment on the level of scrutiny and the form of examination afforded to all relevant material before it.

That balance also recognises that there are interlinkages between different elements of an access arrangement. These interlinkages must be taken into account in order to ensure that all of the elements of an access arrangement work together as a whole. That is, so that the terms and conditions, including prices, will, among other things, contribute to achieving efficient investment in and operation of APA GasNet's gas transmission network in the long term interests of consumers whilst providing APA GasNet with a reasonable opportunity to recover at least its efficient costs and effective incentives to promote economic efficiency. These interlinkages are set out in chapter 16 of the draft decision.

1.3 Access arrangement review process

Under the NGL a service provider must submit an access arrangement proposal to the AER for approval under the NGR.[6] An access arrangement proposal contains the terms, including prices, under which the service provider proposes to provide access to the services provided by their networks to users and prospective users.

[6] NGL, s. 132.

When submitting an access arrangement proposal, the service provider must submit 'access arrangement information' for the proposal. The term 'access arrangement information' is defined by r. 42(1), which provides:

> *Access arrangement information* for an access arrangement or an *access arrangement proposal* is information that is reasonably necessary for users and prospective users:
>
> (a) to understand the background to the access arrangement or the *access arrangement proposal*; and
>
> (b) to understand the basis and derivation or the various elements of the access arrangement or the *access arrangement proposal*.

Rule 42(2) provides that access arrangement information must include the information reasonably required by the NGL and the NGR. Rule 48 sets out general requirements including that the service provider must describe the pipeline services it proposes to offer by means of the pipeline and must specify the reference services and reference tariffs. Rule 72 lists specific information relevant to price and revenue regulation that also must be included in an access arrangement. This includes detailed forecasting information and the service provider's proposed approach to the setting of tariffs.

Following the service provider's submission of an access arrangement proposal, the AER conducts a preliminary assessment of the proposal and access arrangement information against the requirements of the NGR.[7] The AER must publish a notice (initiating notice) on its website and in a newspaper notifying receipt of, and describing the access arrangement proposal, giving a website where it can be inspected, and inviting written submissions on the proposal by a specified date.[8] The AER may defer the initiating notice if, on a preliminary inspection, the AER considers that the proposal or related information is deficient in some respect.[9]

After considering the access arrangement proposal, any submissions in response to the service provider's access arrangement proposal, and any other matters the AER considers relevant, the AER must make an access arrangement draft decision.[10] The AER must include a statement of the reasons for the draft decision.[11] An access arrangement draft decision indicates whether the AER is prepared to approve the service provider's access arrangement proposal as submitted and, if not, the nature of the amendments that are required in order to make the proposal acceptable to the AER.[12]

1.3.1 Access arrangement proposal to be approved in its entirety or not at all

The AER's approval of an access arrangement proposal implies approval of every element of the proposal.[13] It follows that if the AER withholds its approval to any element of an access arrangement proposal, then the proposal cannot be approved.[14]

If, in an access arrangement final decision, the AER does not approve an access arrangement proposal, the AER must itself propose an access arrangement or revisions to the access arrangement

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7 The AER assessed APA GasNet's access arrangement proposal and access arrangement information and considered that it complies with the requirements of the NGR.
8 NGR, r. 58(1).
9 NGR, r. 58(2).
10 NGR, r. 59(1); r. 71(2).
11 NGR. r. 59(4).
12 NGR, r. 59(2).
13 NGR, r. 41(1).
14 NGR, r. 41(2).

for the relevant pipeline.[15] The AER's proposal for an access arrangement or revisions is to be formulated with regard to:

- the matters that the NGL requires an access arrangement to include
- the service provider's access arrangement proposal
- the AER's reasons for refusing to approve that proposal.[16]

1.3.2 Revision of access arrangement proposal and commencement of public consultation

If an access arrangement draft decision indicates that revision of the access arrangement proposal is necessary to make the proposal acceptable to the AER, the decision must fix a period for revision of the proposal.[17] This is known as the revision period. In the revision period, the service provider may submit additions or other amendments to the access arrangement proposal to address matters raised in the access arrangement draft decision.[18] The amendments must be limited to those necessary to address matters raised in the access arrangement draft decision unless the AER approves further amendments.[19]

After the AER makes an access arrangement draft decision, it must notify stakeholders, establish a procedure for stakeholders to make written submissions on the draft decision, and make the draft decision available. It must do this by publishing the decision on its website, and publishing a notice on its website and in a national newspaper. [20] Pursuant to r. 59(5)(c), the notice must invite written submissions. The due date for written submissions must be at least 20 business days after the end of the revision period.

After considering the submissions made in response to the access arrangement draft decision within the time allowed, and any other matters the AER considers relevant, the AER must make an access arrangement final decision.[21]

An access arrangement final decision is a decision to approve, or to refuse to approve, an access arrangement proposal.[22] An access arrangement final decision, like an access arrangement draft decision, must include a statement of the reasons for the decision.[23] The final decision must also be published on the AER's website.

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15 NGR, r. 64(1).
16 NGR, r. 65(2).
17 NGR, r. 59(2).
18 NGR, r. 60(1).
19 NGR, r. 60(2). For example, the AER might approve amendments to the access arrangement proposal to deal with a change in circumstances of the service provider's business since submission of the access arrangement proposal.
20 NGR, r. 59(5)(b) & (c)
21 NGR, r. 62(1).
22 NGR, r. 62(2).
23 NGR, r. 62(4).

1.3.3 Time limits on AER decision making

The AER is required to make an access arrangement final decision to approve or not approve the access arrangement proposal within six months of receipt of the access arrangement proposal.[24] For the purpose of calculating elapsed time in the making of a decision under the NGL and NGR, certain periods may be disregarded, such as a period allowed for public consultation and a period taken by the service provider to respond to a request for information from the AER.[25]

For instance, when calculating the six month period, the AER may disregard any period allowed for public submissions on the proposal or on a draft decision.[26] The time taken for a service provider to remedy a deficiency in their access arrangement information under r. 43(3) of the NGR can also be disregarded for the purposes of calculating the six month period. However, the access arrangement review must be completed within an absolute overall time limit of 13 months between the date on which the service provider submits its access arrangement proposal and the AER's final decision.[27]

1.4 Public consultation

The NGR require the AER to consult with interested parties at various stages during an access arrangement review. Effective consultation and engagement with stakeholders is essential to the AER's performance of its regulatory functions.

The AER invited interested parties to make submissions on APA GasNet's access arrangement proposal. The AER considered all submissions in making this draft decision.

Table 1.1 below outlines the various stages of public consultation that the AER has undertaken as part of the review process, and upcoming consultation following this draft decision. The AER may also hold a public forum and industry workshop following the release of the AER's draft decision.

Submissions on APA GasNet's revised proposal are due 7 January 2012. Further information on providing a submission to the AER can be found at: http://www.aer.gov.au/node/13556

Table 1.1 Scheduled dates for key stages in the decision making process

Key stages in the decision making process	Scheduled date
AER received APA GasNet proposal	31 March 2012
APA GasNet proposal published	17 April 2012
AER draft decision released	10 September 2012
APA GasNet revised proposal to be submitted	9 November 2012
Submissions on revised proposal due	7 January 2013
Release of AER final decision	March 2013

[24] NGR, r. 62(7).
[25] NGR, r. 11.
[26] NGR, r. 11(1)(c).
[27] NGR, r. 13.

1.4.2 Protected information submitted to the AER

As part of the review process the AER receives protected information from the businesses and other stakeholders. The AER is committed to treating protected information responsibly and in accordance with the law.

Division 1 of Part 2 of Chapter 10 of the NGL deals with disclosure of confidential information held by the AER. The NGL authorises the AER to disclose confidential information in specified circumstances.[28] In summary, the AER is authorised to disclose confidential information where it is of the opinion that:

- disclosure would not cause detriment to the person who gave the information, or
- although disclosure would cause detriment, the public benefit in disclosing the information outweighs the detriment to the disclosing person.[29]

Before disclosing information, the AER must undertake the process set out in s. 329(2) of the NGL. It provides that the AER must: give a notice to the person who gave the information of the intended disclosure; give the person an opportunity to address the AER's case for disclosure; and properly consider that person's case for nondisclosure in making its decision.

The AER undertook the NGL process described above to disclose information where it was of the opinion that the information would be relevant to stakeholder submissions or would need to be referred to in its decision, and after it had satisfied itself of the matters required under the NGL.

1.5 Structure of decision paper

The draft decision paper is set out as follows:

- Part 1: AER draft decision – draft decision on access arrangement proposal and summary of reasons
- Part 2: attachments – detailed analysis of the various components of the draft decision (excluding analysis based on confidential information)
- Part 3: appendices – detailed discussion of common, technical issues
- Part 4: confidential appendices – sections of the AER's analysis that include protected information.

In making its draft decision, the AER considered APA GasNet's access arrangement proposal and supporting information, submissions by interested parties and specialist advice provided to the AER by engineering, financial and economic experts.

The attachments to the AER's draft decision contain the AER's more detailed analysis. AER analysis that refers to protected information is contained in a confidential appendix to the decision.

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[28] NGL, ss. 324 to 329 (Division 1 of Part 2 of Chapter 10 of the NGR).
[29] NGL, s. 329(1).

2 AER approach

As the owner and operator of a gas transmission network, APA GasNet is required to submit an access arrangement to the regulator for approval. An access arrangement sets out the terms and conditions under which third parties can use a pipeline. It must specify at least one reference service likely to be sought by a significant part of the market, and a reference tariff for that service.

As the national energy regulator the AER is required to assess APA GasNet's proposed gas access arrangement for the 2013–17 access arrangement period. In order to assess APA Group's proposal, the AER must first identify the covered pipeline that will be regulated through the access arrangement. That is, the 'reference services' covered by the access arrangement. For this draft decision the reference service is essentially the gas transmission service provided by APA GasNet on the Victorian transmission system (VTS). This is discussed in more detail in overview section 3, attachment 1.

The AER then undertakes the more substantial task of assessing and providing a draft decision on:

- tariffs for regulated pipeline services (reference services)
- non-tariff terms and conditions for reference and ancillary services.

2.1 Tariffs for reference services

Assessing tariffs for reference services involves first assessing the total revenue required to deliver reference services on the VTS. Consistent with the NGR, the AER uses the building block approach to determine the total revenue allowance.

Total revenue under the building block approach is set out in r. 76 of the NGR and comprise of the following capital and non-capital costs relating to pipeline services:

- a return on the projected capital base[30] incorporating:
  - capital base – chapter 5 and attachment 2
  - capital expenditure (which forms part of the capital base) – chapter 6, attachment 3 and confidential appendix A
  - rate of return – chapter 7, attachment 4 and appendix B
- regulatory depreciation of the projected capital base – chapter 8 and attachment 5
- forecast operating expenditure – chapter 9 and attachment 6
- increments and decrements resulting from an incentive mechanism[31] – chapter 10 and attachment 7

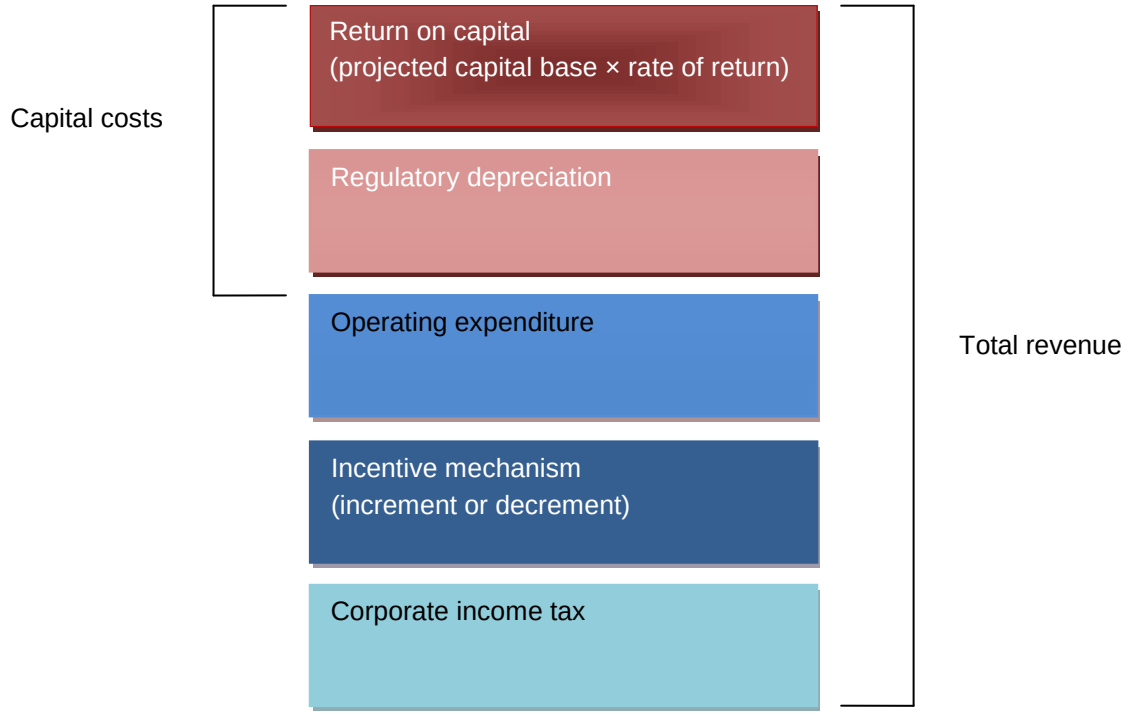
[30] Includes any forecast capital expenditure.

[31] This may relate to operating expenditure and/or capital expenditure depending on the incentive mechanism.

- corporate income tax[32] – chapter 11 and attachment 8.

This is illustrated in Figure 2.1.[33]

Figure 2.1 Building block approach



These building blocks are taken into account in determining APA GastNet's total revenue. That total revenue in general terms, is a forecast of its efficient cost of providing gas transmission services. For the AER's draft decision on APA GasNet's required revenue see overview section 2.

Once total revenue is determined, revenue is allocated to reference and other pipeline services. The tariffs for the pipeline services are determined by reference to the recovery of the total revenue required to provide those services and the forecast demand or capacity utilisation for those services. Hence, capacity utilisation forecasts are an important component of the AER's draft decision on reference services. Capacity utilisation forecasts are discussed in the capacity utilisation forecast section of this document (chapter 12), and at attachment 9 and appendix D.

In relation to tariffs, the access arrangement also details:

- how tariffs for reference services will be set (chapter 13 and attachment 10 relate to tariff setting)
- the mechanism for varying tariffs annually and arrangements for varying tariffs in certain pre-specified conditions (chapter 14 and attachment 11 discuss the tariff variation mechanism).

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[32] This will be included as a building block revenue component in the estimate of corporate income tax payable under the post-tax framework or in the return on the capital under the pre-tax framework. The AER employs the post-tax framework.

[33] AER, *Access arrangement guidelines*, March 2009, p. 55.

2.2 Non-tariff terms and conditions

Non-tariff terms and conditions essentially define the commercial relationship between the network service provider and users. In considering APA GasNet's proposal, the AER assesses whether its proposed terms and conditions are consistent with the NGO and the broader regulatory framework. While parties can agree on terms that are different to those set out in APA GasNet's access arrangement proposal, the AER's approved terms and conditions can act as a starting point for negotiations.

The AER's consideration of the access arrangement's non–tariff components is set out in chapter 15 and attachment 12.

2.3 What the AER considers in reaching its draft decision

The AER's draft decision on APA GasNet's 2013–17 access arrangement has been made in accordance with the relevant sections of the NGL and NGR.

The AER has made its draft decision by:

- considering APA GasNet's access arrangement proposal and other supporting information provided by APA GasNet
- considering submissions from interested parties
- considering views expressed at stakeholder events
- undertaking its own analysis to verify the information provided by APA GasNet
- considering expert advice or analysis commissioned by the AER on certain parts of APA GasNet's access arrangement proposal.

APA GasNet prepared a reasonably comprehensive proposal with additional information to support their proposals where required. This meant the AER had most of the information required to assess the proposal from the start, which avoided any significant delays to the process.

For more on the steps undertaken by the AER in coming to this draft decision, as well as an overview of the regulatory framework, see the introductory chapter at the beginning of this document.

3 Total revenue requirements and the impact on price

The total revenue allowance, in general terms, is a forecast of the efficient cost of providing pipeline reference services.

The total revenue set out in this draft decision has been determined by assessing each element of APA GasNet's access arrangement proposal. These elements include the building blocks, which have been assessed to ensure that they are consistent with the costs that would be incurred by an efficient service provider in providing gas transmission services. This also includes taking into account any relevant interlinkages that exist between the elements of APA GasNet's access arrangement proposal.

These elements are discussed in more detail in the remainder of the overview, as well as in the attachments to this draft decision. The interlinkages are discussed in chapter 16 of this draft decision.

This section also includes some analysis on the likely impact of this draft decision on prices for end consumers. This analysis has been undertaken with reference to the AER's draft decision on tariffs.

In making its draft decision the AER considered APA GasNet's proposal and supporting information as well as information from consultants, where relevant.

3.1 Draft decision

The AER's draft decision on the total (smoothed) expected revenue derived from APA GasNet's reference services is $464.4 million ($nominal) over the 2013–17 access arrangement period.[34]

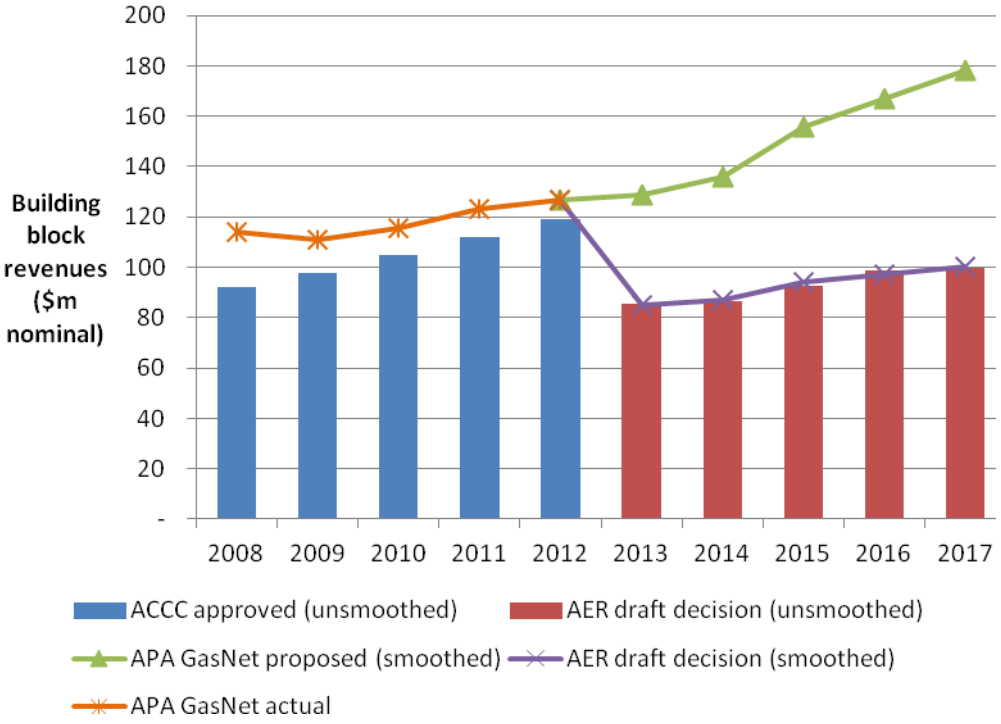
This (smoothed) revenue is 39.3 per cent lower than APA GasNet's proposed (smoothed) revenue over the 2013–17 access arrangement period. The AER accepts that many aspects of APA GasNet's proposed access arrangement proposal are consistent with the requirements of the NGR. However, the AER has not approved all elements. The key elements of the AER's draft decision which would reduce APA GasNet's proposed revenues are:

- the rate of return
- capex
- opex
- regulatory depreciation.

Figure 3.1 compares APA GasNet's proposal with the AER's draft decision for revenues over the 2013–17 access arrangement period and the revenue approved by the ACCC over the 2008–12 access arrangement period. APA GasNet's proposed smoothed revenues for the 2013–17 access arrangement period are 45.7 per cent higher than the ACCC allowed (unsmoothed) revenues for the 2008–12 access arrangement period.

[34] This is based on unsmoothed revenue of $464.4 million ($nominal).

Figure 3.1 AER's draft decision compared to APA GasNet's proposed revenue requirement and approved revenue for 2008–12 ($million, nominal)



Source: AER analysis.

The AER's draft decision on APA GasNet's total revenue is arrived at by summing the 'building blocks'[35] that were set out earlier in section 2.1 of this document. These building blocks are displayed in Table 3.1 and are each discussed in greater detail in this overview and the attachments to the document.

[35] NGR, r. 76.

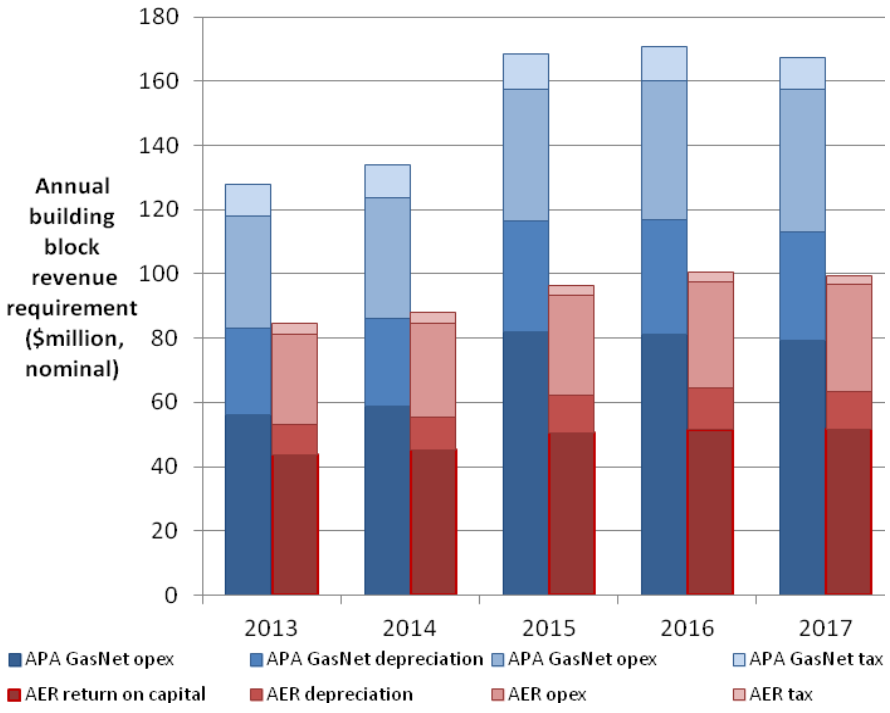
Table 3.1 AER's draft decision on APA GasNet's proposed revenue requirements for its reference services ($million, nominal)

	2013	2014	2015	2016	2017	Total
Return on capital	43.8	45.2	50.5	51.5	51.6	242.7
Regulatory depreciation	9.3	10.2	11.8	13.2	11.7	56.2
Operating expenditure	28.2	29.2	30.9	32.7	33.5	154.6
Benefit sharing allowance	1.0	–1.7	–2.2	–1.9	–	–4.8
Net corporate income tax allowance	3.1	3.4	3.2	3.3	2.7	15.7
Annual building block requirement (unsmoothed)	85.4	86.4	94.3	98.8	99.5	464.4
Annual expected revenue (smoothed)	85.2	87.0	94.3	97.4	100.4	464.4
X factor	32.3%[a]	0%	0%	0%	0%	n/a

Source: AER analysis.
(a) This is the Po for revenue for the first year of the 2013–17 access arrangement period.
n/a Not applicable.

The effect of the AER's draft decision adjustments to the building blocks on APA GasNet's proposed total (unsmoothed) revenue requirement is displayed in Figure 3.2. This figure shows that the AER's draft decision will reduce APA GasNet's proposals for the return on capital, opex, depreciation and tax building blocks.

Figure 3.2 AER's draft decision and APA GasNet's proposed revenue requirement (unsmoothed) ($million, nominal)



Source: AER analysis.

3.1.2 Sensitivity analysis

This section provides additional analysis to consider how revenue has changed between APA GasNet's proposal and this draft decision and the key drivers of this.

The AER's draft decision is to approve smoothed revenue requirement of $464.4 million ($nominal) for APA GasNet over the 2013–17 access arrangement period.[36] The AER's draft decision represents a 39.3 per cent reduction of APA GasNet's proposed smoothed revenue over the 2013–17 access arrangement period.

The AER also assessed the impact of key aspects of the AER's draft decision on APA GasNet's proposed revenue. These include the AER's draft decision on the rate of return, forecast capex, opex and depreciation. The AER's draft decision on each is:

- a rate of return of 7.16 per cent, compared to APA GasNet's proposed 9.06 per cent
- capex of $166.8 million ($nominal), compared to APA GasNet's proposed $394.0 million ($nominal); a reduction of 57.7 per cent
- opex[37] of $149.9 million ($nominal), compared to APA GasNet's proposed $198.2 million ($nominal); a reduction of 24.4 per cent
- depreciation of $56.2 million ($nominal), compared to APA GasNet's proposed $157.5 million; a reduction of 64.3 per cent.

Table 3.2 shows that total revenue would be $90.0 million ($nominal) or 11.8 per cent lower than APA GasNet's proposed total revenue when the AER's draft decision on the rate of return is adopted.

Table 3.3 shows that total unsmoothed revenue, based on the AER's draft decision on forecast capex, would be $78.2 million ($nominal) or 10.2 per cent lower than APA GasNet's proposed revenue. It also shows that when the AER's draft decision on forecast opex is adopted, the total unsmoothed revenue would be around $48.3 million ($nominal) or 6.3 per cent lower than the APA GasNet's total proposed revenue. In addition, the total unsmoothed revenue would be $101.6 million ($nominal) or 13.3 per cent lower than APA GasNet's proposed revenue, when AER's draft decision on regulatory depreciation is adopted.

[36] This is based on unsmoothed revenue of $464.4 million ($nominal).
[37] Includes benefit sharing amounts.

Table 3.2 Changes to APA GasNet's total proposed unsmoothed revenue, when AER's draft decision WACC parameters are adopted

	APA GasNet proposal (per cent)	AER's draft decision (per cent)	Revenue change ($million, nominal)	Revenue change (per cent)
Risk free rate	3.99	2.98	–45.0	–5.9[a]
DRP	3.92	3.76	–3.9	–0.5[b]
MRP	8.50	6.00	–41.2	–5.4
WACC	9.06	7.16	–90.0	–11.8[c]

Source: AER analysis.
(a) The AER has accepted the method for determining the risk free rate proposed by APA GasNet. The difference between the risk free rate proposed by APA GasNet and the AER's draft decision, therefore, is due entirely to the AER's draft decision relying on data from a more recent indicative averaging period. That is, APA GasNet's proposed rate is based on market data from November–December 2011, whereas the AER's draft decision is based on market data from July–August 2012. The AER will update this data for its final decision to reflect APA GasNet's final averaging period.
(b) The difference between the DRP proposed by APA GasNet and the AER's draft decision predominantly reflects the difference in indicative averaging periods (as outlined for the risk free rate). The AER, however, has also amended the bond sample relied on by APA GasNet to extrapolate the Bloomberg fair value curve. This amendment, albeit minor, is discussed in greater detail in attachment 4 of this draft decision.
(c) The impact from each individual parameter change does not add up to the total impact of the WACC change (last row in the table). This is due to the interaction of individual parameters that contribute to calculating the WACC.

Table 3.3 Changes to APA GasNet's total proposed unsmoothed revenue, when AER's draft decision capex forecasts, opex forecasts and regulatory depreciation allowance are adopted

	APA GasNet proposal ($million, nominal)	AER's draft decision ($million, nominal)	Revenue change ($million, nominal)	Revenue change (per cent)
Capex	394.0	166.8	–78.2	–10.2
Opex[a]	198.2	149.9	–48.3	–6.3
Regulatory depreciation	157.5	56.2	–101.6	–13.3

Source: AER analysis.
(a) Includes benefit sharing amounts.

3.2 Impact on prices

3.2.1 Reference tariffs

The effect of the AER's draft decision on APA GasNet's forecast reference tariffs for its reference services can be estimated by comparing these with APA GasNet's forecast reference tariffs. Using this approach the AER estimates that the draft decision will result in reference tariffs being 34.2 per cent[38] lower on average over the 2013–17 access arrangement period in nominal dollar terms than APA GasNet's proposed tariffs.

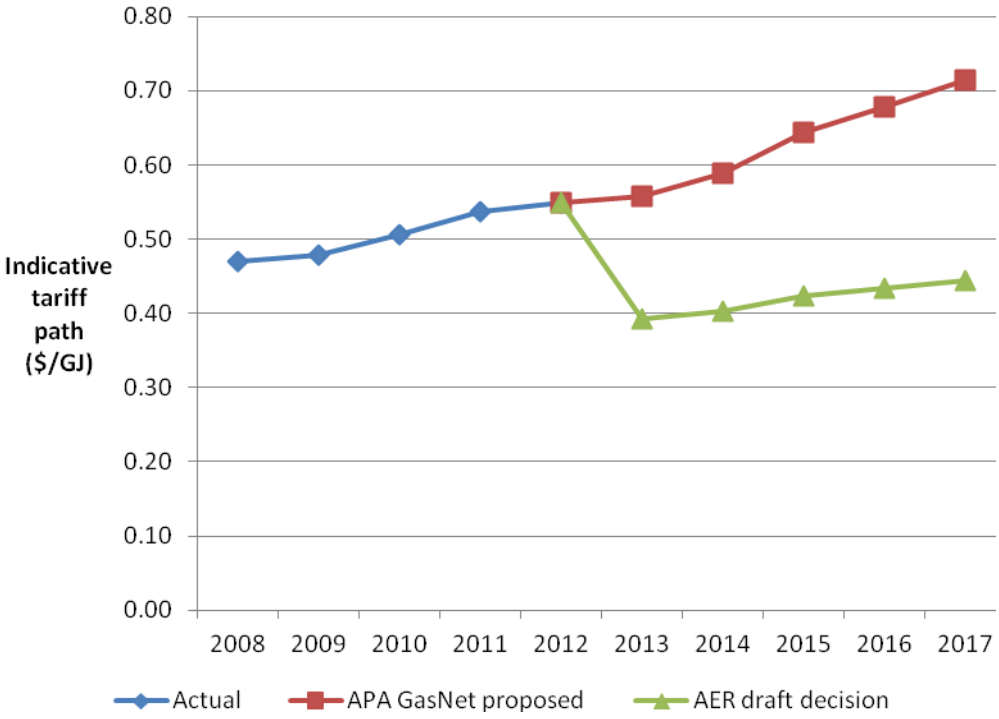
[38] This is an indicative value, calculated using the AER's estimate of average tariffs. These average tariffs are based on the AER's draft decision on APA GasNet's forecast revenue recovery over the 2013–17 access arrangement period and the

The AER's draft decision will result in average reference service transmission charges ($/GJ of demand) for the 2008–12 access arrangement period that are 19 per cent lower than average reference service charges per GJ for the 2013–17 access arrangement period.

This includes a reduction in average transmission charges ($/GJ) from 2012 to 2013 of approximately 28 per cent.

These lower reference tariffs are largely driven by the AER's draft decision on a lower rate of return, lower capex forecast and lower regulatory depreciation allowance. This is also reflected in no real price increases (known as X factors). The indicative tariff path arising from the AER's draft decision compared with that in APA GasNet's proposal is shown in Figure 3.3.

Figure 3.3 Indicative reference tariff paths for APA GasNet's reference services from 2013 to 2017 ($/GJ, nominal)



Source: AER analysis.

3.2.2 Average residential customer bill

In Victoria, the proportion of the average residential gas bill attributable to gas transmission reference tariffs is estimated to be approximately 8 per cent.[39] The AER's draft decision on APA GasNet's

AER's draft decision on aggregate withdrawal demand. This calculation excludes refill demand and refill revenues as demand for this service is highly variable and may cause bias to the estimated average tariffs. The actual price path for individual tariffs may vary from the AER's estimated average tariffs.

[39] The AER derived an estimate of the proportion of transmission charges that contribute to the typical residential customer bill based on a cost per unit of gas ($/GJ). This information was sourced from the ESC's published standing offer bills contained in *Energy retailers comparative performance report – Pricing 2010–11 (*December 2011,pp. 54–55, viewed on 30 August 2012 at http://www.esc.vic.gov.au/getattachment/14281692-b36d-4c03-9c73-65815ee43bfe/Energy-Retail-Performance-Report-2010-11-Pricing.pdf); and APA GasNet's approved tariffs for 2010 and 2011. The averages of the tariffs applied in the AER's analysis uses a weighted average of volume by tariff class.

access arrangement proposal is not expected to contribute towards any price increase for an average residential bill of $1154 per year.[40] The expected lower revenues under the AER's draft decision over the 2013–17 access arrangement period results in lower tariffs compared to APA GasNet's proposal. If these lower transmission tariffs were passed through to end consumers, a typical residential bill could be expected to reduce by up to approximately $4 per year. Under APA GasNet's proposal the estimated increase in a typical residential gas bill would be approximately $6 per annum ($nominal) or $28 in total over the 2013–17 access arrangement period.

3.2.3 Average commercial customer bill

The impact of this draft decision on commercial users will depend on the proportion of the gas bill attributable to gas transmission. It is estimated that transmission costs form approximately 21 per cent of the gas bill for large commercial users.[41] However, the proportion attributable to large commercial users will depend on the terms of private bi-lateral contracts. Based on the above estimated proportion, this draft decision is not expected to contribute towards any price increase in the overall gas bill for this type of users. By comparison, APA GasNet's proposal would result in an estimated annual average increase of 1.3 per cent over the 2013–17 access arrangement period.

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[40] The average residential bill is calculated as the average standing offer contract for a customer consuming 60 GJ per annum, across each distribution zone. Standing offer prices charged by retailers represent charges applied to those customers who have not switched from their incumbent or local retailer.

[41] The AER's calculation of the proportion of transmission charges for large commercial users is based upon the cost of gas per GJ of $5.40 ($nominal) and the weighted average demand transmission charge of $1.40/GJ ($nominal).
The AER's analysis is based on information sourced from ACIL Tasman, *Preparation of energy market modelling data for the Energy White Paper – supply assumptions report*, 13 September 2010, p. 36, viewed on 30 August 2012 at < http://www.aemo.com.au/~/media/Files/Other/planning/0400-0019%20pdf.pdf>.

4 Services covered by the access arrangement

In considering a full access arrangement for a gas pipeline network, the first step is to identify the covered pipeline that will be regulated through the access arrangement. After identifying the covered pipeline, the next step is to describe the reference service(s) that will be regulated through the access arrangement. A service is deemed a reference service if it is a pipeline service that is is likely to be sought by a significant part of the market, pursuant to r. 121(2) of the NGR.

The full draft decision and the AER's detailed reasons and analysis on reference services base can be found in attachment 1.

4.1 Draft decision

As a market carriage system APA GasNet's Victorian gas transmission network is made available in its entirety to AEMO. The terms of this single reference service are set out in the service envelope agreement between APA GasNet and AEMO. AEMO operates the network in accordance with the NGR. The AER considers that this service is likely to be sought by a significant part of the market.

In addition to the single reference service, APA GasNet also offer authorised maximum daily quantity credit certificates (AMDQ CC), which provide preferential rights to users who purchase these certificates for specified amounts of pipeline capacity when the transmission system becomes constrained.

The AER considers that AMDQ CC should be classified as a pipeline service as it is likely to be sought by a significant part of the market. The AER has calculated an initial reference tariff for AMDQ CC of $0.0025 per GJ (in real 2013 dollars).

The AER's draft decision is based on the current definitions of a reference service and also of a rebateable service. These definitions are currently the subject of a proposed rule change.[42] The AEMC has advised that a final rule determination will be made on 1 November 2012. The AER will give effect to that rule change in the event that it takes effect prior to the final decision.

[42] On 5 August 2011 the AER submitted a rule change proposal to amend the definition of a reference and rebateable service in the NGR. The AEMC released its draft decision on the proposed rule change in March 2012. On 27 July 2012, the AEMC extended the period of time for the making of the final rule determination to 1 November 2012.

5 Capital base

The capital base is the value of APA GasNet's capital assets — including gas transmission pipelines, connections, IT systems, plant and equipment, motor vehicles and buildings — that are required to provide reference services. The capital base is the value on which APA GasNet can earn a rate of return. Further, APA GasNet is allowed to earn a depreciation allowance (or a return of capital) on assets in its capital base. Hence, the capital base is an important input to the return on capital and depreciation building blocks and consequently, the revenue requirement.

As part of this draft decision, the AER is required to assess APA GasNet's proposed opening value for the capital base for each year of the previous and upcoming access arrangement period. This involves the AER:

- Confirming the value of the opening capital base at 1 January 2008 (the first year of the 2008–12 access agreement period). This involves assessing whether APA GasNet's actual capex in 2007 is conforming capex and adjusting for differences between actual conforming capex and estimated capex for 2007.[43] Conforming capex is essentially that which would have been undertaken by an efficient transmission service provider in providing reference services.
- Rolling forward the opening capital base as at 1 January 2008 to determine the closing capital base as at 31 December 2012.[44] This involves, for each year:
  - adding conforming actual capex and any speculative capex or redundant assets that were reused during the 2008–12 access arrangement period
  - removing forecast depreciation, any capital contributions, any redundant assets and any disposals
  - indexing the roll forward for actual inflation.
- Using the AER's draft decision on forecast depreciation, capex, disposals and inflation for the 2013–17 access agreement period to roll forward APA GasNet's projected capital base for each year of that access arrangement period. In particular, conforming forecast capex is added to the capital base while forecast depreciation and disposals are removed from the capital base. Forecast inflation is used to index the resulting capital base.

Following this process, the AER's draft decision includes a forecast value of APA GasNet's capital base as at 1 January 2013 and a forecast closing capital base at 31 December 2017.

The full draft decision and the AER's detailed reasons and analysis on the capital base can be found in attachment 2.

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[43] This is required because the 2008–12 access arrangement was agreed in 2007, and hence capex in 2007 was estimated rather than actual.

[44] This closing capital base is also used as the value of the opening capital base as at 1 January 2013 for the access arrangement period.

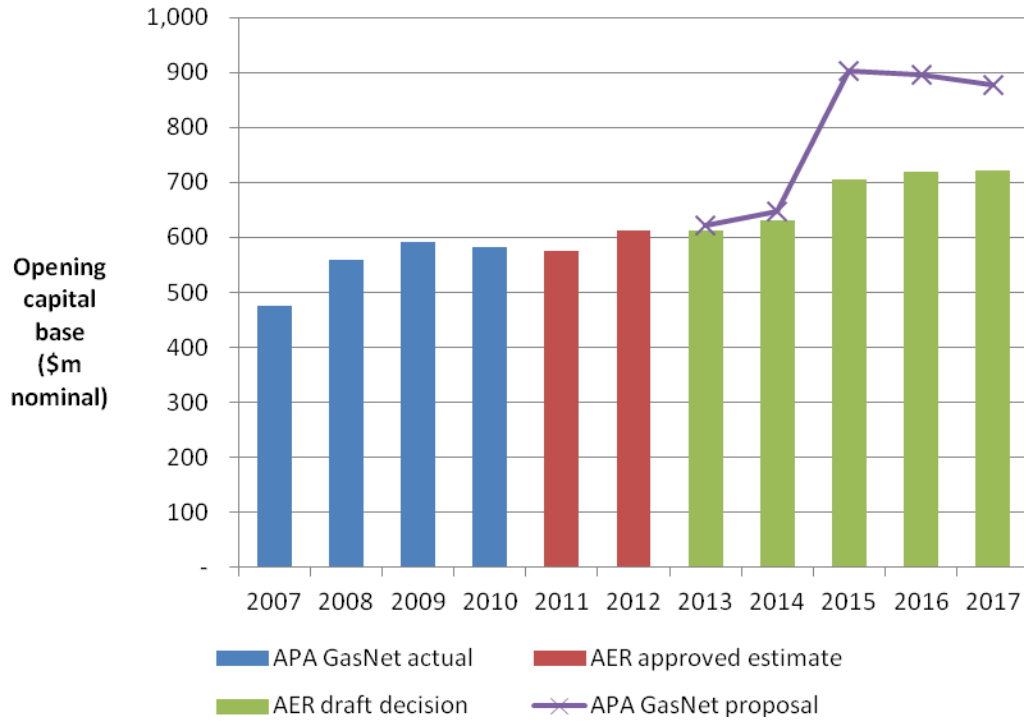
5.1 Draft decision

The AER does not approve APA GasNet's proposed opening capital base of $620.6 million as at 1 January 2013 because it considers that some of APA GasNet's inputs into the capital base roll forward model (RFM) do not comply with the NGR.[45] These include:

- APA GasNet's proposed inflation input for 2007
- APA GasNet's proposal not adjusting the capital base for the accumulated return on capital associated with the difference between actual and estimated capex for 2007.

After adjusting these inputs, the AER has determined an opening capital base of $1023.1 million ($nominal) as at 1 January 2013, which is approximately $50 million less than that proposed by APA GasNet. Figure 5.1 shows APA GasNet's past actual opening capital base values compared to forecast values.

Figure 5.1 APA GasNet's past and forecast opening capital base and the AER's draft decision on the opening capital base ($million, nominal)



Source: AER analysis.

Table 5.1 shows the AER's draft decision on the roll forward of APA GasNet's capital base during the 2008–12 access arrangement period.

[45] NGR, r. 77(2).

Table 5.1 AER's draft decision on APA GasNet's capital base roll forward for the 2008–12 access arrangement period ($million, 2012)

	2008	2009	2010	2011	2012
Opening capital base	559.6	591.1	583.2	575.9	613.0
Net capex	37.8	10.2	10.6	53.6	52.5[a]
Less: depreciation	27.0	30.7	33.4	34.3	35.5
Indexation	20.6	12.5	15.5	17.9	15.3
Closing capital base	591.1	583.2	575.9	613.0	645.3
Less: difference between 2007 forecast and actual capex					20.0
Less: return on difference for 2007 capex					13.2
Opening capital base at 1 January 2013					612.1

Source: AER analysis.
Note: Totals may not add due to rounding.
(a) Based on forecast capex.

Based on the approved opening capital base and the AER's draft decisions on forecast capex, depreciation, and inflation, the AER has determined a projected closing capital base of $722.7 million ($nominal) as at 31 December 2017. Table 5.2 set out the projected roll forward of the capital base over the 2013–17 access arrangement period using the 'partially as incurred' approach for recognising capex.[46]

[46] Under the partially as incurred approach, capex is recognised in the capital base in the year in which it is incurred. APA GasNet previously included capex to its capital base using an as commissioned approach for recognising capex. Under this approach, capex is recognised in the capital base when the project it related to was commissioned and began providing reference services. APA GasNet's proposed roll forward of the capital base during the 2008–12 access arrangement period is therefore based on the as commissioned approach.

Table 5.2 AER's draft decision on projected (partially as incurred) capital base roll forward for the access arrangement period ($million, nominal)

	2013	2014	2015	2016	2017
Opening capital base	612.0	631.8	706.1	719.9	721.5
Net capex[a]	29.0	84.5	25.6	14.8	12.9
Less: depreciation[b]	24.6	26.0	29.5	31.2	29.8
Indexation	15.3	15.8	17.7	18.0	18.0
Closing capital base	631.8	706.1	719.9	721.5	722.7

Source: AER analysis.
(a) Based on as incurred capex.
(b) Based on as commissioned capex.

5.2 Summary of analysis and reasons

The AER approves some aspects of APA GasNet's proposal to determine the opening capital base as at 1 January 2013. These include:

- Using the opening capital base at 1 January 2007 as the basis from which to roll forward the capital base. The opening value is consistent with that adopted in the ACCC's final decision for the 2008–12 access arrangement period.
- The use of forecast depreciation for the 2008–12 access arrangement period as approved by the ACCC.

However, the AER considers that a number of APA GasNet's proposed inputs into the capital base roll forward model overstate the value of the opening capital base as at 1 January 2013 and consequently, the projected closing capital base as at 31 December 2017. In particular, the AER does not agree with APA GasNet's approach in the following areas:

- APA GasNet's proposed RFM included an incorrect inflation input for 2007 and therefore overstates the opening capital base at 1 January 2008.
- APA GasNet's proposed RFM did not correctly include the adjustment for the accumulated return on capital associated with the difference between actual and estimated capex for 2007. This has the effect of overstating the opening capital base as at 1 January 2013.
- APA GasNet's proposed forecast capex and depreciation inputs used to roll forward the projected capital base for the 2013–17 access arrangement period need to be amended. The AER considers that APA GasNet's proposed inclusion of capitalised interest in its capex forecasts will overstate its efficient capital requirements. The AER's assessment of APA GasNet's forecast capex and depreciation inputs is discussed in attachments 3 and 5 respectively.

These adjustments add up to a $50 million reduction to APA GasNet's proposed opening capital base at 1 January 2013. The AER's draft decision is an opening capital base of $621.1 million ($nominal) as at 1 January 2013. Based on this, and the AER's draft decisions on forecast capex, depreciation,

and inflation, the AER has determined a projected closing capital base of $722.7 million ($nominal) as at 31 December 2017. See attachment 2 for more on the AER's draft decision on the capital base and reasons for this.

6 Capital expenditure

Forecast capital expenditure (capex) is a forecast of the cost of new assets that are likely to be required by a network business during an access arrangement period for the efficient operation of the network. As well as assessing forecast capex, the AER reviews actual capex undertaken during the previous access arrangement period (using actual data for the first four years and a forecast of the fifth). The final approved level of capex is used in conjunction with the opening capital base, rate of return and depreciation as an input in the return on capital building block.

Capex is broken down into several categories:

- Augmentation capex – assets that expand the capacity of the network or provide connections to new customers
- Refurbishment and upgrade capex – used to replace or upgrade aging, obsolete or inefficient assets
- Non-network capex – includes IT, plant and equipment, motor vehicles and buildings.

An efficient network business will require one or more of these categories of capex during an access arrangement period. The amount of overall capex required will vary based on the circumstances facing the business. Factors that will influence the required level of capex include the age and condition of existing assets, changes in the number of customers connected to the network, changes in the demand profile of customers, and general 'stay in business' requirements of the business.

The AER assesses the capex forecasts of regulated gas network businesses to determine whether they conform to the criteria set out within r. 79 of the NGR. In particular, the forecast capex must:

- be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances
- be expenditure that would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of providing pipeline services
- be shown that one of the following criteria is met:
  - the capex has a positive economic value
  - the expected present value of the incremental revenue exceeds the expenditure
  - the capex is necessary to either:
    - maintain and improve the safety of services
    - maintain the integrity of services
    - comply with a regulatory obligation or requirement
    - maintain capacity to meet levels of demand existing at the time the capex is incurred
  - the capex is justifiable as a combination of the preceding two dot points.

APA GasNet proposed a total forecast capex of $340.8 million ($2012) for the 2013–17 access arrangement period. The AER must accept APA GasNet's forecast capex if it is satisfied that it is conforming capex as specified in the NGR. [47]

In assessing APA GasNet's proposed capex for both the previous and upcoming regulatory access agreement periods, the AER reviewed APA GasNet's supporting material. This included information on APA GasNet's reasoning and, where relevant, business cases, major risks and risk management practices and other relevant information.

The full draft decision and the AER's detailed reasons and analysis on the capital expenditure can be found in attachment 3.

6.1 Draft decision

The AER's draft decision is to approve APA GasNet's proposed $160.4 million ($2012) total net capex for 2008–2012 as conforming capex for the purpose of setting the capital base for 2007-11 (see chapter 5 and attachment 2).

The AER approves $153.8 million ($2012) of APA GasNet's proposed $340.8 million ($2012) total capex for the 2013-17 access arrangement period. The AER is satisfied that this amount of capex is conforming. The AER is not satisfied that the remainder of APA GasNet's proposed capex is conforming.

Figure 6.1 shows actual and ACCC approved capex for 2008-12 and APA GasNet's proposed capex and the AER's draft decision on capex for 2013-17.

[47] NGR, r. 79(1).

Figure 6.1 Comparison of APA GasNet's past and forecast total capex and AER draft decision

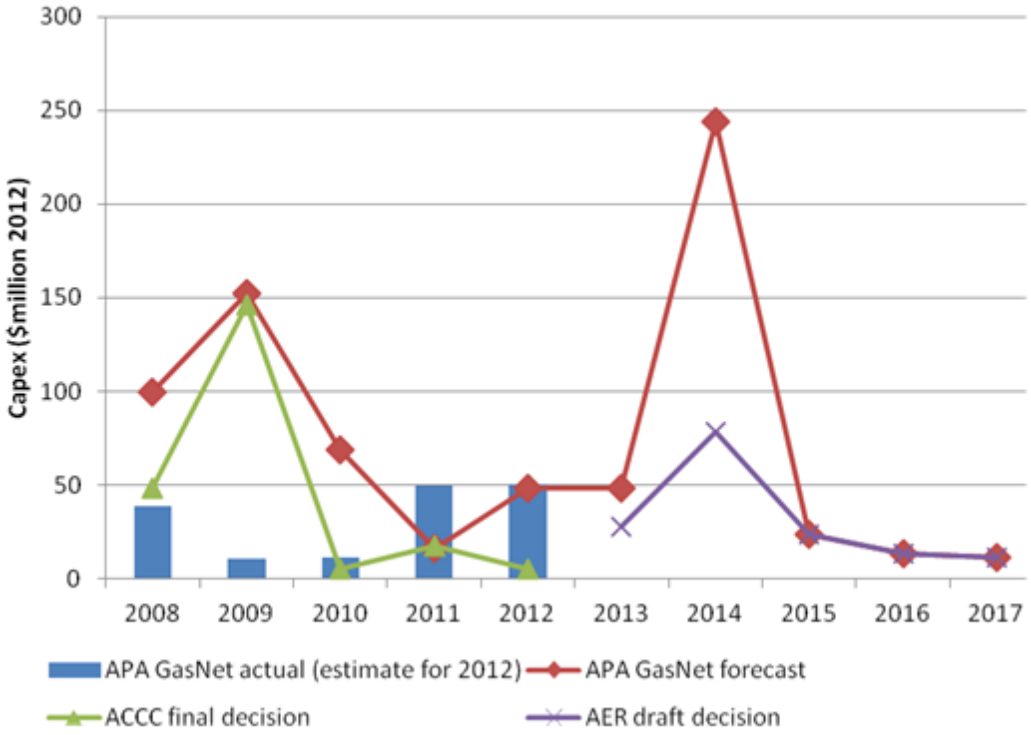


Table 6.1 is a comparison of APA GasNet's proposed capex and the AER's approved capex for the 2013-17 access arrangement period.

Table 6.1 Comparison of APA GasNet proposed and AER approved capex including labour cost escalation adjustment over the 2013-17 access arrangement period ($million, 2012)

	APA GasNet proposal ($million 2012)	AER approved excluding AER labour escalation adjustments ($million 2012)	AER approved including AER labour escalation adjustments ($million 2012)	Variance between APA GasNet proposed and AER approved including labour escalation adjustment (per cent)
Augmentation	270.3	85.2	84.5	68.7%
Refurbishment and upgrade	54.2	54.2	53.2	1.8%
Non-system	16.4	16.4	16.2	1.2%
Total capital expenditure	340.8	155.7	153.8	54.9%

Source: AER analysis.

6.2 Summary of analysis and reasons

6.2.1 Labour cost escalators

The AER is not satisfied APA GasNet's proposed labour cost escalators were arrived at on a reasonable basis or represent the best possible forecast of labour costs over the 2013-17 access arrangement period.[48] The AER considers forecast annual increases in the labour price index (LPI), as forecast by Deloitte Access Economics represent the best possible forecast of labour costs over the 2013-17 access arrangement period. Appendix C contains the AER's consideration of the real cost escalators proposed by APA GasNet.

6.2.2 Augmentation

The AER considers that two of the five major augmentation projects proposed by APA GasNet meet the conforming capex criteria. The majority of the AER's required amendments to APA GasNet's proposed capex are attributed to the three remaining major augmentation projects. The three projects are:

Gas to Calcairn

The Gas to Culcairn project is designed to augment the VTS's capacity on the South West Pipeline and in the Northern Zone. Construction of the Gas to Culcairn project is forecast to occur in 2013 and 2014 at a total cost of $157.5 million ($2012). APA GasNet submitted that the Gas to Culcairn project is justified as the overall economic value of the project is positive. The economic value identified by APA GasNet includes benefits accruing to a gas shipper, in addition to the economic value of the project to APA GasNet.

The AER considers that the proposed capex for the Gas to Culcairn project would not be incurred by a prudent service provider acting efficiently. In reaching this view, it considered that the forecast incremental gas volumes driving the project have not been arrived at on a reasonable basis and do not represent the best forecast possible in the circumstances.

APA GasNet proposed the Gas to Culcairn project to augment the capacity of the South West Pipeline and the VTS Northern zone to transport an additional 45 TJ/day from Iona for export through Culcairn.[49] The AER reviewed the business case and additional information submitted by APA GasNet, along with expert advice and submissions from AGL and TRUenergy. On the basis of this review, the AER considers that the gas volume forecasts have not been arrived at on a reasonable basis, and do not represent the best forecast possible in the circumstances. As a result, the scope of the Gas to Culcairn project proposed by APA GasNet is not prudent. The economic benefits of the project identified by APA GasNet are overstated, and the project as proposed is unlikely to have a positive overall economic value.

Based on the information provided by APA GasNet, AGL and TRUenergy, the AER is satisfied that some augmentation of the VTS to facilitate incremental gas volumes for export via Culcairn is justified. The AER considers that the scope of the Gas to Culcairn project should be amended to reflect the best available estimate of forecast incremental capacity requirements. Taking into account

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[48] Appendix D contains the AER's more detailed consideration of the real cost escalators proposed by Envestra.

[49] APA GasNet, *BC175 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 2.

the information from the parties mentioned earlier and the advice of it consultants, the AER considers a reduced scope of work is prudent and consistent with achieving the lowest sustainable cost of providing services. Accounting for the amended project scope, the AER's estimate of conforming capex for the Gas to Culcairn project is $68.6 million ($2012) of the $157.5 million ($2012) proposed by APA GasNet.

Western Outer Ring Main

APA GasNet submits that the purpose of the Western Outer Ring Main (WORM) project is to enhance the security of supply for domestic customers in the event of a major gas plant outage at Longford.[50] The WORM project has three stages, the first of which (the Sunbury loop) will be completed by APA GasNet in the 2008–12 access arrangement period. APA GasNet proposed to undertake stages two and three of the WORM project in the 2013–17 access arrangement period, consisting of:

- laying 49.3 km of 500 mm pipeline from Wollert to Rockbank via Kalkallo
- installing an additional compressor at Wollert Compressor Station B to allow compression from the Pakenham – Wollert pipeline to the new WORM pipeline
- installing a new interconnecting pressure reduction station at Wollert, connecting the Brooklyn – Lara Pipeline to the Pakenham – Wollert pipeline.[51]

APA GasNet proposed to complete the WORM project in 2013 and 2014 at a total cost of $93.4 million ($2012). APA GasNet submitted that the WORM project is justified under the NGR as necessary to maintain the integrity of services. APA GasNet considered the WORM project is also justified under the NGR, to the extent that it avoids other 'stay in business' capital expenditure that would otherwise be required at a number of sites.

The AER considers that the purported security of supply benefits provided by the WORM project are not supported by APA GasNet's proposal.

Part of APA GasNet's business case for the WORM project was that the project results in the avoidance of alternative expenditure on the Brooklyn compressor station. However, the AER is satisfied that, regardless of whether the WORM project proceeds, significant expenditure on the Brooklyn compressor station will not be required in the 2013–17 access arrangement period. To the extent that APA GasNet has sought to justify the WORM project on the basis of avoiding alternative expenditure, the AER considers that justification is not supported.

Consequently, the proposed capex would not be incurred by a prudent service provider, and is not consistent with achieving the lowest sustainable cost of providing services.

Kalkallo lateral

APA GasNet submits that the Kalkallo lateral project supplies a new city gate station to serve a significant housing and industrial development at Kalkallo. The project consists of a 4.5 km lateral pipeline, to be completed in 2014 at a cost of $4.1 million ($2012). The scope and timing of the project is affected by the WORM project. APA GasNet submitted that if the WORM project does not proceed,

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50 APA GasNet, *Access arrangement submission*, March 2012, p. 96.

51 APA GasNet, *Access arrangement submission*, March 2012, pp. 99-100.

the Kalkallo lateral would need to be 9.5 km long, at a correspondingly higher cost.[52] APA GasNet submitted that the project is justified under the NGR as the net present value of the project is positive.

The AER considers that the need for the proposed expenditure on the Kalkallo lateral is not established. The AER does not accept the need for a new city gate station near Kalkallo. In the absence of the new city gate station, the proposed mains extension capex would not be incurred by a prudent service provider.

These amendments, together with the AER's decision on labour cost escalators, result in a 68.7% per cent reduction to APA GasNet's proposed augmentation capex (from $270.3 million ($2012) to $84.5 million ($2012)). Attachment 3 contains further details on the AER's draft decision on forecast capex.

6.2.3 Replacement and upgrade

APA GasNet's refurbishment and upgrade capex forecast includes funding for:

- the installation of pipeline inspection gauge traps
- the actuation of mainline valves
- capacity management at pressure reduction and compressor stations
- the replacement of assets.

On the basis of its review, the AER is satisfied that the refurbishment and upgrade projects are necessary to maintain the safety, reliability and integrity of the VTS. However, the AER approves a lower amount of $53.2 million ($2012) due to required changes to the labour cost escalator.

6.2.4 Non–system

Non-system capital expenditure, required to support the VTS and ensure the provision of pipeline services to Australian Energy Market Operator (AEMO), is forecast by APA GasNet to be $16.4 million ($2012). The most significant non–system capex project is the redevelopment of its Dandenong office facility which has a total forecast cost of $11.5 million ($2012). The other significant non–system capex project is the upgrade of APA GasNet's Supervisory Control and Data Acquisition system.

The AER considers that APA GasNet's proposed non-system capex is necessary to maintain the safety, reliability and integrity of the VTS. However, the decision on labour cost escalators will result in the AER approving $16.2 ($2012) million of APA GasNet's $16.4 million ($2012) proposed non–system capex.

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[52] APA GasNet, *Access arrangement submission*, March 2012, pp. 102-103.

7 Rate of return

The rate of return is an input to the building block approach that the Australian Energy Regulator (AER) uses to determine total revenue for each regulatory year of the access arrangement period. The rate of return is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.[53]

The AER calculated APA GasNet's return on capital building block by multiplying the rate of return with the value of the service provider's projected capital base. Consistent with APA GasNet's access arrangement proposal and previous AER gas decisions, the AER adopted a rate of return that is based on a nominal vanilla weighted average cost of capital (WACC) formulation.

The AER's detailed reasons for its decision on the rate of return are provided in attachment 4, with additional reasons on some matters set out in appendix B.

7.1 Draft decision

The AER does not approve APA GasNet's proposed (indicative) rate of return of 9.06 per cent. The AER withholds its approval because, in the AER's opinion, 7.16 per cent (subject to updating) is a preferable alternative that is commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.[54]

APA GasNet's proposed rate of 9.06 per cent is based on market data from November–December 2011. The AER's draft decision rate of 7.16 per cent is based on market data from July–August 2012. APA GasNet's proposed rate of return method, if also applied to market data from July–August 2011, would result in a proposed rate of 7.99 per cent.

Both APA GasNet's proposed rate of return method, and the AER's method in this draft decision, will be updated using market data for the risk free rate and debt risk premium (DRP) updated closer to the time of the final decision.

The AER considers a 7.16 per cent rate of return (subject to updating) provides APA GasNet with a reasonable opportunity to recover at least the efficient costs of capital financing. Consequently, the AER expects APA GasNet will be able to attract funds to support the efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers.

The AER agrees with the following aspects of APA GasNet's proposed rate of return method:

- adopting the capital asset pricing model (CAPM) to calculate the cost of equity
- adopting the yield on 10 year Commonwealth Government Securities (CGS) as the proxy for the risk free rate
- adopting an equity beta of 0.8.

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53 NGR, r. 87.

54 The AER's adoption of this rate is subject to the risk free rate and debt risk premium parameters being updated closer to the date of the final decision.

- specifying the cost of debt as the debt risk premium over the risk free rate
- determining the debt risk premium by defining the benchmark bond as a 10 year Australian corporate bond with a BBB+ credit rating and measuring the benchmark bond rate using the extrapolated Bloomberg BBB rated seven year fair value curve
- extrapolating the Bloomberg BBB rated seven year fair value curve to a 10 year maturity (consistent with the definition of the benchmark bond) using paired bond analysis[55]
- adopting a 60 per cent gearing ratio
- adopting the inflation forecasting method based on short term Reserve Bank of Australia (RBA) forecasts and the mid-point of the RBA's inflation targeting band

However, the AER does not agree with the following aspects of APA GasNet's proposal:

- the value for the market risk premium (MRP). The AER adopts a MRP of 6 per cent instead of APA GasNet's proposal of 8.5 per cent, as explained in section 7.2.1.
- the value of the equity beta in the rate applied to GasNet's speculative capex account. The AER will not set a rate of return on the speculative capex account at this time, as explained in section 7.2.2.

Table 7.1 sets out the individual WACC parameters and consequent (indicative) rate of return determined by the AER.

[55] The AER agrees with APA GasNet's proposed paired bonds extrapolation method, including the selection criteria to choose the paired bonds. However, APA GasNet appears to have incorrectly applied the selection criteria in its proposal. Accordingly, the AER has corrected this error in applying APA GasNet's proposed paired bonds extrapolation method.

Table 7.1 AER's draft decision on APA GasNet's rate of return (nominal)

Parameter	Previous ACCC decision	APA GasNet proposal	AER draft decision
Nominal risk free rate	6.29%	3.99%[a]	2.98%[a]
Equity beta	1.0	0.8	0.8
Market risk premium	6%	8.5%	6%
Debt risk premium	3.09%	3.92%[a]	3.76%[a]
Gearing level	60%	60%	60%
Inflation forecast	2.68%	2.5%[a]	2.5%[a]
Gamma	0.50	0.25	0.25
Nominal post-tax cost of equity	12.29%	10.79%[a]	7.78%[a]
Nominal pre-tax cost of debt	9.38%	7.91%[a]	6.74%[a]
Nominal vanilla WACC	10.55%	9.06%[a]	7.16%[a]

Source: ACCC decision; APA GasNet, Access arrangement proposal, March 2012 and AER analysis.

a Indicative only. The risk free rate, debt risk premium and inflation forecast will be updated closer to the date of the final decision.

7.2 Reasons for draft decision

In forming this draft decision, the AER has considered an extensive range of material on the rate of return. This includes APA GasNet's access arrangement proposal, the Victorian gas distribution service providers' proposals, and the submissions into these reviews from users. The AER has also sought a range of expert advice to assist in making these decisions—from the RBA, Treasury, AOFM, Professor McKenzie, Associate Professor Partington and Associate Professor Lally.

In this review, APA GasNet proposed a higher MRP (8.5 per cent) because it considered the AER's approach to the cost of equity in previous decisions resulted in a cost of equity that is too low in current market conditions. The Victorian gas distribution service providers held a similar concern but proposed a different approach. They proposed a 6 per cent MRP but adopted a long run historical average risk free rate (5.99 per cent) for the cost of equity.

On the other hand, BHP Billiton submitted that the MRP is between 5-6 per cent. The Energy Users Coalition of Victoria (EUCV) considered the AER should adopt a 5 year term for the risk free rate and an equity beta of 0.65. The 5 year term and 0.65 equity beta were adopted by the ERA in its access arrangement decision for the Dampier to Bunbury Natural Gas Pipeline (DBNGP). The Tribunal found no error in ERA's position on these matters. Incorporating any of the changes proposed by users to the term, equity beta or MRP would result in a lower cost of equity than applying the AER's approach from previous decisions.

In this draft decision, the AER has maintained its cost of equity approach of adopting a prevailing risk free rate (currently 2.98 per cent), an equity beta of 0.8 and a 6 per cent MRP.

In this review, APA GasNet proposed adopting the extrapolated Bloomberg fair value curve to estimate the DRP. This results in a DRP of 3.82 based on current market data.[56] The Victorian gas distribution service providers also proposed this approach. BHP Billiton considered this method was appropriate but also considered there was merit in the AER exploring alternative methods.

On the other hand, the EUCV considered the DRP should be no more than 195 basis points (based on a 5 year term). The EUCV noted this resulted in a DRP similar to the ERA's approach.

In the ATCO and DBNGP matters, the Tribunal upheld the use of the 'bond yield' approach adopted by the ERA.[57] Under this approach the DRP is estimated by averaging observed bond yields that meet certain criteria.[58] The Tribunal did, however, direct the ERA to amend the simple averaging process used to aggregate these bond yields.[59] The Tribunal also provided guidance on the relevance of various criteria and the use of a more complex weighted average.[60] Such a weighted average was implemented by the ERA on remittal.[61] If the bond-yield approach (with the weighting method adopted in the ERA's re-determination) was applied to APA GasNet, the DRP would be 2.72 per cent.[62]

Consistent with the AER's observations previously, the AER considers that the Bloomberg fair value curve continues to provide DRP estimates which are higher than other potential approaches (such as the ERA's approach). The Bloomberg fair value curve also provides estimates which are high in comparison to recent bond issuances from firms with similar characteristics to the benchmark firm. For these reasons, the AER has commenced an internal review into alternatives to the Bloomberg fair value curve. The AER will advise of a public consultation process on the development of an alternative in due course. However, the AER does not expect to implement any new method in time for APA GasNet's forthcoming access arrangement period given the Tribunal's previous comments on the consultation approach that should be adopted in the development of any new approach.

In this draft decision, the AER has maintained adoption of the extrapolated Bloomberg BBB rate fair value curve. This currently provides a cost of debt of 6.74 per cent, or DRP of 3.76 per cent.[63]

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56 This estimate reflects the paired bonds sample proposed by APA GasNet.

57 Though the AER and ERA operate under different legislative instruments, the sections relevant to the determination of the rate of return are identical. Australian Competition Tribunal, Application by WA Gas Networks Pty Ltd (No 3) [2012] ACompT 12, 8 June 2012, paragraphs 167, 180; and Australian Competition Tribunal, Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14, 26 July 2012, paragraphs 280–282, 287.

58 All bonds (sourced from Bloomberg) were Australian-issued by Australian companies, denominated in Australian dollars and issued in Australia; bonds could be either fixed or floating and either bullet or callable/putable, Different scenarios used other slightly different criteria, such as a minimum term (2 or 5 years), and credit rating (BBB-/BBB/BBB+ or BBB/BBB+).

59 Australian Competition Tribunal, Application by WA Gas Networks Pty Ltd (No 3) [2012] ACompT 12, 8 June 2012, paragraphs 176, 180, 187; Australian Competition Tribunal, Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14, 26 July 2012, paragraphs 290, 310–313.

60 More specifically, the Tribunal endorsed the use of the ERA's 'scenario 2', which encompassed a minimum credit rating of BBB and a minimum term of 2 years. It also suggested that it would be appropriate to apportion weight by considering both term to maturity and issuance amount for the relevant bonds.

61 ERA, Revised decision pursuant to rule 64(4) of the National Gas Rules giving effect to the Economic Regulation Authority's proposed access arrangement revisions for the Mid-West and South-West Gas Distribution System Revised by reason of and pursuant to orders of the Australian Competition Tribunal made on 8 June 2012, 25 June 2012, pp. 5–12.

62 Based on APA GasNet's indicative averaging period, this 'bond-yield approach' estimate incorporates 60 bonds with an average term to maturity of 5.94 years.

63 This estimate reflects an adjustment to APA GasNet's proposed extrapolation approach. This adjustment is discussed in detail in attachment 4 of this draft decision.

In the next sections, the AER outlines its reasons on the MRP and escalation rate for the speculative capex account. These are the two areas where the AER does not agree with APA GasNet's rate of return proposal.

7.2.1 Market risk premium

The AER does not agree with APA GasNet's proposed MRP of 8.5 per cent.

As evidence on the MRP is imprecise, the AER considers it is reasonable to assess a range of evidence to estimate the MRP. From that information, the AER considers an MRP of 6.0 per cent is commensurate with prevailing conditions in the market for funds because:

- Historical excess returns provided a range of 4.9–6.1 per cent if calculated on an arithmetic average basis and a range of 3.0–4.7 per cent if calculated on a geometric average basis.
- Professor McKenzie and Associate Professor Partington advised a 6 per cent MRP is appropriate.
- The MRP is an economy wide measure and other economic regulators in Australia have consistently adopted a 6 per cent MRP under the same CAPM framework.
- In the Envestra, ATCO and DBNGP matters, the Tribunal found no error in the AER's and the Economic Regulatory Authority of Western Australia's 6 per cent MRP. The Tribunal found it was open for both regulators to adopt 6 per cent on the available evidence.
- Surveys of market practitioners consistently supported 6 per cent as the most commonly adopted value for the MRP. They also indicated the average MRP adopted by market practitioners was approximately 6 per cent.

The AER acknowledges that APA GasNet was concerned with the impact of the lower risk free rate on its overall rate of return and that this was a driving factor in APA GasNet proposing a higher MRP. The AER and APA GasNet agree on the methodology for estimating the risk free rate. It is the value of the MRP that is in disagreement. Accordingly, the AER has addressed APA GasNet's concerns as part of its estimation of the MRP.

7.2.2 Escalation rate applied to speculative capex account

The AER does not accept APA GasNet's proposal for a 1.2 equity beta to determine the escalation rate for its speculative capex account. The AER considers it is more appropriate to determinate the appropriate escalation rate at the time speculative capex is made.

The AER amends a provision in the access arrangement associated with a speculative capex account. The AER proposes a revision that makes it clear that prior to any expenditure being placed into such an account, APA GasNet must inform the AER that the capex is not to be recovered by a surcharge or capital contribution, and that the expenditure is otherwise conforming but for the type or volume of the services associated with the capex.

To provide guidance on how the AER may assess the appropriate escalation rate at the time the speculative capex is made, the AER makes the following observations on APA GasNet's justification for a 1.2 equity beta:

- APA GasNet has not explained why 1.2, specifically, is an appropriate equity beta for its speculative capex account. The only justification presented by APA GasNet for this quantification appears to be based on an inconsistency in its own proposal.

- It is not clear to the AER that investment in the speculative capex account faces greater risk such as to warrant a different equity beta than provided for reference services.

- Even if investment in the speculative capex account does face greater risk, it is not clear to the AER that the risk is driven by systematic risk factors. The Sharpe Lintner CAPM has been proposed by APA GasNet and accepted by the AER as the well accepted model to estimate the cost of equity component of the rate of return. Under the Sharpe Lintner CAPM, only systematic risk is compensated for.

See attachment 4 for more on the AER's draft decision on the rate of return and reasons for this.

8 Regulatory depreciation

Regulatory depreciation models the nominal value of APA GasNet's assets over the 2013–17 access arrangement period. It is used to determine the depreciation allowance for APA GasNet in the total revenue requirement under the building block model. APA GasNet's annual regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the annual inflation indexation (positive) on the projected capital base.

APA GasNet must provide a forecast of depreciation for the 2013–17 access arrangement period setting out a depreciation method and demonstrating how the depreciation method has been applied. The depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff.

The AER then assesses whether the proposed depreciation schedule complies with the depreciation criteria set out within the NGR. In particular, the depreciation schedule should be designed:

- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services[64]
- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets[65]
- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets[66]
- so that (subject to the rules about capital redundancy), an asset is depreciated only once[67]
- so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.[68]

Compliance with these criteria may involve the deferral of a substantial amount of depreciation.

The AER must also take into account the depreciation schedule approved in the 2008–12 access arrangement period[69], the NGO and the revenue and pricing principles.[70]

The full draft decision and the AER's detailed reasons and analysis on regulatory depreciation is provided in attachment 5.

8.1 Draft decision

The AER's draft decision on APA GasNet's regulatory depreciation allowance is $56.2 million ($nominal) over the 2013–17 access arrangement period. This represents a reduction of

64 NGR, r. 89(1)(a).
65 NGR, r. 89(1)(b).
66 NGR, r. 89(1)(c).
67 NGR, r. 89(1)(d).
68 NGR, r. 89(1)(e).
69 NGR, schedule 1, r. 5(1)(d).
70 NGL, s 28; NGR r. 100(1). The NGO is set out in NGL, s. 23. The revenue and pricing principles are set out in NGL, s. 24.

$101.3 million ($nominal) or 64.3 per cent of APA GasNet's proposed total regulatory depreciation allowance. Table 8.1 sets out the AER's draft decision on APA GasNet's annual regulatory depreciation allowance for the 2013–17 access arrangement period.

Table 8.1 AER's draft decision on APA GasNet's depreciation allowance ($million, nominal)

	2013	2014	2015	2016	2017	Total
Straight-line depreciation	24.6	26.0	29.5	31.2	29.8	140.9
Less: indexation on opening capital base	15.3	15.8	17.7	18.0	18.0	84.8
Regulatory depreciation	9.3	10.2	11.8	13.2	11.7	56.2

Source: AER analysis.

8.2 Summary of analysis and reasons

The AER's draft decision on APA GasNet's regulatory depreciation allowance is $56.2 million ($nominal) over the 2013–17 access arrangement period.

The AER does not accept APA GasNet's proposed regulatory depreciation allowance of $157.5 million ($nominal) for the 2013–17 access arrangement period. This is mainly because APA GasNet's proposed forecast depreciation approach does not meet the requirement of promoting efficient growth of the market for reference services.

The AER approves APA GasNet's proposed standard economic lives and the proposed weighted average method to calculate the remaining economic lives as at 1 January 2013. However, the AER has updated APA GasNet's remaining economic lives as at 1 January 2013 to reflect the revised capital base roll forward for the 2008–12 access arrangement period.

In addition, the AER has made changes to other building block components of APA GasNet's proposal that impact on the proposed regulatory depreciation allowance.

8.2.1 Change of depreciation approach

The AER does not accept APA GasNet's proposed forecast depreciation approach. The AER considers that it would not promote efficient growth of the market for reference services in accordance with the NGR.[71] The AER is concerned with the incentives created by APA GasNet's proposed approach and the potential for unnecessarily high prices in the short to medium term. There appear to be no offsetting benefits to users arising from the proposed approach that could be considered to be in customers' long term interests. Nor does the AER consider that continuation of the current approach would impinge upon APA GasNet's reasonable cash flow needs consistent with the NGR.[72]

[71] NGR, r. 89(1)(a).
[72] NGR, r. 89(1)(e).

APA GasNet proposed to change its method for modelling the return of capital (and return on capital) over the 2013–17 access arrangement period from that used previously in the 2008–12 access arrangement. Under APA GasNet's proposal:

- The opening capital base is based on historical costs and is not indexed for inflation over the 2013–17 access arrangement period. In contrast the AER's approach (and currently applying to APA GasNet) does index the capital base by the forecast rate of inflation when forecasting the revenue requirements (and subsequently indexed by actual inflation during the roll forward of the capital base in future access arrangement reviews).
- The return on capital for each year is determined based on multiplying the nominal WACC by the historical cost value of the opening capital base of the relevant year.
- The regulatory depreciation allowance in each year is equal to the straight-line depreciation amount. Because the capital base is not indexed for inflation, there is no required offsetting inflation adjustment to the depreciation allowance (that is, there is no negative depreciation/revaluation gain to be accounted for) as occurs under the AER approach.

APA GasNet's proposed change in depreciation approach alters the profile of its cash flow over the useful life of its assets (for both new and existing assets). Compared to the current approach, the proposed approach brings forward cash flows for APA GasNet by requiring customers to pay a greater proportion of an asset's costs earlier in its life (or remaining economic life in the case of existing assets).

The AER considers that APA GasNet's proposed approach could result in a revenue profile that is effectively NPV neutral over the life of the assets, just as the AER's standard approach does. However, the AER considers that APA GasNet's proposed approach does not comply with the NGR, which states that reference tariffs should be determined in a way to promote the efficient growth in the market for reference services.[73] There are several reasons to expect APA GasNet's proposal will inhibit efficient growth of the market. These include:

- Inefficient asset utilisation – Depreciation schedules which provide for price paths that encourage inefficient utilisation of assets, that is, under or over utilisation of the asset at different times in its life cycle.
- Unnecessarily high prices in the short to medium term – These could discourage gas usage and downstream investment.
- Inefficient management of assets – Incentives to manage assets based on reasons other than the efficient provision of reference services.

8.2.2 Standard economic lives and remaining economic lives

The AER approves APA GasNet's proposed standard economic lives assigned to each of its asset classes for the 2013–17 access arrangement period. The AER considers that the proposed standard economic lives are consistent with the ACCC's approved standard economic lives for the 2008–12 access arrangement period.[74] APA GasNet did not propose any new asset classes for the 2013–17 access arrangement period.

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[73] NGR, r. 89(1)(a).

[74] ACCC, *Final decision: GasNet Australia—revised access arrangement 2008–12*, 30 April 2008, pp. 56-60.

The AER accepts APA GasNet's proposed weighted average method to calculate the remaining economic lives as at 1 January 2013. In accepting the weighted average method, the AER has updated APA GasNet's remaining economic lives as at 1 January 2013 to reflect the AER's adjustments to APA GasNet's remaining economic lives as at 1 January 2008 in the capital base roll forward model.[75]

See attachment 5 for more on the AER's draft decision on depreciation and reasons for its decision.

[75] APA GasNet submitted a revised capital base roll forward to the AER on 10 July 2012. However, it did not revise the remaining economic lives as at 1 January 2008 which are required inputs for the RFM. See APA GasNet, *Response to AER information request - Revised models*, 6 July 2012, p.1; APA GasNet, *Revised RFM*, 10 July 2012.

9 Operating expenditure

Operating expenditure (opex) refers to the operating, maintenance and other non-capital costs incurred in the provision of reference services.[76] Opex incorporates labour costs and other non-capital costs associated with providing reference services.

The AER is required to assess APA GasNet's forecast opex to decide whether it is satisfied that the forecast opex complies with applicable criteria prescribed by the NGL and NGR. The AER must accept a forecast that is arrived at on a reasonable basis and represents the best forecast or estimate possible in the circumstances.[77]

The regulatory regime provides incentives for APA GasNet to deliver its required services at least cost. In particular, if APA GasNet is able to provide its services at a lower cost than what was forecast in its access arrangement, it is able to 'keep the difference' for a period of five years as provided under its opex incentive mechanism (see chapter 10). Given these incentives, actual opex can be used to effectively reveal the efficient level of opex required in providing reference services. This means that rather than assess all aspects of opex the AER can instead focus on what changes need to be made to this base level of opex. In particular, once the base year is set, the AER assess the following adjustments:

- forecast labour cost changes,
- network growth changes (referred to as scope changes by APA GasNet),
- step changes, to provide an additional opex allowance where a certain circumstance, requirement or project will require the business to undertake expenditure that is not incorporated in the base year,
- other allowances.

APA GasNet proposed an opex forecast based on a base year roll forward methodology setting 2011 as the base year. It then proposed cost trends and step changes to provide for year on year adjustments to this base level of opex.

The full draft decision and the AER's detailed reasons and analysis on operating expenditure are provided in attachment 6.

9.1 Draft decision

The AER does not approve APA GasNet's forecast opex of $182.2 million ($2012). The AER instead considers a forecast opex of $140.6 million ($2012) complies with the criteria governing opex and the criteria for forecasts and estimates.[78] The reduction of approximately $41.6 million ($2012) reflects the AER view that a number of elements of APA GasNet's forecast opex do not comply with the criteria governing opex or the criteria for forecasts and estimates.

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76 NGR, r. 69.
77 NGR, r. 74.
78 NGR, r. 91, r. 71

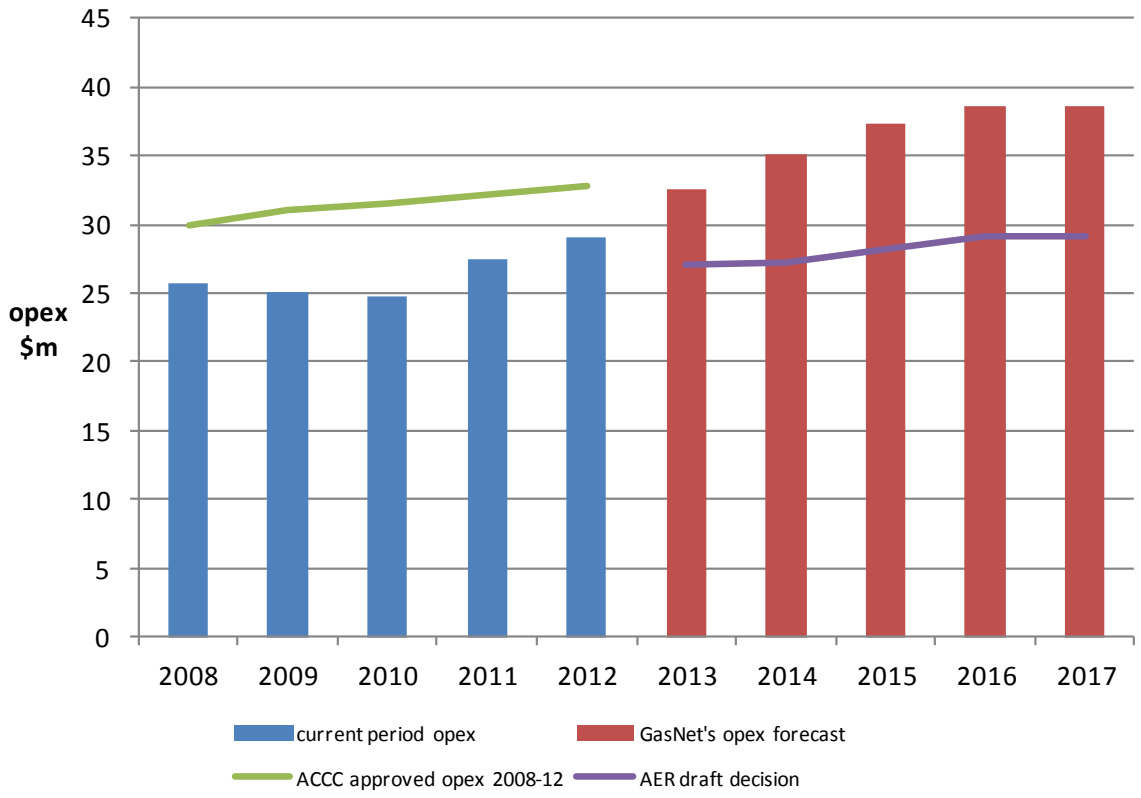
Table 9.1 shows how APA GasNet's proposed opex compares with the AER's draft decision on opex. Figure 9.1 shows how the AER's draft decision for opex compares to APA GasNet's proposal, its opex in the 2008–12 access arrangement period, and the opex approved by the ACCC for this period.

Table 9.1 APA proposed and approved opex ($million, 2012)

	2013	2014	2015	2016	2017	Total
APA GasNet proposed	32.58	35.15	37.39	38.56	38.56	182.25
AER draft decision	27.03	27.30	28.15	29.06	29.07	140.61
Difference	–5.55	–7.85	–9.24	–9.50	–9.49	–41.63

Source: AER analysis

Figure 9.1 APA GasNet's total proposed and approved opex ($m, $2012)



Source: APA GasNet's RIN submission. Note that figures from 2011 onwards are forecasts

9.2 Summary of analysis and reasons

Table 9.2 shows the factors driving opex and differences between APA GasNet's proposed opex and the AER's draft decision on opex for the total 2013–17 access arrangement period.

Table 9.2 APA GasNet's proposed and AER's draft decision on opex ($million, 2012)

	APA GasNet proposal	AER draft decision	Difference
Base year costs	136.3	134.6	–1.7
Labour cost escalation	15.8	5.1	–10.7
Scope changes	7.0	3.8	–3.2
Step changes	20.3	–2.9	–23.2
Errors	2.9	0.0	–2.9
Total	182.2	140.6	–41.6

Source: AER analysis

As can be seen from table 9.2, the main differences between APA GasNet's proposed opex and the AER's draft decision relate to step changes and differences in the labour cost escalator.

9.2.2 Base year costs

APA GasNet forecast opex using a base year roll forward methodology and proposed 2011 as the base year. The AER considers that 2011 is the appropriate base year to use in forecasting APA GasNet's opex allowance. The use of 2011 as the base year also complies with the fixed principle. The AER considers that $27.5 million ($2012) as proposed by APA GasNet is the appropriate base year opex.

However, the AER does not consider that APA GasNet has properly applied its fixed principle clause in rolling forward from this base year from 2011 to 2012 [clause 7.2(h)(ii) in its 2008–12 Access arrangement]. This clause requires that in calculating the allowable revenues for operations and maintenance expenditure for the Fourth Access Arrangement Period, the Regulator must take into account the actual operating costs in 2011, adjusted for the change in forecast operating costs between 2011 and 2012 and, to avoid doubt, not taking into account the efficiency gain (loss) made in 2012. APA GasNet has rolled forward from 2011 to 2012 using a number of adjustments to its base year opex and has used the forecast escalation that APA GasNet proposed for the 2013–17 access arrangement period. The AER consider this does not comply with the fixed principle and accordingly the AER does not approve the manner in which APA has applied its roll forward methodology.

9.2.3 Labour cost escalators

The AER is not satisfied APA GasNet's proposed labour cost escalators were arrived at on a reasonable basis or represent the best possible forecast of labour and material costs over the 2013–17 access arrangement period.[79] The AER considers forecast annual increases in the labour price index (LPI), as forecast by Deloitte Access Economics represent the best possible forecast of labour costs over the 2013–17 access arrangement period. Appendix C contains the AER's consideration of the real cost escalators proposed by APA GasNet.

[79] Appendix C contains the AER's more detailed consideration of the real cost escalators proposed by APA GasNet.

9.2.4 Step changes

Step changes allow for additional funding where the service provider faces a new requirement or change in circumstance requiring it to undertake additional expenditure that was not accounted for in the base year level of opex. Examples of step changes include new safety regulations requiring additional opex on an ongoing basis, opex related to a new capital project or other new legislative requirements. In assessing APA GasNet's proposed step changes, the AER has considered whether these are consistent with that which would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services. Where the AER considers these step changes meet this requirement an incremental increase in base year opex is included in total forecast opex. Where they do not meet this requirement no additional opex is included in total forecast opex.

In general the AER considers a step increase in opex is not consistent with the above requirement where the additional expenditure is intended to comply with a regulatory requirement or industry standard that has not changed since the 2008–12 access arrangement period. In such cases, it is the AER's view that such expenditure would already be included in base opex for a prudent service provider acting in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

In some cases a program of expenditure may be consistent with the above requirement but might not justify an incremental increase in the total opex allowance as it should already be couvered in the base level of opex. For instance, if a program of expenditure is intended to improve productivity, the AER would generally consider that there is sufficient expenditure in the base opex in order to fund the program.

The AER's assessment of proposed step changes also recognises that a service provider's opex program will not be exactly the same from year to year. For example, actual opex in the base year reflects both recurrent expenditure and non-recurrent expenditure. That is, some of the expenditure will be ongoing while some will be related to one-off occurrences. When forecasting opex for the 2013–17 access arrangement the AER has not sought to estimate all non-recurrent (or one-off) expenditure incurred in the base year. In this way, the base year will inevitably include some opex that will not be undertaken in all other years.

Given this, the AER does not automatically consider there should be a step change in opex solely because a program of expenditure was not undertaken in the base year but needs to be undertaken in the 2013–17 access arrangement period. Instead, the AER considers on case by case basis whether base year opex would be likely to be sufficient in order to fund the proposed program of opex or whether a step up in opex is required. This avoids potential asymmetries that would occur if all additional opex requirements for the 2013–17 access arrangement were included as step changes without subtracting any one-off or non-recurrent opex that is inevitably included in the base year.

In considering the above, the AER made a number of revisions to APA GasNet's proposed step changes. These adjustments lead to APA GasNet's proposed step change related opex being reduced from $20.3 million to –$2.9 million. The negative amount has been caused by the reallocation of pipeline inspection gauges from the opex forecast into capex forecasts. See attachment 6 for more on the AER's draft decision on opex step changes and reasons for its decision.

9.2.5 Allowances

APA GasNet submitted that its forecast opex is supplemented by a number of other allowances that are not step changes or real cost escalations to make up the total forecast opex allowance. The AER considers each allowance on a case by case basis.

APA GasNet proposed an efficiency carryover mechanism as part of their allowances. The application of the efficiency benefit sharing scheme to APA GasNet is discussed in attachment 7.

The AER accepted APA GasNet's allowances for debt raising costs and a return on passive linepack and spare parts which are inventories related to the VTS. However as the AER does not approve APA GasNet's proposed WACC, the AER has adjusted APA GasNet's proposed allowances to account for the AER's approved WACC.

APA GasNet proposed an allowance for reset costs incurred in 2008-12. The AER considers under the NGR costs recovered in the period relate to those incurred in the period and as such costs incurred in the 2008-12 access arrangement period cannot be recovered as part of the 2013-17 Access arrangement.

See attachment 6 for more on the AER's draft decision on opex allowances and reasons for its decision.

9.3 Network Growth (scale escalation)

APA GasNet proposed an increase in opex related to the operation and maintenance of several new compressor stations and pipelines.[80] However, as discussed in section 5 of this overview, the AER's draft decision is to reject capex for several augmentation projects, which will negate the need for associated opex. Consequently, the AER's draft decision is to not accept APA GasNet's network growth opex forecast of $7 million ($2012). Instead, the AER considers a forecast increase in opex of $3.8 million ($2012) to fund opex relating to increased scope from the augmentation capex projects approved by the AER.

9.3.1 Other changes

The other changes to APA GasNet's opex relate to errors identified in APA GasNet's calculation of its opex forecast.

[80] APA GasNet, *Access arrangement submission*, 31 March 2012 pp. 174-6.

10 Incentive mechanisms

Incentive mechanisms offer service providers incentives to reduce costs and increase efficiency in the provision of pipeline services. Incentive mechanisms provide a financial reward (or penalty) for efficiency gains (or losses) achieved relative to opex or capex expenditure benchmarks for the access arrangement period. Any rewards (or penalties) for efficiency gains (or losses) are added to the service provider's total revenue and carried forward for five years after the year in which the efficiency gain (or loss) is made. The five year period corresponds to the length of the access arrangement period.

The full draft decision and the AER's detailed reasons and analysis on the incentive mechanism are provided in attachment 7.

10.1 Draft decision

The AER is required under transitional arrangements to ensure increments or decrements resulting from the operation of the incentive mechanism in APA GasNet's current access arrangement are properly reflected increments or decrements in its total revenue.[81]

The AER must also consider whether the incentive mechanism proposed by APA GasNet will encourage efficiency in the provision of services by the service provider and is consistent with the revenue and pricing principles.[82]

The AER does not approve APA GasNet's proposed carryover of –$2.6 million ($2006) from the 2008–12 access arrangement period. This proposed carryover was not correctly calculated in accordance with the benefit sharing allowance in APA GasNet's 2008–12 access arrangement. The AER instead calculated a carryover of –$5.6 million ($2006) to be carried over from the 2008–12 access arrangement period (table 9.1).

Table 10.1 AER draft decision carryover from the 2008–12 access arrangement period ($million, 2006)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	1.7	0.3	–1.9	–2.8	–	–2.6
AER draft decision	0.8	–1.4	–1.7	–1.5	0.0	–3.7
Difference	0.9	1.7	3.6	–1.3	0.0	1.1

Source: APA GasNet, *Access arrangement information*, 31 March 2012, table 9.2, p. 24, AER analysis.

The AER does not approve the incentive mechanism proposed by APA GasNet for inclusion in the 2013–17 access arrangement. The AER considers amendments are necessary to ensure the incentive mechanism encourages efficiency in the provision of services by APA GasNet and is consistent with the revenue and pricing principles.

81 NGR, Schedule 1, cl. 5(1)(a).
82 NGR, r. 98.

10.2 Summary of analysis and reasons

The AER considers APA GasNet did not correctly calculate the carryover in accordance with clause 7.2 of its 2008–12 access arrangement.[83] Specifically, APA GasNet adjusted the forecast opex benchmarks in the 2008–12 access arrangement period by:

- subtracting the efficiency carryover amounts from the 2003–07 access arrangement period
- adding the approved forecasts for asymmetric risk, equity raising costs and returns on inventories and linepack.

This calculation does not meet the requirements set out in clause 7.2(f) of APA GasNet's 2008–12 access arrangement.[84]

The AER considers the forecast opex benchmarks already exclude any efficiency carryover and no subtraction from the total forecast opex is required. This reduces the negative carryover accrued by APA GasNet in the 2008–12 access arrangement period. Further, clause 7.2(f) only allows for the addition of specific costs to the forecasts. These costs do not include asymmetric risks, equity raising costs or returns on inventories and linepack. The AER therefore considers APA GasNet's additions to the forecast opex do not accord with the requirements set out in clause 7.2.

The AER has recalculated the benefit sharing allowance to ensure the revenue calculations made for the 2013–17 access arrangement period properly reflect increments or decrements resulting from the operation of the benefit sharing mechanism, in accordance with the requirements set out in clause 7.2.

For these reasons, the AER recalculated the carryover amounts using the approach set out in APA GasNet 's Access Arrangement for 2008–12.

The AER accepts APA GasNet's proposal to apply an incentive mechanism to opex. However, the AER considers APA GasNet's proposed approach to calculating the opex efficiency gain (or loss) for 2013 does not properly account for the efficiency gain (or loss) in that year. The AER proposes to amend APA GasNet's incentive mechanism to replace the equation used to calculate efficiency carryover for the first year of the next access arrangement period (2013). This approach is consistent with rule 98(3) because it ensures APA GasNet is consistently rewarded for achieving efficiency gains (losses) regardless of the year those gains (losses) are achieved. The AER also considers APA GasNet's proposed fixed principle for the incentive mechanism requires clarification.

See attachment 7 for more on the AER's draft decision on incentive mechanisms and reasons for its decision.

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[83] APA GasNet, *Access Arrangement 2008–2012*, p. 10–11.
[84] APA GasNet, *Access Arrangement 2008–2012*, p. 11.

11 Corporate income tax

The estimated cost of corporate income tax is one of the building blocks used to determine the total revenue requirement for APA GasNet over the 2013–17 access arrangement period.

APA GasNet adopted the post-tax framework to derive its revenue requirement for the 2013–17 access arrangement period.[85] Under the post-tax framework, a separate corporate income tax allowance is calculated as part of the building block assessment.

The AER uses the PTRM to produce an estimate of the taxable income that would be earned by an efficient company operating APA GasNet's business. The AER modelled APA GasNet's tax expenses over the access arrangement period using a benchmark 60 per cent gearing. Tax depreciation is calculated using a separate tax asset base. All tax expenses are offset against the service provider's forecast revenue to estimate the taxable income. The statutory income tax rate of 30 per cent is then applied to the estimated taxable income to arrive at a notional amount of tax payable. The AER then applies a discount to that notional amount of tax payable to account for the assumed utilisation of imputation credits (gamma), which has a value of 0.25. This amount is then included as a separate building block in determining APA GasNet's total revenue.[86]

The full draft decision and the AER's detailed reasons and analysis on corporate income tax are provided in attachment 8.

11.1 Draft decision

The AER's draft decision on APA GasNet's corporate income tax allowance is $15.7 million ($nominal), which is a reduction of $35.8 million ($nominal) or 69.5 per cent to APA GasNet's proposal. Table 11.1 sets out the AER's draft decision on APA GasNet's corporate income tax allowance for the 2013–17 access arrangement period.

Table 11.1 AER's draft decision on corporate income tax allowance for APA GasNet ($million, nominal)

	2013	2014	2015	2016	2017	Total
Tax payable	4.2	4.6	4.3	4.4	3.5	20.9
Less: value of imputation credits	1.0	1.1	1.1	1.1	0.9	5.2
Net corporate income tax allowance	3.1	3.4	3.2	3.3	2.7	15.7

Source: AER analysis.

[85] APA GasNet, *Post tax revenue model,* March 2012.
[86] NGR, r. 76(c).

11.2 Summary of analysis and reasons

The AER accepts most of APA GasNet's proposed methods for calculating the corporate income tax allowance. However, the AER adjusted some of APA GasNet's proposed inputs to the PTRM for calculating the corporate income tax allowance, which include:

- the opening tax asset base as at 1 January 2013
- remaining tax asset lives as at 1 January 2013.

In addition, there are various other changes to the building block components in this draft decision that impact forecast revenues. These include changes to capex, opex, depreciation and the rate of return, among other things. These will consequently affect the forecast income tax allowance. See attachment 8 for more on the AER's draft decision on the corporate income tax allowance and reasons for its decision.

11.2.1 Opening tax asset base as at 1 January 2013

The AER accepts APA GasNet's proposed method for calculating the opening tax asset base as at 1 January 2013, but does not accept APA GasNet's proposed opening tax asset base of $262.9 million ($nominal) as at 1 January 2013. This is because APA GasNet's proposal included estimated rather than actual capex in 2007 and did not account for actual disposals in 2010. These changes reduce APA GasNet's proposed opening tax asset base as at 1 January 2013 by about $27 million ($nominal) or 10 per cent.

11.2.2 Standard tax asset life and remaining tax asset lives

The AER approves APA GasNet's proposed standard tax asset lives assigned to each of its asset classes for the 2013–17 access arrangement period. This is because they are consistent with the statutory cap on the effective life of gas transmission assets under the *Income Tax Assessment Act (ITAA)* 1997,[87] and with the standard tax asset lives prescribed in the Tax Ruling 2012/2. The AER also accepts APA GasNet's proposed weighted average method to calculate the remaining tax asset lives as at 1 January 2013. In accepting the weighted average method, the AER has updated APA GasNet's remaining tax asset lives[88] as at 1 January 2013 to reflect APA GasNet's revised tax asset base roll forward in the RFM.[89]

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87 ITAA 1997, s. 40.102(5).

88 At the time of this draft decision the roll forward of APA GasNet's capital base includes forecast capex for 2012. The AER may update this capex figure for its final decision. These capex figures are used to calculate the weighted average remaining tax asset lives of the assets. Therefore, the AER may recalculate APA GasNet's remaining tax asset lives using the method approved in this draft decision to reflect the updated 2012 capex for the final decision.

89 APA GasNet submitted a revised tax asset base roll forward with 2007 actual capex and revised remaining tax asset lives as at 1 January 2008 which took into account the 2007 actual capex. See APA GasNet, *Response to AER information request No. 7*, 6 June 2012, p. 3; APA GasNet, Revised RFM, 10 July 2012. The AER notes that there is an error in APA GasNet's formula used to calculate the revised remaining tax asset lives as at 1 January 2008. The AER has corrected the error to account for one year of roll forward of the remaining tax asset lives from 1 January 2007 to 1 January 2008. This results in slightly shorter remaining tax asset lives as at 1 January 2008 compared to APA GasNet's revised figures.

11.2.3 Utilisation of imputation credits (gamma)

The AER accepts APA GasNet's proposal to adopt the value of 0.25 for gamma. The proposed gamma value is consistent with the findings by the Australian Competition Tribunal (Tribunal) in its review of the AER's 2010 distribution determinations for Energex, Ergon Energy and ETSA Utilities.[90] There is no new evidence before the AER to cause it to vary from the findings of the Tribunal.

[90] Australian Competition Tribunal, *Application by Energex Limited (Gamma) (No. 5)[2011] ACompT 9*, 12 May 2011, paragraph 42.

12 Capacity utilisation forecasts

The AER assesses forecasts of pipeline capacity and utilisation of pipeline capacity as part of its review of an access arrangement. Capacity utilisation forecasts are an important component of the tariff setting process. Understanding how much each reference service is likely to be used over the five year period allows the AER to determine the quantum of each tariff and the overall efficient allocation of tariffs.

APA GasNet is required to provide a forecast of pipeline capacity and utilisation of pipeline capacity and the basis on which the forecast has been derived.

The AER assesses this forecast to determine whether it has been arrived at on a reasonable basis and represents the best forecast possible under the circumstances, pursuant to r. 74 of the NGR.

The full draft decision and the AER's detailed reasons and analysis on capacity utilisation forecasts are provided in attachment 9.

12.1 Draft decision

The AER does not approve APA GasNet's proposed forecast of capacity utilisation on the basis that it has not been arrived at on a reasonable basis and does not represent the best possible forecast in the circumstances. The AER considers that for some sections of the VTS, the levels of demand proposed by APA GasNet are made on a reasonable basis, and the best possible in the circumstances.

12.2 Summary of analysis and reasons

The AER does not approve APA GasNet's capacity utilisation forecasts for the 2013–17 access arrangement period. The AER considers that:

- the forecasts provided for the NSW Interconnect section of the VTS are not arrived at on a reasonable basis, and are not the best possible in the circumstances—the AER considers that the throughput of gas on this section of the VTS will be lower than that forecast by APA GasNet. This assessment has been arrived at based on information provided by shippers that would (or would not) utilise the proposed increased capacity on the interconnect.
- the AER has not approved some augmentation projects proposed by APA GasNet. This reduces the capacity and utilisation rates of some sections of the VTS compared to those forecast by APA GasNet.

The AER considers that APA GasNet's forecasts of usage on other sections of the pipeline are arrived at on a reasonable basis and are the best possible in the circumstances.

The AER considers that in the circumstances, it is appropriate to use the forecasts provided by AEMO, and that these forecasts are provided based on reasonable assumptions and methodologies. These forecasts will, however, require updating at the final decision using the most recent information to remain the best forecasts in the circumstances. The AER's forecast of capacity utilisation for the 2013–17 access arrangement period is provided at attachment 9 of this draft decision.

13 Tariff setting – transmission pipelines

An access arrangement must set out how a service provider intends to charge for reference services. The NGR requires that the access arrangement information must include an explanation of the basis for setting reference tariffs, including the method used to allocate costs and a demonstration of the relationship between costs and tariffs.[91]

The AER is required to assess APA GasNet's proposed reference tariffs against the provisions established by r. 93 and r. 95 of the NGR, and the revenue and pricing principles and the NGO, both established by the NGL. In particular, r. 95 requires that:

- A tariff for a reference service provided by means of a transmission pipeline must be designed:
  - to generate from the provision of each reference service the portion of total revenue referable to that reference service; and
  - as far as is practicable consistent with the above dot point, to generate from the user, or the class of users, to which the reference service is provided, the portion of total revenue referable to providing the reference service to the particular user or class of users.
- The portion of total revenue referable to a particular reference service is determined as follows:
  - costs directly attributable to each reference service are to be allocated to that service; and
  - other costs attributable to reference services are to be allocated between them on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.
- The portion of total revenue referable to providing a reference service to a particular user or class of users is determined as follows:
  - costs directly attributable to supplying the user or class of users are to be allocated to the relevant user or class; and
  - other costs are to be allocated between the user or class of users and other users or classes of users on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.

The AER's role also includes an assessment of APA GasNet's proposed reference services to which the reference tariff applies.

The full draft decision and the AER's detailed reasons and analysis on tariff setting are provided in attachment 10.

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91 NGR, r. 72(1)(j), 95(1) and 95(3)(a).

13.1 Draft decision

The AER accepts the fundamental features of the proposed reference tariff, including the tariff design, the zonal structure, the basis for charging users, and the general approach to allocating costs.

However, the AER does not approve a number of specific elements of the proposal, principally in relation to cost allocation. This necessarily affects the calculation of the reference tariff. APA GasNet is required to recalculate the reference tariff incorporating the amendments detailed in Attachment 10 and the various other amendments in this draft decision that affect the inputs to the tariff calculation such as the approved capex forecast, opex forecast and rate of return.

13.2 Summary of analysis and reasons

APA GasNet proposed a highly detailed and complex tariff setting methodology. The AER accepts that the fundamental aspects of the proposed tariff methodology which are carried over from the 2008–12 access arrangement are consistent with the NGR and the NGL. This includes the tariff design, the definition of tariff zones and tariff classes, and the charging parameters.

The AER has reviewed the proposed prudent discounts and accepts the discounted tariffs proposed by APA GasNet. The AER also accepts key aspects of the cost allocation procedures which are carried over from the 2008–12 access arrangement.

However, in a number of specific areas the AER does not accept the proposal from APA GasNet. As a consequence, the AER does not approve the reference tariff as proposed by APA GasNet. The AER's detailed analysis of tariff setting is at attachment 10. APA GasNet is required to recalculate the reference tariff incorporating the amendments below, along with those detailed in Attachment 10 and the various other amendments in this draft decision that affect the inputs to the tariff calculation such as the approved capex forecast, opex forecast and WACC. Specifically, the AER:

- requires that the proposed Anglesea, Kalkallo and Warragul laterals be allocated to the correct tariff zones
- does not accept the application of the optimised replacement cost (ORC) cost allocation procedure for the existing Murray Valley pipeline and the South West pipeline, and requires the allocation to these pipelines be determined on a stand-alone basis
- does not accept the ORC allocation procedure for the proposed Gas to Culcairn project, and requires the allocation to this project be determined on a stand-alone basis
- requires that the forecast export volumes through Culcairn pay at least the incremental cost of the proposed Wollert to Wodonga expansion
- requires that users in the northern tariff zones receive an allocation of indirect costs which minimises the movement in tariffs from the 2008-2012 access arrangement.

14 Tariff variation mechanism

The tariff variation mechanism:

- permits building block revenues to be recovered smoothly over the access arrangement period
- accounts for actual inflation
- adjust for volume risk due to uncontrollable weather factors
- accommodates other tariff adjustments that may be required, such as for an approved cost pass through event; and
- sets administrative procedures for the approval of any proposed changes to tariffs.

The AER assessed APA GasNet's proposal against the tariff variation mechanism requirements of the NGL and NGR.

The full draft decision and the AER's detailed reasons and analysis on the tariff variation mechanism is provided in attachment 11.

14.1 Draft decision

The AER does not approve the reference tariff variation mechanism proposed by APA GasNet for the 2013-17 access arrangement period. The AER considers that some elements of APA GasNet's proposed tariff variation mechanism are not consistent with the NGL and the NGR or that there are alternatives to some elements of APA GasNet's proposal that better meet the purpose of the NGR and NGL. The AER requires the following revisions to APA GasNet's access arrangement proposal:

- price control formula – correction of minor typographical errors in relation to the definition of the Actual EDD factor where the reference to VENCorp should be to AEMO and the definition of the VW factor where the reference to PTS should instead be VTS
- annual tariff variation process – in the event that the AER does not approve an annual tariff variation before the variation comes into effect, the existing reference tariff should apply until such time that the AER makes a decision to either approve the proposed tariff variation, or specify a tariff variation that is consistent with the access arrangement
- schedule of initial tariffs – the inclusion of a new schedule of tariffs as a result of the AER's draft decision on such matters as WACC, capex, opex and capacity utilisation forecasts.

The AER accepts each of APA GasNet's proposed cost pass through events, subject to amendments to the definition of an insurance cap event and carbon cost event, and the addition of an extra factor for the AER to consider when assessing a cost pass through application.

14.2 Summary of analysis and reasons

Annual tariff variation process

The AER does not accept APA GasNet's proposal on how tariff variations may come into effect. It proposed that a tariff variation would take effect automatically; if the AER does not approve an annual

tariff variation before the variation is due to come into effect (by 1 January of the next year). The AER considers that the proposal is inconsistent with the NGR [r. 97(3)].

Consequently, the AER does not approve APA GasNet's proposed procedures for the approval of annual tariff variations. The AER considers that in the event that it does not approve an annual tariff variation before the variation comes into effect, the existing reference tariff should apply until such time that the AER makes a decision to either approve the proposed tariff variation, or specify a tariff variation that is consistent with the access arrangement. This approach is consistent with the 2008–12 access arrangement.[92]

The AER accepts that any material error or deficiency in a past annual tariff adjustment should be corrected, potentially by changes to subsequent tariffs in the next annual tariff variation, provided that the proposed changes are consistent with relevant requirements in access arrangement. This will ensure the error does not result in any under or over recovery of the allowed revenue.

The price control formula

The AER accepts the proposed removal of the limit on revenue variations from the price control formula. This encourages the service provider to better manage the costs associated with uncontrollable events. Apart from the correction of minor typographical errors in relation to the definition of the Actual EDD factor and the VW factor, the AER accepts the proposed retention of all other terms in the price control formula.

The AER accepts that the side constraints applied in the 2008-2012 access arrangement should be retained. The constraint provides a reasonable balance between the need for APA GasNet to rebalance tariffs over the access arrangement period to enable increased efficiency and pipeline utilisation, and the user's need to have a reasonable degree of certainty to facilitate their investments.

The AER considers that the schedule of initial tariffs should be amended to reflect the AER's draft decision on WACC, capex, opex and capacity utilisation forecasts.

Cost pass through

Rule 97(1)(c) of the NGR provides that a reference tariff variation mechanism may provide for variation of a reference tariff as a result of a cost pass through for a defined event. The AER has full discretion to withhold its approval to an element of a reference tariff variation mechanism if it believes that a preferable alternative exists.[93]

The AER considers that most of APA GasNet's proposed cost pass through events meet the criteria outlined in the NGR, are consistent with the NGO and are needed to provide APA GasNet with sufficient cover when acting prudently and efficiently. The AER requires the definition of two of APA GasNet's proposed cost pass through events to be amended.

Carbon Cost Event

APA GasNet has submitted that a carbon cost event is required in respect of the carbon costs that may be incurred in connection with the consumption of fuel gas and fugitive emissions.[94] APA GasNet

92 See GasNet Australia Access Arrangement, 2008–2012, Schedule 3.
93 NGR, r. 40(3)
94 APA GasNet - Access arrangement proposal - March 2012, p. 223.

also stated that the costs for fuel gas will be incurred by AEMO, as the operator of the pipeline. However, there is a significant degree of uncertainty as to whether APA GasNet will incur a carbon liability associated with fuel gas consumption.

The AER considers that in view of the uncertainty surrounding APA GasNet's liability for carbon costs, it is appropriate to approve an event that enables any carbon costs to be passed through, in the event that any are incurred. The AER notes that APA GasNet's proposed carbon cost pass through event will operate without a materiality threshold.

Insurance Cap event

An insurance cap event allows a service provider to pass through costs that exceed the maximum payout that the service provider receives from its insurer when an insured risk eventuates. APA GasNet's proposed an insurance cap event similar to the insurance cap event approved by the AER in its recent gas decisions. However, the AER requires a number of amendments to be made to this pass through event which reflect that the AER will conduct a broad assessment of the cause of the claim leading to the insurance cap event, the extent to which APA GasNet mitigated any risk of the event occurring including whether it obtained an efficient level of insurance having regarding to its forecast opex allowance. These are detailed in Attachment 11 of the draft decision.

15 Non-Tariff components

Non-tariff components refer to the terms and conditions that are not directly related to the nature and level of tariffs paid by users, but which are important to the relationship between the network service provider and users.

The AER has considered the non-tariff components of APA GasNet's access arrangement proposal including capacity trading requirements, queuing requirements, extension and expansion requirements, and terms and conditions on which the reference service will be provided.

The full draft decision and the AER's detailed reasons and analysis on the tariff variation mechanism is provided in attachment 12.

15.1 Draft decision

The AER has decided to accept most of APA GasNet's terms and conditions. The AER accepts APA GasNet's terms and conditions that it considers are consistent with the NGO. The AER received submissions that do not support its decision for some of those terms and conditions. The AER has addressed these submissions and reasons for its decision are provided in attachment 12.

The AER requires minor amendments to capacity trading requirements, queuing arrangements and review dates. The AER proposes to accept APA GasNet's proposal in relation to a change of receipt or delivery point.

The AER's draft decision approves the majority of non-tariff terms included in APA GasNet's access arrangement proposal. However, the AER proposes revisions to be made to certain non-tariff terms to:

- make it clear at what rate interest will be charged
- provide that APA GasNet cannot terminate the Deed for non-payment where a user has disputed the charge
- make it clear that there are no applicable capacity trading requirements.

16 Interlinkages between elements of the access arrangement

In assessing each element of APA GasNet's access arrangement, including the building blocks, the AER has taken into account the interlinkages between the building blocks and between the elements of APA GasNet's access arrangement proposal. Some examples of interlinkages between the elements include:

- Rate of return and the weighted average cost of capital parameters—there are various interlinkages between these parameters including: the AER has determined each of them on the basis of a 10 year investment horizon, the 60 per cent gearing ratio affects the estimation of the equity beta, and the debt risk premium and the assumed utilisation of imputation credits (gamma) affects the estimation of the market risk premium.

- Forecast opex allowance and the incentive mechanism—the use of actual opex in establishing the forecast opex allowance and the efficiency carryover resulting from the operation of the efficiency carryover mechanism is necessary to preserve the rewards or penalties associated with the efficiency of a service provider's operations.

- Capex and opex allowances and the cost pass through mechanism—the cost pass through mechanism allows a service provider to recover certain costs that are not otherwise provided in the forecast capex and opex allowances.

- Non price terms and condition and opex—the efficient level of insurance that the AER has allowed for in APA GasNet's forecast opex is determined to some extent by how risk is allocated through its terms and conditions (see attachments 6 and 12).

- Capex and opex—capex can result in potentially higher or lower opex, depending on whether, for example, that capex goes to network augmentation (increased opex could be required to support new systems) or replacement of aging assets (which can require higher maintenance opex) (see attachments 3 and 6).

Access arrangement draft decision

APA GasNet Australia (Operations) Pty Ltd

2013–17

Part 2

Attachments

September 2012

AUSTRALIAN ENERGY REGULATOR

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Shortened forms

Shortened form	Full title
2008-12 access arrangement	Access arrangement for APA GasNet effective from 1 January 2008 to 31 December 2012 inclusive
2008-12 access arrangement period	1 January 2008 to 31 December 2012 inclusive
2013-17 access arrangement period	1 January 2013 to 31 December 2017
2018-22 access arrangement	Access arrangement for APA GasNet effective from 1 January 2018 to 31 December 2022 inclusive
ACCC	Australian Competition and Consumer Commission
access arrangement information	APA GasNet Australia (Operations) Pty Ltd, Access arrangement information, 31 March 2012
access arrangement submission	APA GasNet Australia (Operations) Pty Ltd, Access arrangement submission, 31 March 2012
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMDQ CC	authorised maximum daily quantity credit certificates
APA GasNet	APA GasNet Australia (Operations) Pty Ltd (ACN 083 009 278)
AWOTE	average weekly ordinary time earnings
capex	capital expenditure
CAPM	capital asset pricing model
Code	National Third Party Access Code for Natural Gas Pipeline Systems
CPI	consumer price index
DRP	debt risk premium
ESC	Essential Services Commission (Victoria)
GFC	global financial crisis
GPG	gas powered generation
MRP	market risk premium
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
opex	operating expenditure
ORC	optimised replacement cost
PTRM	post tax revenue model
RAB	regulatory asset base

RFM	roll forward model
RPP	revenue pricing principles
SEAGas	South East Australia Gas
VTS	Victorian transmission system
WACC	weighted average cost of capital
WORM	western outer ring main

Contents

1 Pipeline Services

This attachment considers APA GasNet's proposed pipeline services to be provided by its Victorian gas transmission network, including the tariffed transmission service and authorised maximum daily quantity credit certificates (AMDQ CC).

The NGR includes a number of requirements with respect to identifying the pipeline which the access arrangement relates to[1] and the services which APA GasNet proposes to offer to provide by means of that pipeline.[2]

AMDQ CC provide preferential rights to users who purchase these certificates for specified amounts of pipeline capacity when the transmission system becomes constrained. The holders of AMDQ CC receive:

- priority in terms of avoiding curtailment in the event of load shedding on the VTS
- congestion payment benefits in the event of congestion on the VTS
- priority in the event of a tied injection and withdrawal bid in the Victoria Declared Wholesale Gas Market.

AMDQ CC are specific to a certain injection point and are sold to users by APA GasNet through a tender process. Under this process, users can buy a fixed term certificate related to a particular injection zone which can then be assigned to a specific demand site or the reference hub. AMDQ CC are tradeable between participants.

In the 2008–12 access arrangement period the holder of the AMDQ CC was charged at the contracted price of the AMDQ CC for the contracted volume even if their actual gas flow is less than the contracted volume. Any gas volume exceeding the contracted AMDQ CC amount was charged at the reference tariff price. The revenue from AMDQ CC is not regulated in the 2008–12 access arrangement period.

1.1 AER's draft decision

The AER requires APA GasNet to amend section 2 and Schedule B of the proposed access arrangement to reflect the classification of AMDQ CC as a pipeline service. The AER also requires amendments to the reference tariff and tariff variation mechanism sections of the proposed access arrangement. In particular, the amendment will require APA GasNet to discontinue the voluntary rebate of the volume effect from AMDQ CC revenue by reporting contracted AMDQ CC volumes under the reference haulage services using the same regulated assets. The detailed discussions of these amendments are set out in attachment 10 - tariff setting and attachment 11 - tariff variation mechanism of this draft decision.

As noted in section 1.3 below, the AEMC's final decision on the definition of reference and rebateable services is relevant to the regulation of AMDQ CC. The AEMC's final decision will

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1 NGR, r. 48(1)(a).
2 NGR, r. 48(1)(b).

be applied by the AER in its final decision. APA GasNet should address the AEMC's rule change in its revised proposal.

1.2 APA GasNet's proposal

APA GasNet's access arrangement proposal describes the type and nature of pipeline services to be provided by its Victorian gas transmission network. This includes those services APA GasNet considers are likely to be sought by a significant part of the market (reference services) and non-reference services. APA GasNet's access arrangement proposal sets out a single service that is offered under the access arrangement proposal.[3]

APA GasNet proposed to classify AMDQ CC services as an unregulated service and proposed to allocate AMDQ CC on the basis of a fixed price auction.[4]

APA GasNet submitted that the costs for providing the AMDQ CC service are low compared to the value that market participants place on those certificates. APA GasNet proposed to voluntarily rebate a proportion of the revenue from issuance of AMDQ CC back to users by including the contracted volume (the volume effect) into the price control model.[5] However, APA GasNet did not propose any amendment to the access arrangement to make this process compulsory.

APA GasNet submitted that the AMDQ transportation rights are intended to provide a level of security to pipeline users for access to pipeline capacity and the creation and allocation of AMDQ CC provide important (if imperfect) signalling for capacity in the VTS. They have been created to support the Victorian market as it operates on a market-carriage model where capacity is not allocated through contract as it is for other pipelines in Australia.[6]

1.3 Assessment approach

In its access arrangement proposal APA GasNet is required to specify the reference services.[7] A reference service is a pipeline service that is likely to be sought by a significant part of the market.[8] A pipeline service is a service provided by means of a pipeline, including a haulage service and a service facilitating the interconnection of pipelines, and a service ancillary to one of these services.[9] A reference service must also be consistent with the NGO.[10]

The AER's approach to assessing these requirements involves first identifying the covered pipeline that will be regulated through the access arrangement. This involves identifying:

- the covered pipeline under the earlier access arrangement

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3 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 5.
4 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 14–20.
5 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 19.
6 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 15.
7 NGR, r. 48(1)(c), NGR, r. 101(1).
8 NGR, r. 101(2).
9 NGL, s. 2.
10 NGR, r. 100(a).

- any extensions or expansions that were completed during the earlier access arrangement and which are taken to be 'covered' under that access arrangement's extension and expansion requirements.

After identifying the covered pipeline the next step is to describe the pipeline services and reference service that will be regulated through the access arrangement. It is then possible to:

- calculate the reference tariff
- determine the other non-tariff terms and conditions which will form part of the access arrangement.[11]

In assessing the classification of AMDQ CC, the AER has considered the definition of a pipeline service as provided for in section 2 of the NGL and the definition of a reference service as provided for in r. 101 of the NGR. Rule 101 provides that a pipeline service that is likely to be sought by a significant part of the market is a reference service.

The AER's draft decision is based on the current definitions of a reference service and also of a rebateable service. These definitions are currently the subject of a proposed rule change.[12] The AEMC has advised that a final rule determination will be made on 1 November 2012. The AER will give effect to that rule change in the event that it takes effect prior to the final decision.

Rule 48 of the NGR requires that an access arrangement must specify the reference services and specify for each reference service, the reference tariff and the other terms and conditions on which the reference service will be provided. Rules 101, 93 and 95 require the AER to have regard to the current and expected future demand, and the allocation of costs when setting a reference tariff for a reference service. When exercising its discretion to approve a reference tariff the AER must take into account the revenue and pricing principles. Under r. 100 of the NGR, the provisions of an access arrangement, including a reference tariff, must be consistent with the NGO.

The AER has also considered two submissions in relation to AMDQ CC from TRUenergy and Australian Power and Gas.

1.4 Reasons for Decision

1.4.1 Identification of the pipeline

The AER considers that APA GasNet has identified the pipeline to which its access arrangement relates and has included a reference to a website at which a description of the pipeline can be viewed.

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11 Such as queuing requirements, extension and expansion requirements, and capacity trading requirements.

12 On 5 August 2011 the AER submitted a rule change proposal to amend the definition of a reference and rebateable service in the NGR. The AEMC released its draft decision on the proposed rule change in March 2012. On 27 July 2012, the AEMC extended the period of time for the making of the final rule determination to 1 November 2012.

The AER assessed whether APA GasNet appropriately identified the pipeline to which the access arrangement relates.[13] APA GasNet identified the pipeline in clause 1.3 of the access arrangement proposal. The AER considers that clause 1.3 sufficiently identifies the geographical area covered by APA GasNet's gas transmission network.

Clause 1 also references a website at which a map of APA GasNet's Victorian gas transmission network can be found. The reference is to a link to a specific page on APA GasNet's website at which the map can be found, rather than a general link to APA GasNet's website home page. The AER considers that this constitutes a reference to APA GasNet's website and, accordingly, APA GasNet has met its obligations under r. 48(1)(a) of the NGR.

1.4.2 Description of the pipeline services

The AER considers that APA GasNet has described the pipeline services that it proposes to offer. However, the AER considers that APA GasNet has not described all pipeline services that are likely to be sought by a significant part of the market.

APA GasNet has described the pipeline services being offered as a reference service in clause 2.2 of its access arrangement proposal. The AER considers that the proposed pipeline services should be amended to include the AMDQ CC service. The AER's reason for amendment is set out in section 1.4.5 below.[14]

1.4.3 Specification of the reference service

In clause 2 of its access arrangement proposal, APA GasNet explains that the NGR establish its Victorian gas transmission network as a market carriage network. As a market carriage network, APA GasNet's Victorian gas transmission network is made available in its entirety to the Australian Energy Market Operator (AEMO) via a Service Envelope Agreement under which AEMO then operates it in accordance with the NGR.[15]

APA GasNet provides a single reference service, which comprises the Tariffed Transmission Service.[16] Tariffed Transmission Service is defined in Schedule B to APA GasNet's access arrangement proposal. It is defined as making available APA GasNet's Victorian gas transmission network on the same terms as those set out in the Service Envelope Agreement and entering into agreements with Shippers in accordance with r. 327 of the NGR.[17]

Service Envelope Agreement is defined as the agreement of that name entered into between AEMO and APA GasNet (NSW) and Service Provider on 2 November 2006, as amended from time to time.[18] Service Provider means APA GasNet Australia (Operations) Pty Ltd.[19]

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13 NGR, r. 48(1)(a)
14 NGR, r. 48(1)(b).
15 APA GasNet, *Access arrangement*, 31 March 2012, p. 5.
16 APA GasNet, *Access arrangement*, 31 March 2012, p. 5.
17 APA GasNet, *Access arrangement*, 31 March 2012, Schedule B, p. 38.
18 APA GasNet, *Access arrangement*, 31 March 2012, Schedule B, p. 37.
19 APA GasNet, *Access arrangement*, 31 March 2012, Schedule B, p. 37.

Rule 327 of the NGR provides that each Market Participant must ensure it has in place a valid agreement (a use of system agreement) with the declared transmission system service provider (APA GasNet), which provides for the payment of transmission charges to the declared transmission system service provider.

Accordingly, APA GasNet proposes to provide a reference service whereby it makes the Victorian gas transmission network available on the terms set out in the Service Envelope Agreement dated 2 November 2006, as amended from time to time.

Tariffed Transmission Reference Service

The AER considers that APA GasNet's proposed Reference Service is likely to be sought by a significant part of the market. The circumstances of its network mean that it cannot provide any other services. The AER received submissions in support of this proposed reference service.[20]

The AER notes that APA GasNet's proposed Reference Service is substantially the same service as provided in its current access arrangement. The only changes reflect the changed regulatory framework.[21]

The AER considers that the nature of APA GasNet's network as a market carriage network, where the network is operated by AEMO, places a limitation on the services that APA GasNet can offer. In particular, APA GasNet does not provide the services of allowing injection, haulage and delivery of gas, as these services are provided by the network operator, AEMO.

The AER considers that the service that APA GasNet provides to users is making the network available. By making the network available to users, APA GasNet is providing a service which then enables users to obtain injection, haulage and delivery services from AEMO. The AER considers that there is merit in making the network available to AEMO and users on the same terms. This will avoid inconsistency and ensure alignment in what is already a complex tripartite relationship. Accordingly, the AER considers that it is appropriate to limit the service to being provided on the same terms as are set out in the Service Envelope Agreement.

TRUenergy made submissions that the proposal to offer a single reference service through the Tariff Transmission Service is consistent with the NGR.[22] This submission supports the AER's decision.

1.4.4 Over recovery of revenue from AMDQ CC

The AMDQ CC has been allocated by APA GasNet since introduced in 2002. The AMDQ CC service is currently provided by regulated assets that also provide the regulated haulage service. The efficient costs of these assets are fully recovered from the relevant reference tariffs. Therefore, under the proposed classification of AMDQ CC, APA GasNet is able to receive two steams of revenue from these regulated assets including revenue from:

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20 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 2.

21 i.e. the replacement of VenCorp with AEMO.

22 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 2.

- the pay-as-you-go reference tariff which is charged on the basis of the volume of gas flowed to fully recover the costs of providing the regulated reference service

- issuing and administering unregulated AMDQ CC contracts to users based on the capacity of the relevant parts of the VTS.

The holder of the certificate will be charged the tendered price of the AMDQ CC for the contracted volume on a take-or-pay basis even if their actual gas flow is less than the contracted volume. If gas flow is less than the contracted volume non AMDQ CC holders can flow gas and take up any unused capacity. Any actual gas flow taken by the AMDQ CC holder exceeding the contracted amount will be charged at the reference tariff price.

Since the revenue collected from AMDQ CC service is unregulated, this allows APA GasNet to recover more than its efficient pipeline costs through:

- the price differential between the price of the AMDQ CC and the reference tariff (the price effect)

- the volume differences between the contracted AMDQ volumes and actual physical gas volumes (the volume effect).

The AER considers that the retention of this additional revenue from the sale of AMDQ CC amounts to the recovery of more than the efficient costs of providing the regulated service.

The AMDQ CC revenue is unregulated in the 2008–12 access arrangement. Despite this, APA GasNet has been voluntarily rebating a proportion of the AMDQ CC revenue to users by passing back the additional revenue earned where contracted volumes exceeded actual volumes (i.e. the volume effect). APA GasNet proposed to retain this process in the 2013–17 access arrangement period.

The AER does not consider the current practice of voluntarily rebating AMDQ CC is consistent with the access arrangement. The AMDQ CC is neither a reference service nor a rebateable service under the 2008–12 access arrangement. Therefore the inclusion of AMDQ CC contracted volume in the price control model is not consistent with schedule 4 of the 2008–2012 access arrangement.

APA GasNet has re-tendered the majority of its AMDQ CC in 2011 for a period of five years, commencing on 1 January 2013 (i.e. the same period as the 2013–17 access arrangement period). The tendered price is higher than the corresponding reference tariff proposed by APA GasNet for 2013.[23] The total revenue generated from the tender process is approximately $27.5 million ($2013). Consequently, the price effect from AMDQ CC revenue is more substantial over the 2013–17 access arrangement period than for the 2008–12 access arrangement period.

[23] AER, AER submission in response to the AEMC Draft Reference service and rebateable service definitions Rule change Determination, April 2012.

1.4.5 Classification of AMDQ CC

The NGL defines a pipeline service as follows:[24]

Pipeline service means-

a. a service provided by means of a pipeline, including

   i. a haulage service (such as firm haulage, interruptible haulage, spot haulage and backhaul); and

   ii. a service providing for, or facilitating, the interconnection of pipelines; and

b. a service ancillary to the provision of a service referred to in paragraph (a),

but does not include the production, sale or purchase of natural gas or processable gas.

Under the above definition, the AER considers that AMDQ CC should be classified as a pipeline service. This is because AMDQ CC is a service provided by APA GasNet by means of a pipeline and, in the alternative, a service ancillary to the haulage transmission service.

APA GasNet submits that AMDQ CC is not related to the delivery of a physical service (such as haulage or pipeline interconnection services). For this reason, it considers that AMDQ CC is not a pipeline service and should be unregulated.[25] This position is consistent with the position taken by APA GasNet during the review of the 2008–12 access arrangement by the ACCC in 2007 and 2008.[26] The ACCC at that time considered that the AMDQ CC was a pipeline service under the provisions of the Gas Code for the reasons set out in its draft decision.[27] The provisions in the Gas Code are largely reflected in the definition of a pipeline service under the NGL.[28] The AER considers that the ACCC's reasoning is consistent with its own conclusions as set out above, and as such AMDQ CC is a pipeline service.

The AER has further considered whether AMDQ CC as a pipeline service is a reference service. Australian Power Gas submitted that it is a reference service or alternatively a rebateable service. Relevant to this assessment is information provided by APA GasNet that it has re-tendered the majority of its AMDQ CC in 2011 for a period of five years, commencing on 1 January 2013.[29] On this basis, the AER considers that the AMDQ CC service is likely to be sought by a significant part of the market, at least for the 2013–17 access arrangement period and as such, AMDQ CC is a reference service under r. 101.[30]

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24 s. 2 of the NGL.

25 APA GasNet, *Access arrangement submission*, March 2012, pp. 18–19.

26 APA Group, *Response to the Commission's draft decision on proposed access arrangement for the Principal Transmission System*, December 2007, p 51.

27 ACCC, *Draft decision, Revised access arrangement by GasNet Australia Ltd for the Principal Transmission System*, November 2007, p. xxi.

28 See s. 2 of the NGL and section 10.2 of the Gas Code.

29 AER, AER submission in response to the AEMC Draft Reference service and rebateable service definitions Rule change Determination, April 2012.

30 An amendment to the definition of reference and rebateable services in r. 101 is the subject of the AEMC's Draft Rule Determination, National Gas Amendment (Reference service and rebateable service definitions) Rule 2012,15 March 2012.

Australian Power and Gas submitted that AMDQ CC should be classified as a rebateable service. If classified as a rebateable service, the price for AMDQ CC could be determined by a tender process and the revenue generated by the AMDQ CC (e.g. based on the receipts of the tender process) would be rebated partially to users who pay for the cost of the relevant pipeline assets through the annual tariff variation process. An appropriate portion of the revenue would be retained by APA GasNet to cover the costs of providing the service and to maintain its incentive to offer AMDQ CC.

The AER accepts that the pricing of AMDQ CC through a tender process is efficient. This provides an investment signal in terms of the cost of network capacity constraints. However, a pipeline service can only be a rebateable service if, amongst other factors, it is not a reference service and if the market for the service is substantially different from the market for any reference service.[31] Given that the AMDQ CC is a reference service because it is likely to be sought by a significant part of the market, and as it is offered in the same market as the haulage reference service, the AER cannot classify AMDQ CC as a rebateable service.

1.4.6 Setting a reference tariff for AMDQ CC

To derive the reference tariffs for AMDQ CC, it is necessary to allocate the costs of the pipeline assets which provide both the tariffed reference service and the AMDQ CC service between these two services.

Rule 93 of the NGR requires that the costs directly attributable to reference services are to be allocated to those services, and r. 95 requires that a tariff for a reference service must be designed to generate from the provision of each reference service the portion of total revenue referable to that reference service.

Since the same regulated assets are used to provide both haulage and AMDQ CC services, the cost for pipeline assets could be allocated to both services. A common allocation approach is to separate the pipeline asset costs based on the avoidable cost for each service. However, the avoidable cost for haulage and AMDQ CC services is likely to be zero given that the provision of any one of these services requires the same regulated assets. For example, the cost that can be avoided by not providing the AMDQ CC service is very low because without AMDQ CC, users are still required to pay for the full cost of the pipeline assets that provide the haulage service. Given the difficulty of allocating the cost of shared regulated assets across the haulage and AMDQ CC service, it is likely that any reference tariffs derived on this basis are likely to result in an inefficient mix of tariffs for both services.

Alternatively, as the AER considers that the AMDQ CC is also a service ancillary to the provision of the haulage service by the means of the pipeline, the haulage service can be allocated the full cost of the pipeline assets. The costs for the provision of the AMDQ CC service can be derived based on the incremental costs, that is, the costs associated with the tender process and any follow up administrative costs. Under this approach, the reference tariff for the haulage service will reflect the full cost of the pipeline assets used to provide the haulage service, while the reference tariff for AMDQ CC will reflect the additional cost users need to pay to obtain the preferential rights to access the haulage service under the contracted terms and conditions. Using the current contracted AMDQ CC volumes and an

[31] NGR, rr. 93(4)(a) and 93(4)(c)

estimate of the administrative costs, the AER has calculated an initial reference tariff for AMDQ CC of $0.0025 per GJ ($2013).[32]

The AER acknowledges that the AMDQ CC reference tariff derived on this basis is significantly lower than the value market participants place on those certificates as reflected by the tendered price. This may reduce the effectiveness of the AMDQ CC as an investment signal in terms of costs and congestion on the pipeline. However, the AER considers this approach best meets the revenue and pricing principles by maintaining the cost reflectivity of the reference haulage tariff.

The AER has considered TRUenergy's submission but considers that it is not possible to adjust the price control formula in Schedule D of the access arrangement to make it compulsory for APA GasNet in the 2013–17 access arrangement period to include actual volumes from AMDQ CC every year. This is because AMDQ CC is a separate service from the haulage service.

The AER acknowledges that AMDQ CC contracts are currently in place and that as a result AMDQ CC reference tariffs associated with the existing pipeline capacity will have no effect in the 2013–17 access arrangement period. This will reduce the effectiveness of the reference tariff in addressing the over recovery of revenue, at least for the 2013–17 access arrangement period.

1.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 1.1

Remove section 2.2 from the access arrangement and replace with the following:

The Service Provider will provide two pipeline services under this Access Arrangement:

(1) the Reference Service comprising the Tariffed Transmission Service; and

(2) the AMDQ CC service.

Revision 1.2

Insert the following definition to Schedule B of the proposed access arrangement:

Authorised maximum daily quantity credit certificate (AMDQ CC) has the meaning given to it in the NGR.

[32] The current total capacity contracted by AMDQ CC is 468 TJ. The total capacity over 10 days is 4680 TJ. Over the five years of the access arrangement period, the contracted volume is therefore 234000TJ. The estimated administrative cost is derived based on the base cost of $50 000 in real 2007 dollars escalated by CPI. A simple division of cost over contracted volume yields 0.0025 per GJ.

2 Capital base

The capital base roll forward accounts for the value of APA GasNet's regulated assets over the access arrangement period. The opening capital base value for a regulatory year is rolled forward by indexing it for inflation, adding any conforming capex, and subtracting depreciation and other possible factors (for example, disposals or customer contributions). Following this process, the AER arrives at a closing value of the capital base at the end of the relevant year. The opening value of the capital base is used to determine the return of capital (regulatory depreciation) and return on capital building block allowances.

The AER is required to make a decision on APA GasNet's opening capital base as at 1 January 2013 for the 2013–17 access arrangement period. The AER is also required to make a decision on APA GasNet's projected capital base for the 2013–17 access arrangement period. This attachment presents the AER's draft decision on these matters.

2.1 Draft decision

The AER does not approve APA GasNet's proposed opening capital base of $620.6 million ($nominal) as at 1 January 2013 because it considers that some of APA GasNet's inputs into the capital base roll forward model (RFM) do not comply with the NGR.[33] These include:

- APA GasNet's proposed inflation input for 2007
- APA GasNet's proposal not adjusting the capital base for the accumulated return on capital associated with the difference between actual and forecast capex for 2007.

After adjusting these inputs, the AER has determined an opening capital base of $612.1 million ($nominal) as at 1 January 2013, which is approximately $8.5 million less than that proposed by APA GasNet. Table 2.1 summarises the AER's draft decision on the roll forward of APA GasNet's capital base during the 2008–12 access arrangement period.

The AER approves some aspects of APA GasNet's proposal to determine the opening capital base as at 1 January 2013. These include:

- the opening capital base at 1 January 2007, which is consistent with the value adopted in the ACCC's final decision for the 2008–12 gas access arrangement review
- the use of forecast depreciation as set by the ACCC.

[33] NGR, r. 77(2).

Table 2.1 AER's draft decision on APA GasNet's capital base roll forward for the 2008–12 access arrangement period ($million, nominal)

	2008	2009	2010	2011	2012[a]
Opening capital base	559.6	591.1	583.2	575.9	613.0
Net capex	37.8	10.2	10.6	53.6	52.5[a]
Less: depreciation	27.0	30.7	33.4	34.3	35.5
Indexation	20.6	12.5	15.5	17.9	15.3
Closing capital base	591.1	583.2	575.9	613.0	645.3
Less: difference between 2007 forecast and actual capex					20.0
Less: return on difference for 2007 capex					13.2
Opening capital base at 1 January 2013					612.1

Source: AER analysis.
Note: Totals may not add due to rounding.
(a) Based on forecast capex.

Based on the approved opening capital base and the AER's draft decisions on forecast capex, depreciation, and inflation, the AER has determined a projected closing capital base of $722.7 million ($nominal) as at 31 December 2017. Table 2.2 sets out the projected roll forward of the capital bases over the 2013–17 access arrangement period using the 'partially as incurred' approach.

Table 2.2 AER's draft decision on projected (partially as incurred) capital base roll forward for the 2013–17 access arrangement period ($million, nominal)

	2013	2014	2015	2016	2017
Opening capital base	612.1	631.8	706.1	719.9	721.5
Net capex[a]	29.0	84.5	25.7	14.8	12.9
Less: depreciation[b]	24.6	26.0	29.5	31.2	29.8
Indexation	15.3	15.8	17.7	18.0	18.0
Closing capital base	631.8	706.1	719.9	721.5	722.7

Source: AER analysis.
(a) Based on as incurred capex.
(b) Based on as commissioned capex.

2.2 APA GasNet's proposal

APA GasNet proposed adopting an opening capital base as at 1 January 2008 of $538.1 million ($nominal).[34] This included a reduction of $21.5 million ($nominal) from the opening capital base at 1 January 2008 approved in the previous access arrangement review. This reduction is due to the difference between the ACCC's approved capex for 2007 and actual capex for 2007.

APA GasNet also proposed to roll forward its capital base during the 2013–17 access arrangement period using the partially as incurred approach for recognising capex.[35] Under this approach, capex is recognised in the capital base in the year in which it is incurred. APA GasNet previously included capex to its capital base using an as commissioned approach for recognising capex. Under this approach, capex is recognised in the capital base when the project it related to was commissioned and began providing reference services. APA GasNet's proposed roll forward of the capital base during the 2008–12 access arrangement period is therefore based on the as commissioned approach.

Based on the opening capital base as at 1 January 2008 and the roll forward of the capital base in the 2008–12 access arrangement period, APA GasNet proposed an opening capital base of $620.6 million ($nominal) as at 1 January 2013.[36] This is shown in Table 2.3.

Table 2.3 APA GasNet's proposed capital base roll forward during the 2008–12 access arrangement period ($million, nominal)

	2008	2009	2010	2011	2012
Opening capital base	538.1	568.8	560.4	552.6	588.9
Net capex	37.8	10.2	10.7	53.6	52.5
Less: depreciation	27.0	30.7	33.4	34.3	35.5
Indexation	19.8	12.0	14.9	17.1	14.7
Closing capital base	568.8	560.4	552.6	588.9	620.6

Source: APA GasNet, *Access arrangement proposal*, March 2012, p. 125.

2.2.2 Capital expenditure in the 2008–12 access arrangement period

APA GasNet indicated it has commissioned capex of $164.8 million ($nominal) in the 2008–12 access arrangement period.[37] This amount included actual capex from 2007–10, an estimate of 2011 capex, and APA GasNet's forecast of capex for 2012.

APA GasNet proposed that this amount conforms to the NGR requirements and should be included in the opening capital base for the access arrangement period as set out in Table

34 APA GasNet, *Access arrangement submission,* March 2012, p. 121.
35 APA GasNet, *Access arrangement submission,* March 2012, p. 121.
36 APA GasNet, *Access arrangement submission,* March 2012, p. 125.
37 APA GasNet, *Roll forward model,* March 2012.

2.4. The capex proposed under each category driver is discussed in more detail in attachment 3.

Table 2.4 APA GasNet's proposed conforming capital expenditure for the 2008–12 access arrangement period ($million, nominal)

	2008	2009	2010	2011	2012	Total
Pipelines	18.7	2.6	1.5	5.8	17.5	46.1
Compressors	3.9	2.8	4.0	39.7	28.3	78.6
City gates & field regulators	14.0	3.9	–	4.2	1.8	23.9
Odourant plants	–	–	–	0.1	–	0.2
Gas quality	–	–	–	–	–	–
Other	0.5	0.5	5.1	1.6	4.6	12.2
General building	0.8	0.4	0.2	0.9	0.2	2.6
General land	–	–	–	1.2	–	1.2
Total	37.8	10.2	10.7	53.6	52.5	164.8

Source: APA GasNet, *Roll forward model*, March 2012.
Note: APA GasNet's proposed RFM also included asset classes for Non reg - LNG, Non reg - LNG - Land, Non reg - Connection services. The AER has not included these asset classes in its draft decision because there are no residual values or capex allocated to them during the 2008–12 access arrangement period. Further, APA GasNet has not included these asset classes in its projected capital base roll forward.
Note: Total values may not add due to rounding.

APA GasNet identified two items regarding uninterruptible power supply units which were incorrectly approved and classified as 30 year assets in the 2008–12 access arrangement period. APA GasNet submitted that approximately $87,500 ($nominal) of capital base write-offs (disposals) occurred in 2010. APA GasNet further submitted that it considered the disposals to be minor and immaterial and therefore did not include any disposals in the roll forward of the capital base during the 2008–12 access arrangement period.[38]

2.2.3 Adjustment to the capital base for inflation in the 2008–12 access arrangement period

APA GasNet proposed to roll forward its capital base using actual outturn inflation, consistent with the ACCC's 2008 access arrangement review.[39]

2.2.4 Depreciation in the 2008–12 access arrangement period

APA GasNet proposed to depreciate its capital base roll forward for the 2008–12 access arrangement using forecast straight-line depreciation, as approved by the ACCC in its 2008–12 gas access arrangement review.[40]

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38 APA GasNet, *Response to information request No. 3 follow-up,* 19 June 2012, p. 1.
39 APA GasNet, *Access arrangement submission*, March 2012, p. 124.

2.2.5 Projected capital base over the 2013–17 access arrangement period

APA GasNet proposed a projected closing capital base as at 31 December 2017 of $857.1 million ($nominal).[41] The projected roll forward of the capital base during the 2013–17 access arrangement period is shown in Table 2.5. APA GasNet has included in its capital base projection:

- No inflation indexation of the capital base, which is discussed in more detail in attachment 5. APA GasNet proposed instead to apply a nominal WACC to an unindexed capital base to determine the return on capital allowance. Consequently, its proposal does not adjust the forecast depreciation allowance to be net of the capital base inflation indexation.[42]
- Forecast straight-line depreciation,[43] which is discussed in more detail in attachment 5.

Table 2.5 APA GasNet's proposed projected capital base roll forward during the 2013–17 access arrangement period ($million, nominal)

	2013	2014	2015	2016	2017
Opening capital base	620.6	648.3	903.2	896.5	876.7
Net capex	54.4	282.2	27.8	15.7	14.0
Less: depreciation	26.7	27.3	34.5	35.5	33.5
Closing capital base	648.3	903.2	896.5	876.7	857.1

Source: APA GasNet, *Access arrangement information*, March 2012, p. 12.

2.3 Assessment approach

The AER is required to consider the transitional provisions of the NGR in relation to the assessment of APA GasNet's proposal. This is because APA GasNet's access arrangement for the 2008–12 access arrangement period was ongoing when the new access regime came into force.[44] Rule 79 of the NGR provides that actual or forecast capex (new facilities investment) approved by a Relevant Regulator under section 8.21 of the National Gas Code is taken to be a decision by the AER that the capex conforms with the new capex criteria.[45]

40 APA GasNet, *Access arrangement information*, March 2012, p. 151.
41 APA GasNet, *Post tax revenue model*, March 2012.
42 APA GasNet, *Access arrangement submission*, March 2012, p. 127.
43 APA GasNet, *Access arrangement revision proposal*, March 2012, p. 8.
44 NGR, Schedule 1, clause 1(1)(a).
45 NGR, Schedule 1, clause 3(2)(a).

The AER's approach to assessing APA GasNet's projected capital base is consistent with that in previous gas decisions reviewed under the NGR.[46] In accordance with rr. 77(2) and 78 of the NGR, the AER applied three steps to calculate the projected capital base:

- First, the AER confirms the value of the opening capital base for the first year of the 2008–12 access arrangement period (in this case, 1 January 2008). This requires making an adjustment to account for any difference between actual and estimated capex in the final year of the previous access arrangement period (in this case, 2007). This adjustment is also subject to any changes made in the AER's assessment of conforming capex for that year.

- Second, the opening capital base as at 1 January 2008 is rolled forward to determine the closing capital base as at 31 December 2012. This closing capital base is also used as the value of the opening capital base for the access arrangement period as at 1 January 2013. This involves:[47]

  - adding conforming actual capex for each year—this requires assessing the capex and ensuring it is consistent with the provisions of the 2008–12 access arrangement and historical regulatory accounts

  - removing forecast straight-line depreciation for each year based on the approach approved for the 2008–12 access arrangement

  - removing any capital contributions during the 2008–12 access arrangement period

  - adding any speculative capex or redundant assets that were reused during the 2008–12 access arrangement period

  - removing any redundant assets and disposals during the 2008–12 access arrangement period

  - indexing the roll forward each year for actual inflation.

- Third, the capital base is projected over the 2013–17 access arrangement period by rolling forward the opening capital base as at 1 January 2013 to 31 December 2017. This involves taking the opening capital base:[48]

  - adding forecast conforming capex for each year

  - removing forecast depreciation for each year

  - removing the forecast value of assets to be disposed of during the 2013–17 access arrangement period

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46 AER, *Final decision: Jemena access arrangement*, June 2010; AER, *Final decision: Country Energy Gas access arrangement*, March 2010; AER, *Final decision: ActewAGL access arrangement*, March 2010; AER, *Final decision: Envestra arrangement proposal Qld*, June 2011; AER, *Final decision: Envestra Ltd access arrangement proposal for the SA gas network 2011–2016*, June 2011 (AER, *Final decision: Envestra access arrangement SA*, June 2011); AER, *Final decision: APT Allgas access arrangement*, June 2011; AER, *Final decision: NT Gas access arrangement*, July 2011. AER, *Final decision: Roma to Brisbane Pipeline 2012–13 to 2016–17*, April 2012.

47 NGR, r. 77(2).

48 NGR, r. 78.

- indexing the capital base each year for forecast inflation.

2.4 Reasons for draft decision

The AER considers APA GasNet's proposed inputs into the capital base roll forward overstate the value of the opening capital base at 1 January 2013 and consequently the projected closing capital base as at 31 December 2017. The AER considers these inputs are not consistent with rr. 77(2) and 73 of the NGR respectively. In particular, the AER considers:

- APA GasNet's proposed RFM included an incorrect inflation input for 2007 and therefore overstates the opening capital base at 1 January 2008.
- APA GasNet's proposed RFM did not correctly include the adjustment for the accumulated return on capital associated with the difference between actual and estimated capex for 2007. This has the effect of overstating the opening capital base as at 1 January 2013.
- APA GasNet's proposed forecast capex and depreciation inputs used to roll forward the projected capital base for the 2013–17 access arrangement period need to be amended. As discussed below, the AER considers APA GasNet's proposed inclusion of capitalised interest in its capex forecasts will overstate its efficient capital requirements. The AER's assessment of APA GasNet's forecast capex and depreciation inputs is discussed in attachments 3 and 5 respectively.

The AER has also made other minor amendments to APA GasNet's capital base roll forward, which are discussed in the following sections. These amendments are individually necessary for consistency with relevant NGR requirements. The AER's detailed assessment follows.

2.4.1 Opening capital base in the 2008–12 access arrangement period

The AER does not approve APA GasNet's proposed opening capital base as at 1 January 2008 because it does not correctly reflect the appropriate inflation input for 2007. APA GasNet's proposed value for 2007 actual inflation is inconsistent with its annual tariff variation mechanism. In its proposed RFM, APA GasNet applied a December–December CPI for 2007. However, APA GasNet's annual tariff mechanism used:

- a September–September CPI for the 2003–2007 access arrangement period[49]
- a December–December CPI for the 2008–12 access arrangement period.[50]

The AER has adjusted APA GasNet's RFM to include the correct value for 2007 actual inflation, which is consistent with that applied to its annual tariff variation for the same access

[49] GasNet Australia, *Access arrangement*, December 2003, p. 43.
[50] APA Group, *GasNet Australia access arrangement*, January 2008, p. 35.

arrangement period.[51] The AER approves $559.6 million ($nominal) as the value for the opening capital base as at 1 January 2008, consistent with the NGR.[52]

APA GasNet's actual capex for 2007 is lower than the estimated 2007 capex that was included in the capital base when the ACCC made its decision for the 2008–12 access arrangement. While APA GasNet has adjusted the capital base for the difference between forecast and actual 2007 capex, it did not make this adjustment in the manner required in the AER's RFM. As a result, it did not include a reduction for the excess accumulated return on capital arising from its forecast 2007 capex being higher than actual 2007 capex.

In the AER's standard RFM, the amendment for the difference between 2007 actual and forecast capex does not affect the opening capital base at 1 January 2008. Instead, the amendment and the resulting adjustment for the return on difference associated with 2007 capex apply to the opening capital base as at 1 January 2013. Conversely, APA GasNet's proposed RFM included its amendment in the capital base at 1 January 2008. The AER has used its standard approach to present the amendments. As a result, the AER's amendment increases APA GasNet's proposed opening capital base at 1 January 2008 by $20 million ($nominal). However, by the end of the 2008–12 access arrangement period, these adjustments have the effect of reducing APA GasNet's opening capital base as at 1 January 2013 by approximately $33 million. This includes both the amendment for the difference between 2007 actual and forecast capex, as well as the resulting adjustment for the return on that difference of $13.2 million. The AER's consideration of this adjustment is discussed in the following section.

2.4.2 Adjustment for the return on difference associated with 2007 capex

The AER accepts APA GasNet's proposal to reduce the opening capital base for the difference between estimated and actual capex in 2007.[53] However, the AER has further reduced APA GasNet's opening capital base as at 1 January 2013 by $13.2 million ($nominal). This is to remove the effect of the rate of return on this difference over the 2008–12 access arrangement period.

The ACCC approved the opening capital base as at 1 January 2008 of $560.5 which included an amount for estimated capex in 2007 of $93.9 million ($nominal).[54] APA GasNet's actual capex for that year was $72.4 million ($nominal), or $21.5 million less than the amount approved by the ACCC.[55] As the higher estimated capex for 2007 was incorporated into the capital base for the 2008–12 access arrangement period, APA GasNet has therefore earned a return on this amount over that period.

While APA GasNet reduced its opening capital base by about $20 million ($nominal) to account for the difference between estimated and actual capex in 2007, it did not remove the

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51 APA GasNet's RFM included the correct actual inflation inputs for 2008–11 (with an estimate for 2012). These were calculated as the annual change in December–December CPI. The AER's final decision will update the RFM for the actual inflation input for 2012.

52 NGR, r. 77(2).

53 NGR, r. 77(2)(a).

54 APA GasNet, *Response to AER information request 7*, 6 June 2012.

55 APA GasNet, *Proposed RFM*, March 2012; APA GasNet, *Response to AER information request 7*, 6 June 2012.

benefit of the return on capital associated with this difference from the capital base. The AER considers that this benefit should be removed in these circumstances because allowing the difference would create an incentive for APA GasNet to overestimate its capex for the final year of the access arrangement period. Table 2.6 shows that the return on this difference that was earned by APA GasNet over the 2008–12 access arrangement period is $13.2 million ($nominal).

The AER therefore amends APA GasNet's proposed RFM to remove the return on the difference between estimated and actual net capex for 2007 from the capital base. This adjustment removes the benefit APA GasNet received by applying the rate of return to the estimated capex instead of the lower actual capex which APA GasNet incurred.[56] The AER's decision to remove the rate of return from APA GasNet's capital base is consistent with the approach adopted by the AER in previous gas access arrangement decisions. This is also consistent with the Australian Competition Tribunal's decision upholding the AER's removal of the return on difference between estimated and actual capex from Jemena Gas Networks' capital base.[57]

Table 2.6 Return on capital from overestimate of 2007 capex ($million, nominal)

	2007	2008	2009	2010	2011	2012	Total
Amount of overestimate	20.0						
Return on the overestimate (including inflation)		2.3	2.2	2.6	3.0	3.1	13.2

Source: AER analysis, based on a real vanilla WACC of 7.67 per cent approved for 2008–12 and actual CPI.

2.4.3 Conforming capital expenditure in the 2008–12 access arrangement period

The AER largely approves APA GasNet's proposed capex for the 2008–12 access arrangement period. The AER's assessment of conforming capex is set out in attachment 3. However, in determining the opening capital base as at 1 January 2013, the AER assessed whether APA GasNet's proposed capex amounts for the 2008–12 access arrangement are properly accounted for in the capital base roll forward. The AER accepts that APA GasNet's proposed capex for the 2008–12 access arrangement period is properly included in the capital base roll forward, except for its initial treatment of asset disposals in 2010. In consultation with APA GasNet, the AER identified minor asset disposal values that were not initially included in APA GasNet's proposed RFM. [58] APA GasNet provided a detailed RAB spreadsheet to the AER and identified that the disposals were allocated to the 'General

[56] The adjustment for any benefit or penalty associated with differences between actual and estimated values is intended to provide a neutral incentive to the estimation process so it removes the incentive to overestimate or underestimate the amount of capex for the final year of the access arrangement period.

[57] Australian Competition Tribunal, Application by Jemena Gas Networks (NSW) Ltd (No 3) [2011] ACompT6, 25 February 2011.

[58] Specifically, APA GasNet disposed of $87,000 of capex from the general building asset class in 2010. APA GasNet, *Response to AER information request 3—Follow up number 1*, 19 June 2012.

building' asset classes in 2010.[59] APA GasNet also provided a revised RFM that included the disposal amounts.[60]

The AER's draft decision on APA GasNet's conforming capex for the 2008–12 access arrangement period is set out in Table 2.7.

Table 2.7 AER's approved conforming net capex for the 2008–12 access arrangement period ($million, nominal)

Asset class	2007	2008	2009	2010	2011[a]	2012[a]	Total
Pipelines	41.5	18.7	2.6	1.5	5.8	17.5	87.6
Compressors	28.9	3.9	2.8	4.0	39.7	28.3	107.5
City gates & Field regulators	1.3	14.0	3.9	–	4.2	1.8	25.3
Odourant plants	–	–	–	–	0.1	–	0.2
Gas quality	–	–	–	–	–	–	–
Other	0.2	0.5	0.5	5.1	1.6	4.6	12.4
General building	0.4	0.8	0.4	0.1	0.9	0.2	2.9
General land	–	–	–	–	1.2	–	1.2
Total	72.4	37.8	10.2	10.6	53.6	52.5	237.2

Source: AER analysis.
(a) Values are estimates.

At the time it submitted its proposal, APA GasNet did not yet have the values for 2011 and 2012 actual capex.[61] As such, APA GasNet's RFM contained capex estimates for those years. The AER understands the 2011 actual capex information should be available when APA GasNet submits its revised proposal. The AER therefore requires APA GasNet to include in its revised proposal actual capex for 2011. APA GasNet may also include an update of its capex estimate for 2012.

2.4.4 Depreciation used in the 2008–12 access arrangement period

The AER approves APA GasNet's proposal to roll forward the capital base to 1 January 2013 using forecast depreciation (straight-line method) as approved in the previous access arrangement review. The use of forecast depreciation to determine the opening capital base is consistent with the AER's standard approach to depreciation for gas distribution service providers.[62]

59 APA GasNet, *Response to AER information request 3—Follow up number 3*, 2 July 2012.
60 APA GasNet, *Response to AER information request—revised models*, 9 July 2012.
61 APA GasNet, *Access arrangement submission,* March 2012, p. 121.
62 For example, AER, *Final decision: Jemena access arrangement proposal*, June 2010, p. 92; AER, Final decision: APT Allgas access arrangement, June 2011, p. 13; AER, *Final decision: Envestra access arrangement Qld*, June 2011, p. 25; AER, *Final decision: Envestra access arrangement SA*, June 2011, p. 28.

Under the NGR,[63] the AER must subtract from the capital base depreciation calculated in accordance with the relevant access arrangement. In its last access arrangement review, the ACCC calculated a forecast depreciation allowance for APA GasNet, based on its forecast capex allowance over the 2008–12 access arrangement period.[64] The AER therefore accepts that APA GasNet's proposed approach is consistent with the relevant provisions in the 2008–12 access arrangement.

2.4.5 Approach for recognising capex—capitalised interest

The AER does not approve GasNet's inclusion of capitalised interest (or interest during construction) in its capex forecasts. This is because it is not required under the 'partially as incurred' approach for recognising capex in the AER's transmission PTRM, which APA GasNet has proposed to adopt. Under the partially as incurred approach, the AER considers that capex forecasts including capitalised interest overstate APA GasNet's efficient capital requirements, and do not meet the requirements of conforming capex under the NGR.[65] The removal of capitalised interest reduces APA GasNet's capex forecasts for the 2013–17 access arrangement period by approximately $12 million, or 3 per cent compared to APA GasNet's proposal.

For the 2008–12 access arrangement period, APA GasNet used the ACCC's approved 'as commissioned' approach for recognising capex. Under this approach, capex was only recognised in the capital base when the project it related to was commissioned and began providing reference services. Where expenditure on a project was incurred over several years, it resulted in time delays between when capex was incurred and when APA GasNet could begin to recover a return relating to that project. Accordingly, under the as commissioned approach, the ACCC allowed APA GasNet to include in its capex values the efficient cost of financing projects when they are under construction but not earning revenues—that is, capitalised interest. The AER accepts APA GasNet's proposal to adopt the partially as incurred approach for recognising capex during the 2013–17 access arrangement period. Under this approach, however, capex is recognised in the year it is incurred and there is no delay in rolling the expenditure into the capital base where it starts earning a return. As a result, there is no need to include any capitalised interest in the capex forecasts. This is consistent with the AER's previous determinations for electricity transmission network service providers.[66]

During its assessment of APA GasNet's forecast capex, the AER identified discrepancies between the capex forecast values in APA GasNet's PTRM and in other areas of its access arrangement proposal. Following an information request, APA GasNet responded that its capex forecasts in the PTRM included capitalised interest. The AER therefore requires APA GasNet to remove the capitalised interest from the capex forecasts for the 2013–17 access arrangement period.

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63 NGR, r. 77(2)(d).

64 ACCC, *Final decision: Revised access arrangement by GasNet Australia (Operations) Pty Ltd and GasNet (NSW) Pty Ltd for the Principal Transmission System*, April 2008, p. 57. (ACCC, *Final decision*, April 2008).

65 NGR, r. 79(2).

66 For example, see AER, *Draft Decision: Powerlink Queensland transmission network revenue cap 2007–08 to 2011–12*, December 2006, pp. 23–25, 17.

2.4.6 Projected capital base during the 2013–17 access arrangement period

The AER's forecast of APA GasNet's projected capital base as at 31 December 2017 is $722.7 million ($nominal), a reduction of $134.4 million or 16 per cent from APA GasNet's proposal. This is because of the AER's draft decision on the inputs to the determination of the projected capital base. The AER has amended the following inputs:

- Reduced APA GasNet's proposed opening capital base as at 1 January 2013 to $612.1 million or by 1 per cent to reflect the changes required in this attachment.
- In rejecting APA GasNet's proposed depreciation approach (see attachment 5), the AER has applied its standard approach for projecting the capital base as follows:
  - Applied forecast inflation indexation to the opening capital base
  - Determined the return on capital allowance using a nominal WACC and the indexed opening capital base
  - Determined the forecast depreciation (straight-line method) using the indexed capital base. The regulatory depreciation allowance in the building block is based on the forecast straight-line depreciation net of the forecast inflation indexation applied to the opening capital base.
- Reduced APA GasNet's proposed forecast capex allowance by $223 million ($2012) or 59 per cent. The AER's detailed assessment of the forecast capex allowance is set out in attachment 3 The AER has also excluded capitalised interest from APA GasNet's capex forecasts.
- Reduced APA GasNet's proposed forecast depreciation allowance by $101 million ($nominal) or 64 per cent. The AER's assessment of the proposed forecast depreciation allowance is set out in attachment 5.
- Applied an updated forecast inflation of 2.5 per cent per annum for the 2013–17 access arrangement period. As discussed in attachment 5, APA GasNet's proposed change in depreciation approach means no inflation indexation was applied to the capital base in its proposal. The AER has not accepted the proposed change in depreciation approach. Consequently, this draft decision indexes the capital base for inflation.

The capital base at the commencement of the 2018–22 access arrangement period will be subject to adjustments under the NGR.[67] These adjustments are not limited to, but include:

- the difference between actual and forecast capex for 2012 (the final year of the 2008–12 access arrangement period)
- actual inflation and approved depreciation over the 2013–17 access arrangement period.

The AER accepts APA GasNet's proposal to use forecast depreciation approved in the final decision for the 2013–17 access arrangement period to establish APA GasNet's opening capital base as at 1 January 2018. The use of forecast depreciation to roll forward the capital base:

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[67] NGR, r. 77(2).

- is consistent with the AER's approach for determining the opening capital base in its recent decisions, including those for the Jemena Gas Networks (JGN), APT Allgas, and Envestra networks[68]

- maintains a consistent approach with APA GasNet's roll forward of its capital base to 1 January 2013 using forecast depreciation as approved by the ACCC for the 2008–12 access arrangement period[69]

- is also consistent with the approach outlined in the AER's Access Arrangement Guideline.[70]

2.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 2.1: Make all necessary amendments to reflect the AER's draft decision on the roll forward of the capital base for the 2008–12 access arrangement period, as set out in Table 2.1.

Revision 2.2: Make all necessary amendments to reflect the AER's draft decision on the projected opening capital base for the 2013–17 access arrangement period, as set out in Table 2.2.

Revision 2.3: Make all necessary amendments to reflect the AER's draft decision on net capex by asset class during the 2008–12 access arrangement period, as set out in Table 2.7.

Revision 2.4: Make all necessary amendments to reflect the AER's draft decision on the removal of capitalised interest from the capex forecasts for the 2013–17 access arrangement period, as set out in section 2.4.5.

[68] AER, *Final decision: Jemena access arrangement proposal*, June 2010, p. 92; AER, *Final decision: APT Allgas access arrangement*, June 2011, p. 13; AER, *Final decision: Envestra access arrangement Qld*, June 2011, p. 25; AER, *Final decision: Envestra access arrangement SA*, June 2011, p. 28.

[69] APA GasNet, *Access arrangement submission*, March 2012, p. 124.

[70] AER, *Final access arrangement guideline*, March 2009, pp. 65–66.

3 Capital expenditure

This attachment sets out the AER's draft decision, reasoning and approach to assessing APA GasNet's proposed capital expenditure (capex) for the 2008-12 access arrangement period and forecast capex for the 2013–17 access arrangement period.

3.1 Draft decision

3.1.1 2008–12 access arrangement period capex

The AER approves APA GasNet's proposed $160.4 million ($2012) total capex for the 2008–12 access arrangement period.

Table 3.1 summarises the AER's approved capex in the 2008–12 access arrangement period.

Table 3.1 AER approved capital expenditure by asset class over the 2008–12 access arrangement period ($million, 2012)

	2008	2009	2010	2011	2012	Total
Augmentation	18.6	2.4	4.3	43.5	23.4	92.1
Refurbishment and upgrade	19.2	7.1	1.3	4.8	22.5	54.9
Non-system	**0.6**	**0.8**	**5.5**	**1.7**	**4.8**	**13.4**
Total capex	38.5	10.3	11.1	49.9	50.6	160.4

Source: APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73.

3.1.2 2013–17 access arrangement period capex

The AER approves $153.8 million ($2012) of APA GasNet's proposed $340.8 million total capex for the 2013–17 access arrangement period.

Table 3.2 summarises the AER's approved capex over the 2013–17 access arrangement period.

Table 3.2 Forecast capital expenditure by asset class over the 2013–17 access arrangement period ($million, 2012)

	2013	2014	2015	2016	2017	Total
Augmentation	10.6	62.1	11.6	0.3	-	84.5
Refurbishment and upgrade	12.0	10.8	10.7	11.2	8.5	53.2
Non-system	5.1	5.8	1.0	1.7	2.6	16.2
Total capex	27.7	78.7	23.3	13.1	11.1	153.8

Source: AER analysis.

The AER's reasons for requiring amendments to APA GasNet's proposed capex are:

- the proposed capex for the Gas to Culcairn project would not be incurred by a prudent service provider acting efficiently. The forecast incremental gas volumes driving the project have not been arrived at on a reasonable basis and do not represent the best forecast possible in the circumstances as required by r. 74(2) of the NGR. The proposed capex for the project is not conforming capex for the purposes of r. 79 of the NGR.

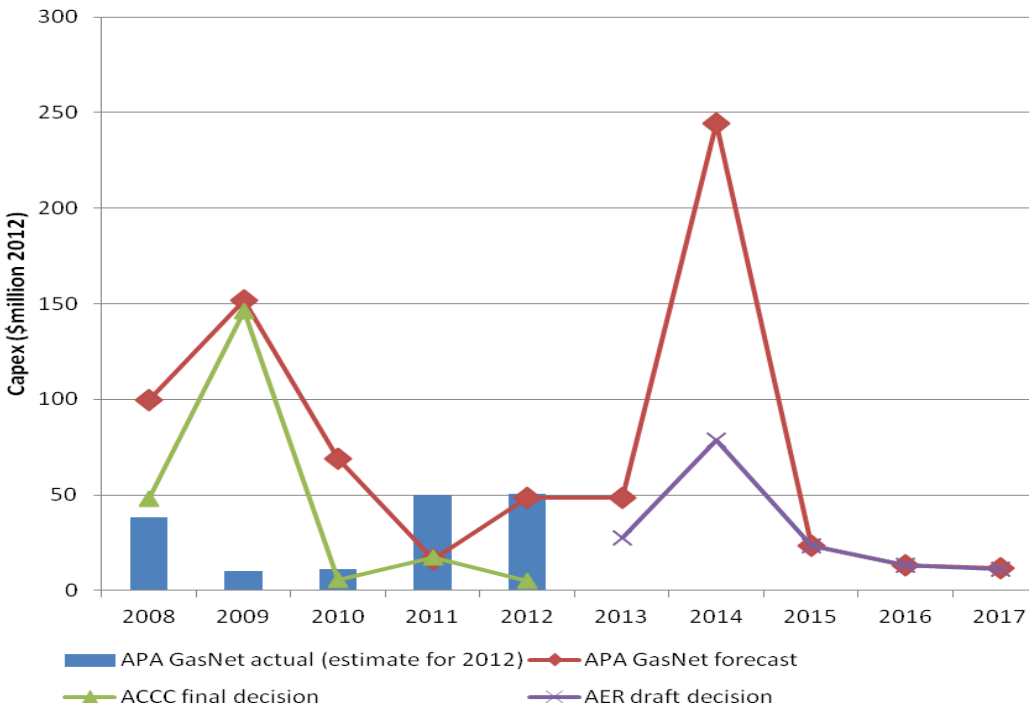
- the purported security of supply benefits provided by the Western Outer Ring Main (WORM) project are not supported by APA GasNet's proposal. Neither the proposed WORM project nor the alternative expenditure at the Brooklyn compressor station is required in the 2013–17 access arrangement period. The proposed capex would not be incurred by a prudent service provider, and is not consistent with achieving the lowest sustainable cost of providing services. The AER is not satisfied the proposed capex for the project is conforming capex for the purposes of r. 79 of the NGR.

- the need for the proposed expenditure on the Kalkallo lateral is not established. The AER has not accepted the related distribution network capex proposal for a new city gate station near Kalkallo. In the absence of the new city gate station, the proposed mains extension capex would not be incurred by a prudent service provider. The AER is not satisfied that the capex proposed for the project conforms with r. 79(1)(a) of the NGR.

- the AER considers that the labour price index provides a better measure of labour cost changes than APA GasNet's proposed Average Weekly Full time Ordinary Time Earnings (AWOTE) index.

Figure 3.1 shows the actual incurred and estimated capex of the 2008–12 access arrangement period with both APA GasNet's and the AER's proposed forecasts of capex for the 2013–17 access arrangement period.

Figure 3.1 APA GasNet actual, forecast and AER approved capital expenditure



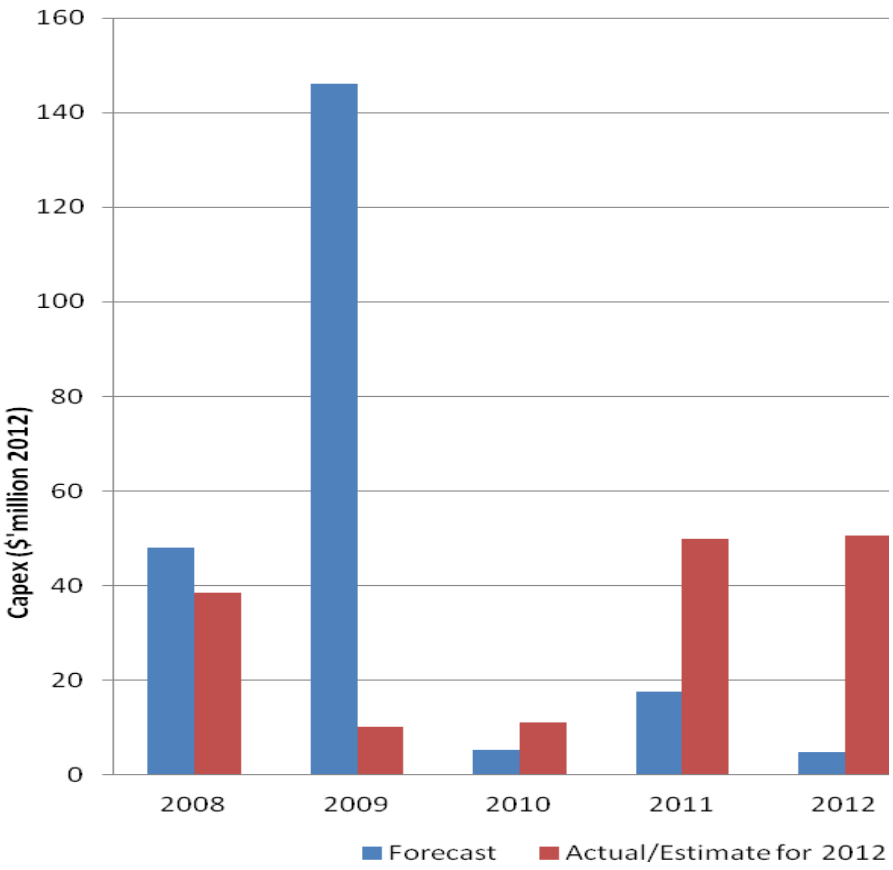
Source: APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73; APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012; and AER analysis.

3.2 APA GasNet's proposal

3.2.1 Capex in the 2008–12 access arrangement period

APA GasNet proposed capex of $160.4 million ($2012) in the 2008–12 access arrangement period.[71] This is $61.4 million ($2012) lower than the amount approved by the ACCC.[72] The underspend was largely due to the actual level of expenditure being significantly lower than that forecast for 2009 as shown in Figure 3.2.

Figure 3.2 Comparison of ACCC approved and APA GasNet actual/estimated capital expenditure for the 2008–12 access arrangement period



Source: APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73.

Table 3.3 shows APA GasNet's approved and incurred capex for each capex category in the 2008–12 access arrangement period. During this period, APA GasNet underspent its approved expenditure in the augmentation and refurbishment and upgrade capex categories and overspent its approved expenditure in the non-system capex category. The variations in these categories are discussed below.

[71] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73.
[72] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73.

Table 3.3 APA GasNet's approved and actual/forecast capital expenditure by category for the 2008–12 access arrangement period ($million, 2012)

		2008	2009	2010	2011	2012F	Total
Augmentation	Approved	16.8	94.9	-	-	-	111.7
	Actual	18.6	2.4	4.3	43.5	23.4	92.1
	Variance	1.8	-92.5	4.3	43.5	23.4	-19.6
Refurbishment and upgrade	Approved	29.9	51.1	5.2	15.6	4.4	106.2
	Actual	19.2	7.1	1.3	4.8	22.5	54.9
	Variance	-10.7	-44.0	-4.0	-10.8	18.1	-51.3
Non-system	Approved	1.2	0.1	0.1	1.9	0.5	3.9
	Actual	0.6	0.8	5.5	1.7	4.8	13.4
	Variance	-0.6	0.7	5.4	-0.3	4.3	9.5
Total	Approved	48.0	146.1	5.4	17.5	4.9	221.9
	Actual	38.5	10.3	11.1	49.9	50.6	160.4
	Variance	-9.5	-135.9	5.7	32.4	45.8	61.4

Source: APA GasNet, *Access arrangement submission*, 31 March 2012, p. 73.

Augmentation capital expenditure

As shown in Table 3.3, APA GasNet's augmentation expenditure was below the approved amount (by $19.6 million ($2012) or 17.5 per cent). APA GasNet claims that it delivered all proposed augmentation projects but at lower cost because of significant efficiencies during the 2008–12 access arrangement period.[73] APA GasNet submits that it was able to complete projects at a lower cost or undertake alternative options during the 2008–12 access arrangement period, than those forecast in 2007, because it was able to adopt more efficient processes and practices as a consequence of the APA Group's acquisition of APA GasNet in 2007.[74] APA GasNet also submitted that it focused on augmentation expenditure as a prudent response to the financial uncertainty of the period to secure volumes and ensure continued growth of its business without attracting higher financing costs.[75] APA GasNet submitted that although the scope of some of these projects varied from that proposed and approved by the ACCC, the variations were necessary and prudent and the expenditure should be rolled into the opening capital base for the 2013–17 access arrangement period as conforming capital expenditure.[76] Table 3.4 provides a summary of APA GasNet's augmentation capital expenditure and details for the variances during the 2008–12 access arrangement period.

[73] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 74.
[74] APA GasNet, *Response to AER information request 3, Part 2,* 29 May 2012, pp.1-2 (confidential).
[75] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 74.
[76] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 75.

Table 3.4 Summary of APA GasNet's augmentation capital expenditure

Project	Approved expenditure ($million, 2012)	Actual expenditure ($million, 2012)	Main driver for variance
Northern Zone Augmentation	93.5	66.8	The Global Financial Crisis (GFC) delayed commencement of the project allowing APA GasNet to review and investigate alternative options. Also, APA GasNet submitted that the APA Group's purchase of APA GasNet in 2007 brought a national view for engineering design and optimising interstate transfers. Subsequently APA GasNet implemented more efficient options including the acquisition of larger compressors at lower cost, implementing an alternative solution to looping the Wollert to Wandong Pipeline and modifying the Springhurst compressor station.
Pakenham Loop	1.4	1.3	Completed in 2009 as approved by ACCC.
Brooklyn Lara Pipeline (Corio Loop)	16.8	24.0	Total approved amount for the project was $71.1 million ($2012) with a split of $54.3 million in 2007 and $16.8 million in 2008. Delays in undertaking some stages of the project diverted expenditure from 2007 to 2008 with some additional expenditure in 2011 and 2012. Delays were mainly driven by issues associated with the compulsory acquisition of easements. These delays increased the cost of the project. Total expenditure on this project was $70.3 million ($2012) compared to an approved amount of $71.1 million ($2012).
Total expenditure	111.7	92.1	

Source: APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 74-79 and *Response to AER information request 3, Part 2,* 29 May 2012, p.2 (confidential).

Refurbishment and upgrade capital expenditure

APA GasNet significantly underspent the refurbishment and upgrade component of its approved capex in the 2008–12 access arrangement period. Refurbishment and upgrade capex was $54.9 million ($2012) or 51.7 per cent below the approved amount. APA GasNet submitted that the significant underspend in refurbishment and upgrade capex can be attributed to the impact of the GFC and uncertainty over the availability of funds from early 2009 through 2010, necessitating APA GasNet to limit all non-time critical capex and opex during this period.[77] Table 3.5 provides a summary of APA GasNet's refurbishment and upgrade capex project expenditure and details for the variances during the 2008–12 access arrangement period.

[77] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 74.

Table 3.5 Summary of APA GasNet's refurbishment and upgrade capital expenditure

Project	Approved expenditure ($million, 2012)	Actual expenditure ($million, 2012)	Main driver for variance
Gas heating facilities	9.2	8.4	Scope change due to higher Brooklyn Lara Pipeline City Gate upgrade costs. Deferral of expenditure due to GFC.
City Gate Works	15.4	15.4	Work undertaken differed from that forecast reflecting reprioritisation in response to changing pipeline operation and dynamics. Some projects postponed to the 2013 -2017 access arrangement period.
Pipeline Upgrades	11.4	17.8	Scope change due to construction of the Sunbury Loop for $13.5 million ($2012) which was not part of approved expenditure. Deferral of other expenditure due to GFC.
Safety and Security Systems	5.0	1.5	Deferral of much of the work on the basis of risk assessment due to impact of GFC.
Brooklyn Compressor Station	58.6	4.4	The transition of APA GasNet into the APA Group led to a review of capex forecast to occur during the 2008–12 access arrangement period and identified an alternative to address the constraints in the Sunbury and Ballarat areas. The Sunbury Loop project replaced expenditure at the Brooklyn Compressor Station and was identified as a first stage in completing the proposed WORM project. Some carryover of expenditure from 2007.
Wollert Compressor Station	Not forecast	1.9	Carryover of expenditure from 2007.
Iona Compressor Station	0.8	–	Deferred expenditure on basis of the WORM being approved.
Gooding Compressor Station	1.4	1.8	Carryover of expenditure from 2007.
Other Compressor Stations	3.4	2.5	Deferred expenditure on the Iona Compressor Station and overhaul of Gooding Compressor unit 3. Unforecast work at Gooding Compressor Station.
Other	1.0	1.3	Scope change due to higher odorant plant costs.
Total expenditure	106.2	54.9	Prudent deferral due to identification of alternative projects, lower cost delivery of outcomes and uncertainty due to GFC.

Source: APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 80-88 and *Response to AER information request 3, Part 2,* 29 May 2012, pp.1-2 (confidential).

Non-system capital expenditure

APA GasNet submitted that the basis for the increase in non-system capex from a forecast level of $3.9 million ($2012) to actual expenditure of $13.5 million ($2012) was due to IT

system expenditure at a corporate level.[78] APA GasNet attributes $9.7 million ($2012) of this unforecast expenditure to the operation of the VTS.[79] Expenditure on IT systems was undertaken nationally and allocated to the VTS based on APA GasNet's allocation methodology for corporate costs.[80] This allocation methodology allocates corporate costs to specific assets like the VTS first by driver, with the remainder allocated in proportion to APA Group revenue.[81] APA GasNet submitted that in all cases the amount capitalised for the VTS is less than the cost that an equivalent system could be built for on a stand-alone basis.[82]

APA GasNet submitted that there was some deviation from its forecast repair and maintenance works program at its Dandenong office in 2011 and 2012. These maintenance works were not completed largely because replacement of the Dandenong office buildings was identified as the only option available to address known issues at the site. APA GasNet has included this project as part of its forecast non-system capex.[83]

3.2.2 Forecast capex over the 2013–17 access arrangement period

APA GasNet proposed forecast capex of $340.8 million ($2012) over the 2013–17 access arrangement period.[84] This forecast reflects updated capex estimates provided by APA GasNet in July 2012 following the identification of a number of minor errors in the forecast capex estimates submitted by APA GasNet to the AER in March 2012. The proposed forecast capex is set out in Table 3.6.

Table 3.6 APA GasNet's forecast capital expenditure for the 2013–17 access arrangement period ($million, 2012)

	2013	2014	2015	2016	2017	Total
Augmentation	31.2	227.5	11.5	0.0	0.0	270.3
Refurbishment and upgrade	12.0	11.0	10.9	11.5	8.8	54.2
Non-system	5.1	5.8	1.0	1.7	2.7	16.4
Total	48.3	244.3	23.5	13.2	11.5	340.8

Source: APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.

Forecast capex over the 2013–17 access arrangement period is made up of augmentation, refurbishment and upgrade and non-system capex. Augmentation capex consists of five major projects accounting for 79 per cent of total forecast capex. Refurbishment and upgrade capex applies to existing assets to ensure the safety of the VTS and to meet the long term objectives of the VTS.[85] Non-system capex includes expenditure on two major projects; the Dandenong office facility ($9.2 million ($2012)) and the Supervisory Control and Data

78 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 89.
79 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 89.
80 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 91.
81 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 91.
82 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 91.
83 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 89.
84 APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.
85 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 103.

Acquisition (SCADA) system upgrade ($3.8 million ($2012)).[86] APA GasNet applied two labour cost escalators to its base capex forecasts; an Electricity, Gas and Water labour cost escalator to capitalised APA Group staff labour costs, and a Construction labour cost escalator to outsourced labour.[87]

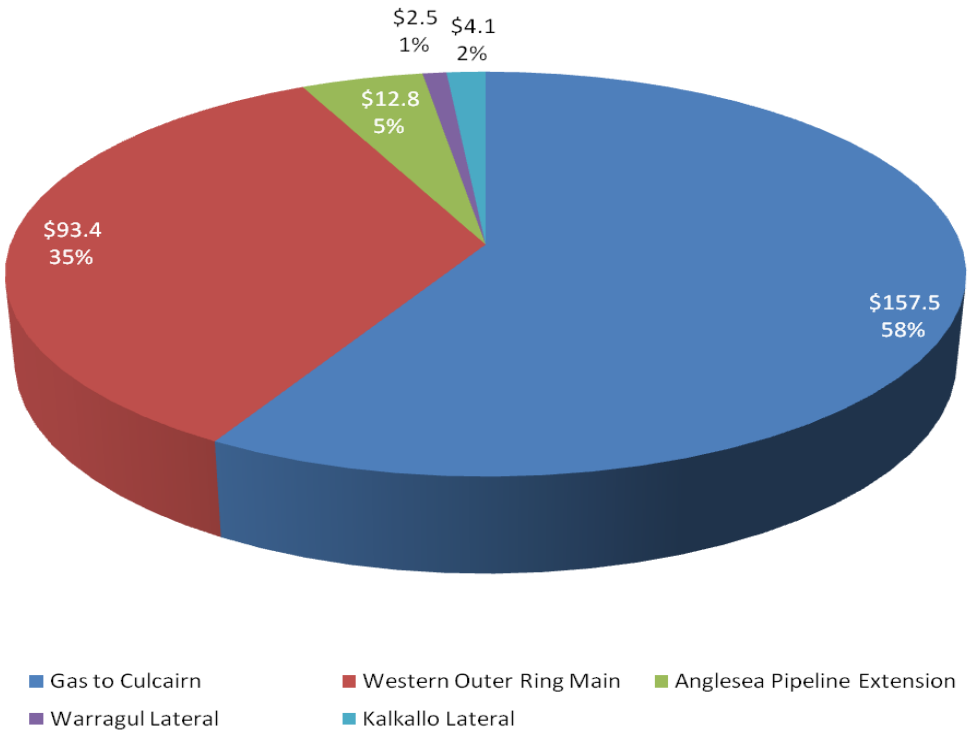
Augmentation capital expenditure

APA GasNet proposed augmentation capital expenditure of $270.3 million ($2012) over the 2013–17 access arrangement period. The augmentation capital expenditure proposed by APA GasNet consists of five significant capital expenditure projects:[88]

- Gas to Culcairn – $157.5 million
- Western Outer Ring Main – $93.4 million
- Anglesea Pipeline Extension – $12.8 million
- Kalkallo Lateral – $4.1 million
- Warragul Lateral – $2.5 million

The proposed augmentation capital expenditure is shown in Figure 3.3.

Figure 3.3 Augmentation capital expenditure projects ($million, 2012)



86 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 116-119.
87 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 93.
88 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 95-102.

Gas to Culcairn

The Gas to Culcairn project is designed to augment transmission capacity on the South West Pipeline and in the Northern Zone. The project is driven by specific requests from shippers for additional injection capacity at Iona (53 TJ/day) and withdrawal capacity at Culcairn (45 TJ/day).[89] The project consists of two distinct elements:

- installation of a new compressor station at Stonehaven on the South West Pipeline
- laying 104.1 km of 450 mm pipeline looping three sections of the Wollert to Barnawartha pipeline.

Construction of the Gas to Culcairn project is forecast to occur in 2013 and 2014 at a total cost of $157.5 million ($2012). APA GasNet submitted that the Gas to Culcairn project is justified under clause 79(2)(a) of the NGR as the overall economic value of the project is positive. The economic value identified by APA GasNet includes benefits accruing to a gas shipper, in addition to the economic value of the project to APA GasNet.[90]

Western Outer Ring Main

The purpose of the Western Outer Ring Main (WORM) project is to enhance the security of supply for domestic customers in the event of a major gas plant outage at Longford.[91] The WORM project has three stages, the first of which (the Sunbury loop) will be completed by APA GasNet in the 2008–12 access arrangement period. APA GasNet has proposed to undertake stages two and three of the WORM project in the 2013–17 access arrangement period, consisting of:

- laying 49.3 km of 500 mm pipeline from Wollert to Rockbank via Kalkallo
- installing an additional compressor at Wollert Compressor Station B to allow compression from the Pakenham – Wollert pipeline to the new WORM pipeline
- installing a new interconnecting pressure reduction station at Wollert, connecting the Brooklyn – Lara Pipeline to the Pakenham – Wollert pipeline.[92]

APA GasNet proposed to complete the WORM project in 2013 and 2014 at a total cost of $93.4 million ($2012). APA GasNet submitted that the WORM project is justified under clause 79(2)(c)(ii) of the NGR as necessary to maintain the integrity of services. APA GasNet considered the WORM project is also justified under clause 79(2)(c)(iii) of the NGR, to the extent that it avoids other 'stay in business' capital expenditure that would otherwise be required at a number of sites.[93]

Anglesea pipeline extension

The Anglesea pipeline extension project provides a second transmission supply point to the Geelong area distribution system currently served by the Corio city gate station. APA GasNet

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89 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 95.
90 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 95-96.
91 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 96.
92 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 99-100.
93 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 99-101.

proposed the project in response to a request from the distribution network service provider to supply a new city gate station near Anglesea. The project consists of a 15 km pipeline extension from the South West Pipeline to the new city gate station.[94]

APA GasNet proposed to undertake the Anglesea pipeline extension project in 2014 and 2015 at a cost of $12.8 million ($2012). APA GasNet submitted that the project is justified under clause 79(2)(c)(ii) of the NGR as necessary to maintain the integrity of services.[95]

Kalkallo lateral

The Kalkallo lateral project supplies a new city gate station to serve a significant housing and industrial development at Kalkallo. The project consists of a 4.5 km lateral pipeline, to be completed in 2014 at a cost of $4.1 million ($2012). The scope and timing of the project is affected by the WORM project. APA GasNet submitted that if the WORM project does not proceed, the Kalkallo lateral would need to be 9.5 km long, at a correspondingly higher cost.[96]

APA GasNet submitted that the project is justified under clause 79(2)(b) of the NGR as the net present value of the project is positive.[97]

Warragul lateral

The purpose of the Warragul Lateral project is to augment the capacity of the existing Warragul lateral pipeline to meet forecast increases in industrial load in the area. In the absence of augmentation, the Warragul city gate is forecast to breach minimum connection pressures at the city gate in 2014.[98]

The Warragul Lateral project consists of looping the existing 4.8 km lateral pipeline to Warragul in 2014, at a total cost of $2.5 million. APA GasNet submitted that the project is justified under clause 79(2)(b) of the NGR as the net present value of the project is positive.[99]

Refurbishment and upgrade capital expenditure

Total forecast refurbishment and upgrade capex of $54.2 million ($2012) is forecast to be similar to that during the 2008–12 access arrangement period.[100] APA GasNet submit that the proposed WORM project will contribute to the avoidance of $60 million ($2012) (before labour escalation) of refurbishment and upgrade capex.[101] Table 3.7 provides a summary of APA GasNet's proposed refurbishment and upgrade capex program by project driver.

94 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 101-102.
95 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 95 and 102.
96 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 102-103.
97 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 94-95.
98 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 102.
99 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 94-95 and p. 102.
100 APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.
101 APA GasNet, *Access arrangement submission*, 31 March 2012, p 104.

Table 3.7 APA GasNet's forecast refurbishment and upgrade capital expenditure

Driver category	Forecast expenditure ($million, 2012)	Projects
Capacity Management	4.0	Projects include the Rockbank Pressure Reduction Station ($2.2 million), replacement of the Iona Compressor Station control system ($0.7 million) and Springhurst Compressor Station Cooler Upgrade ($0.9 million).
Replacement	10.0	Projects include decommissioning of Brooklyn Compressor Station units 8, 9, 10 and 11 ($2.7 million), decommissioning Wollert Compressor Station 'A' ($0.4 million), upgrade Type B appliances ($0.9 million), security upgrades ($2.5 million) and upgrade of remote terminal unit equipment ($0.9 million).
Pipeline Integrity	15.6	Projects include in-line inspection ($2.8 million), installation of pig traps ($8.6 million), exposed pipeline coating refurbishing ($2.4 million), cathodic protection ($1.1 million) and liquids management ($0.8 million).
Facilities Integrity	15.7	Projects include Dandenong City Gate upgrade ($2.9 million), design life reviews ($1.2 million), hazardous area rectification ($2.2 million), and North Laverton City Gate heater upgrade ($0.7 million).
Risk Mitigation	5.9	Projects include Gooding Compressor Station anti-surge and fast stop valve upgrade ($0.7 million), fire suppression systems ($1 million) and actuation of mainline valves ($4 million).
Emergency	3.1	Emergency pipe and fittings ($1.4 million) and in-house emergency inventory ($0.5 million).

Source: APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 103-116.
Note: Table does not list individual project forecasts less than $0.5 million ($2012), which in total contribute to less than five per cent of APA GasNet's total capex forecast.[102]

Non-system capital expenditure

Non-system capital expenditure, required to support the VTS and ensure the provision of pipeline services to Australian Energy Market Operator (AEMO), is forecast by APA GasNet to be $16.4 million ($2012).[103] The most significant non-system capex project is the redevelopment of the Dandenong office facility which has a total forecast cost of $11.5 million ($2012). APA GasNet has allocated $9.2 million ($2012) to the VTS in proportion to its use of the building.[104] APA GasNet submit that there are significant issues and shortcomings associated with the current buildings that make it prudent to redevelop the Dandenong site by developing new, purpose built office accommodation and demolishing the existing buildings.[105]

The other significant non-system capex project is the upgrade of APA GasNet's Supervisory Control and Data Acquisition system at a forecast cost of $3.8 million ($2012). APA GasNet submits that there are benefits in migrating its SCADA system to the APA Group's

102 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 94.
103 APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.
104 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 117.
105 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 116-119.

ClearSCADA system as its current system is becoming more difficult to maintain and there is limited support from the manufacturer for the product in Australia.[106]

3.3 Assessment approach

3.3.1 NGR requirements for conforming capital expenditure

The AER must accept, as part of the opening capital base for the 2013–17 access arrangement period, any conforming capex made (or to be made) during the 2008–12 access arrangement period. Capex will be conforming if it:

- meets the definition of capex in r. 69 of the NGR. Capex is defined as costs and expenditure of a capital nature incurred to provide, or in providing, pipeline services
- is based on a forecast or estimate which is supported by a statement of the basis of the forecast or estimate as set out in r. 74(1) of the NGR. Any forecast or estimate submitted must:
  - be arrived at on a reasonable basis
  - represent the best forecast or estimate possible in the circumstances[107]
- conforms to the capex criteria in r. 79 of the NGR. There are two essential criteria that must both be met under this rule:
  - The expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of providing services (r. 79(1)(a); and
  - The expenditure must be justifiable on one of four grounds set out in r. 79(2) of the NGR.

The four grounds set out in r. 79(2) of the NGR can be summarised as follows. The capex must either:

- have an overall economic value that is positive
- demonstrate an expected present value of the incremental revenue that exceeds the expenditure
- be necessary to maintain and improve the safety of services, or maintain the integrity of services, or comply with a regulatory obligation or requirement, or maintain capacity to meet levels of demand existing at the time the capex is incurred, or
- be justifiable as a combination of the preceding two dot points.

The AER has limited discretion when making decisions under r. 79 of the NGR. The AER must approve a particular element of the access arrangement proposal if that element

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106 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 118-119.

107 NGR, r. 74(2).

complies with the applicable requirements of the NGR and NGL and is consistent with any criteria set out in the NGR or NGL.[108] This is different to the position under the NER, where the AER is required to consider total forecast capex and whether that forecast total reasonably reflects certain criteria. In contrast, under the NGR, any element of the access arrangement proposal that satisfies the requirements of the NGR must be approved and individual elements that do not satisfy the NGR requirements may not be accepted.

3.3.2 Assessment of conforming capital expenditure

In making its assessment of APA GasNet's proposed capex, the AER considers, amongst other things, the access arrangement information provided by APA GasNet. The information provided by APA GasNet must meet certain standards. The AER will not approve certain information and forecasts provided by APA GasNet if the information does not meet the requirements set out in the NGR.[109]

The AER must, in performing and exercising an AER economic regulatory function or power, exercise that function or power in a manner that will or is likely to contribute to the achievement of the NGO.[110] For instance, having regard to the NGO, the AER takes the view that a prudent service provider will seek cost efficiencies through continuous improvements, and that customers ultimately share in these benefits. This also provides the service provider with a reasonable opportunity to recover at least its efficient costs in accordance with the revenue and pricing principles. This is pertinent as no incentive mechanism (or similar) is applied to capex for the VTS.

The AER has reviewed APA GasNet's access arrangement and notes the proposed capex of $160.4 million ($2012) in the 2008–12 access arrangement period is less than the ACCC approved capex by 27.7 per cent. The AER reviewed APA GasNet's supporting material including its reasoning and, where relevant, business cases and other drivers. This information helped the AER identify the need for the capex over the 2008–12 access arrangement period and, in turn, whether that capex should be included in the opening capital base in accordance with r. 77 (2)(b) of the NGR.

In making its assessment of whether APA GasNet's proposed capex in the opening and projected capital base conforms to the capex criteria in r. 79(1) of the NGR, the AER considered APA GasNet's historic and proposed capex and assessed the key drivers for the capex. This included an analysis of APA GasNet's proposal, including:

- various asset plans, policies and schedules
- investment justification processes
- ACCC's Final Approval in June 2008
- an assessment of major risks identified for the period, and the risk management practices and policies adopted to mitigate those risks.

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108 NGR, rr. 40(2) and 79(5).

109 For instance, r. 74 of the NGR requires estimates and forecasts to be made on a reasonable basis, amongst other things.

110 NGL, s. 28(1).

By examining key documents, processes and assumptions, and comparing historical expenditure to that proposed, the AER can better understand the key drivers behind APA GasNet's proposed capex.

The AER engaged Sleeman Consulting to provide technical advice on two major augmentation projects proposed by APA GasNet. The AER also engaged Deloitte Access Economics to provide advice on APA GasNet's proposed labour cost escalators and ACIL Tasman to provide advice on capacity utilisation.

The AER received submissions from AGL Energy Limited, Australian Power and Gas Pty Limited, BHP Billiton, the Energy Users Coalition of Victoria, Origin and TRUenergy relating to APA GasNet's capex proposal.[111]

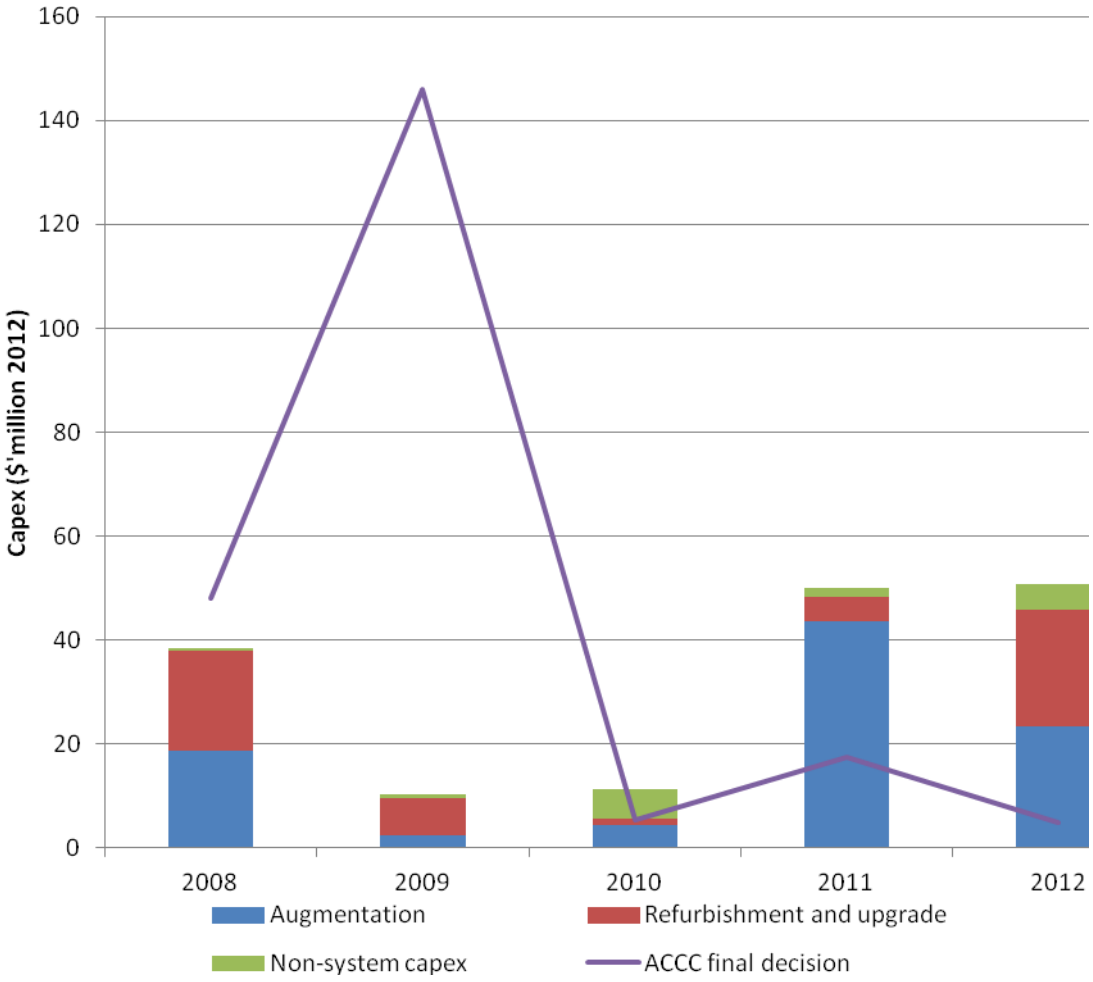
3.4 Reasons for decision

3.4.1 Conforming capital expenditure in the 2008–12 access arrangement period

APA GasNet proposed $160.4 million ($2012) of conforming capex in the 2008–12 access arrangement period. The proposed conforming capex comprises expenditure in augmentation, refurbishment and upgrade and non-system capex. As Figure 3.4 shows, there is a significant divergence between APA GasNet's proposed capex and that approved by the ACCC. The AER has carefully examined this divergence and approves APA GasNet's capex during the 2008–12 access arrangement period.

[111] AGL, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012; Australian Power and Gas, *Submission to the AER: APA GasNet access arrangement proposal,* 15 June 2012; Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012; Origin, *Submission to the AER: APA GasNet access arrangement proposal*, 21 June 2012; TRUenergy, *Submission to the AER: APA GasNet access arrangement proposal*, 22 June 2012; and BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012.

Figure 3.4 Total proposed capex over the 2008–12 access arrangement period by component



Source: APA GasNet, *Access arrangement submission*, 31 March 2012, p 73.

Augmentation

As a result of the GFC and the APA Group's acquisition of the VTS in 2007, APA GasNet completed approved augmentation projects at a lower cost or pursued alternative options than those forecast in 2007 through adopting more efficient processes and practices.

In respect of the Northern Zone Augmentation project, the impact of the GFC and financial uncertainty led APA GasNet to delay commencement of the project and review and investigate alternative options. Further, the acquisition of APA GasNet by the APA Group in 2007 allowed APA GasNet to integrate capital planning and management practices with centralised planning, approval and management of assets. APA GasNet was able to modify its proposed Northern Zone Augmentation project by implementing an alternative solution to looping the Wollert to Wandong Pipeline, modifying the Springhurst compressor station, delaying completion of the Euroa compressor station construction until 2012 and installing

larger compressors at lower cost.[112] The AER considers these modifications were prudent, and have resulted in reduced overall project costs.

The AER also accepts APA GasNet's justification for incurring additional expenditure in 2008 for the Brooklyn Lara Pipeline project because of delays in the compulsory acquisition of easements. APA GasNet submitted that delays in completion of the project increased its expenditure to $24.0 million ($2012) in 2008 from the proposed expenditure of $16.8 million ($2012). Total expenditure for the project of $70.3 million ($2012) was still consistent with the approved amount of $71.1 million ($2012).[113]

The AER considers that APA GasNet's augmentation expenditure during the 2008–12 access arrangement period is conforming capex under r. 79 of the NGR.

Refurbishment and upgrade

Although APA GasNet underspent its approved refurbishment and upgrade capex, the AER considers that APA GasNet's response to the impact of the GFC was prudent. APA GasNet responded to the impact of the GFC and uncertainty over the availability of funds from early 2009 through 2010 by limiting all non-time critical capex and opex during this period.[114]

APA GasNet's most significant underspend in refurbishment and upgrade capex was for the Brooklyn Compressor Station project where APA GasNet spent $4.4 million ($2012) compared to an approved amount of $58.6 million ($2012). APA GasNet did not attribute this underspend to the GFC, but rather, to the transition of ownership of the VTS into the APA Group and a review of asset management practices.[115] A consequence of this review was a decision to address the constraints in the Sunbury and Ballarat areas through the construction of the Sunbury Loop at a cost of $13.5 million ($2012) as a first stage in completing the proposed WORM project. This expenditure replaced the proposed works on compressors 11, 13 and 14 at the Brooklyn Compressor Station.[116] The AER considers APA GasNet's decision to alleviate the constraints in the Sunbury and Ballarat areas by developing the Sunbury Loop to be prudent.

The AER has reviewed the other refurbishment and upgrade projects that APA GasNet submits were impacted by the GFC, and to a lesser extent changing pipeline operation and dynamics. These projects include expenditure on gas heating facilities, pipeline upgrades, safety and security systems and work on other compressor stations. The AER considers APA GasNet's decision to defer expenditure on these projects was prudent. The AER considers that it was reasonable for APA GasNet to defer some maintenance, overhaul and replacement works as scheduled where risk assessments showed that deferral of that work would not be detrimental to safety and security of supply.

On the basis of its review of APA GasNet's refurbishment and upgrade expenditure during the 2008–12 access arrangement period, the AER considers that this expenditure is conforming capex under r. 79 of the NGR.

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112 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 76-78.
113 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 78-79.
114 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 74.
115 APA GasNet, *Response to AER information request 3, Part 2,* 29 May 2012, pp. 1-2 (confidential).
116 APA GasNet, *Response to AER information request 3, Part 2,* 29 May 2012, p. 2 (confidential).

Non-system capex

Although non-system capex of $13.5 million ($2012) during the 2008–12 access arrangement period was significantly greater than the forecast level of $3.9 million ($2012), the AER considers that unforseen IT systems expenditure of $9.7 million is justified on the grounds submitted by APA GasNet. These include the need for[117]:

- robust financial management and reporting
- sophisticated project and cost management
- secure and reliable access to SCADA data
- access to robust and reliable integrity data.

The AER has considered the Energy Users Coalition of Victoria's submission that the IT systems expenditure was not prudent as APA GasNet was operating successfully without the need to harmonise its operations with the APA Group.[118] However, based on its review of IT systems expenditure, the AER considers that APA GasNet has justified this expenditure. Each IT system was necessary to address a variety of operational needs as well as reducing the risks to APA GasNet. In particular, the AER considers that:

- APA GasNet's project management will benefit from having consistent and aligned methods and portfolio reporting across the APA Group
- APA GasNet's previous IT systems were becoming obsolete and updated IT systems provide more effective solutions for the management of its assets and data
- there are likely to be some economies of scale where the allocation to the VTS of the cost of APA Group IT systems are less than the stand-alone cost of the systems.

The AER also considers that APA GasNet's decision to deviate from the proposed works program for its Dandenong office in 2011 and 2012 was prudent given that the replacement of the Dandenong office buildings is included as part of its capex program for the 2013–17 access arrangement period. There are a number of problems with the current facility which made it necessary for APA GasNet to consider demolishing the existing buildings and redeveloping the site. The AER considers it was prudent for APA GasNet to not invest in repair, maintenance and capital works for the Dandenong office buildings in 2011 and 2012 as proposed when replacement of the buildings is scheduled for 2013 and 2014. Further discussion on the proposed redevelopment of the Dandenong site is provided in section 3.4.2.

The AER considers that APA GasNet's non-system capex expenditure during the 2008–12 access arrangement period is conforming capex under r. 79 of the NGR.

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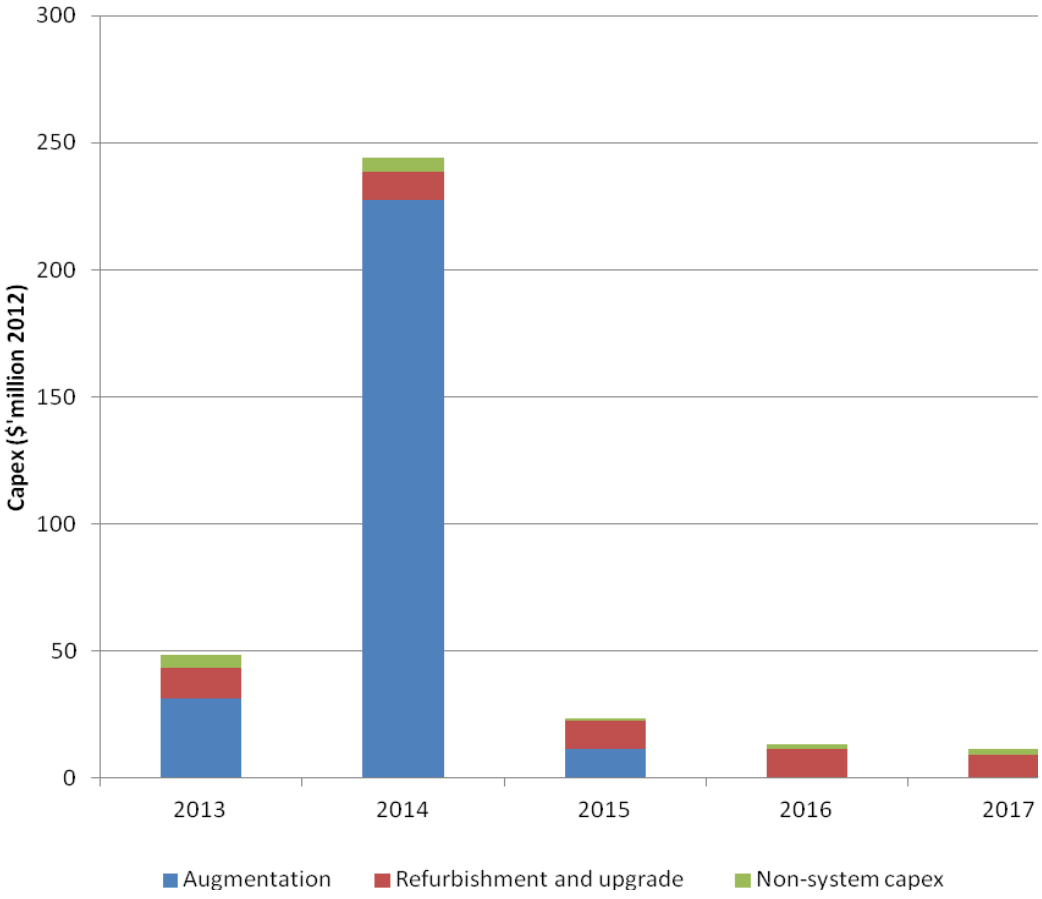
117 APA GasNet, *Response to AER information request 3, Part 1,* 28 May 2012, p. 6 (confidential).

118 Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 20.

3.4.2 Conforming capital expenditure for the 2013–17 access arrangement period

The AER approves $153.8 million ($2012) of APA GasNet's proposed $340.8 million ($2012) total forecast capex for the 2013–17 access arrangement period. Figure 3.5 shows the major capex components of the total proposed capex in each year of the 2013–17 access arrangement period.

Figure 3.5 Total proposed capex over the 2013–17 access arrangement period by component



Source: APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.

The AER does not accept a significant component of APA GasNet's proposed augmentation capex as it does not conform with the new capital expenditure criteria in r. 79 of the NGR. The AER accepts that APA GasNet's proposed refurbishment and upgrade program and non-system capex is necessary to maintain the safety, reliability and integrity of the VTS. The AER also does not accept APA GasNet's proposed labour cost escalators. The AER does not approve APA GasNet's proposed labour cost escalators because the AER considers that the labour price index provides a better measure of labour cost changes than APA GasNet's proposed AWOTE. The AER considers that real labour cost escalations should not be productivity adjusted because of issues in regards to measuring and forecasting productivity. The AER's consideration of the real cost escalators proposed by APA GasNet is in appendix C. The AER requires APA GasNet to amend its access arrangement proposal as set out in revision 3.1

Augmentation capital expenditure

Gas to Culcairn

The AER considers the forecast incremental gas volumes relating to the Gas to Culcairn project have not been arrived at on a reasonable basis and do not represent the best forecast possible in the circumstances.[119] Given the unrealistic volume forecasts underpinning APA GasNet's proposal, the proposed capex is not such as would be incurred by a prudent service provider acting efficiently.[120] Further, the AER is not satisfied that the expenditure proposed by APA GasNet will result in a positive overall economic value.[121] Consequently, the AER considers that the proposed capex on the Gas to Culcairn project is not conforming capex for the purposes of r. 79 of the NGR. The AER requires amendments to the scope of the project, and considers capex of $68.6 million ($2012) for the Gas to Culcairn project is conforming capex in accordance with r. 74(2) and r. 79 of the NGR.

APA GasNet proposed the Gas to Culcairn project to augment the capacity of the South West Pipeline and the VTS Northern zone to transport an additional 45 TJ/day from Iona for export through Culcairn.[122] Total project capex for the Gas to Culcairn project as proposed was $157.5 million ($2012).[123] The AER reviewed the business case submitted by APA GasNet in support of the project, and sought advice from Sleeman Consulting concerning the prudence and efficiency of the proposed expenditure. The AER also sought further advice from APA GasNet and directly from gas shippers to substantiate the forecast incremental gas volumes and likely economic benefits to be delivered by the project.

Information provided to the AER by APA GasNet and gas shippers does not substantiate the forecast incremental gas volumes driving the scope of the Gas to Culcairn project.[124] The forecast incremental gas volumes to be facilitated by the Gas to Culcairn project are discussed further in confidential appendix A. In summary:

- APA GasNet did not provide evidence to support the forecast incremental Culcairn export volumes[125]
- AGL submitted that the volume forecast prepared by APA GasNet is not an accurate representation of AGL's demand, in that:
  - the identified capacity requirement for the South West Pipeline represents a contracting requirement for Authorised Maximum Daily Quantity (AMDQ) only, and is not a requirement for incremental volume on the South West Pipeline
  - AGL does not support the allocation of incremental Iona capacity for export through Culcairn, as all of AGL's capacity should be deliverable to the Victorian market

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119 NGR, r. 74(2).
120 NGR, r. 79(1)(a).
121 NGR, r. 79(2)(a).
122 APA GasNet, *BC175 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 2.
123 APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.
124 APA GasNet, *Response to AER information request 3, Part 2*, 29 May 2012 (confidential).
125 APA GasNet, *Response to AER information request 3, Part 2*, 29 May 2012, C.2 (confidential); and APA GasNet, *Response to AER information request 3 follow up*, 19 June 2012, C.9 (confidential).

- AGL does not support an expansion of the Northern network in the 2013–17 access arrangement period.[126]

The AER also received a submission from TRUenergy which supported the Gas to Culcairn project, arguing that the project provides economic benefits to shippers on the VTS.[127] Confidential information provided by TRUenergy in relation to possible economic benefits of the Gas to Culcairn project to VTS shippers is discussed further in confidential appendix A.

Based on the information provided by APA GasNet, AGL and TRUenergy discussed above, the AER is satisfied that some augmentation of the VTS to facilitate incremental gas volumes for export via Culcairn is justified. However, the forecast incremental gas volumes identified by APA GasNet are overstated. The gas volume forecasts have not been arrived at on a reasonable basis, and do not represent the best forecast possible in the circumstances.[128] As a result, the scope of the Gas to Culcairn project proposed by APA GasNet is not prudent. The economic benefits of the project identified by APA GasNet are overstated, and the project as proposed is unlikely to have a positive overall economic value.[129] The AER considers the proposed Gas to Culcairn capex is not conforming capex in accordance with r. 79 of the NGR.

The AER sought advice from Sleeman Consulting regarding the prudence and efficiency of the Gas to Culcairn project.[130] Sleeman Consulting concluded that:

- the proposed works would deliver the stated capacity increases, and the project costs are reasonable for the scope of work proposed[131]
- given the gas volume information submitted by AGL, the proposed augmentation works are excessive[132]
- a Centaur 50 (C50) compressor should be installed at Winchelsea, or between Winchelsea and Iona, to expand the capacity of the South West Pipeline
- the augmentation requirement for the Northern zone is 27.2 km of 450 mm diameter pipeline looping between Wollert and Wandong
- consideration should be given to re-rating the maximum allowable operating pressure of Pipeline Vic:101 to the north of Euroa.[133]

The AER considers the scope of the Gas to Culcairn project should be amended to reflect the best available estimate of forecast incremental capacity requirements. The project scope which the AER considers to be prudent and consistent with achieving the lowest sustainable cost of providing services is:

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126 AGL, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012.
127 TRUenergy, *Submission to the AER: APA GasNet access arrangement proposal,* 22 June 2012.
128 NGR, r. 74(2).
129 APA GasNet, *B4 - VTS NPV analysis - Culcairn*, March 2012.
130 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012.
131 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 3.
132 AGL, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012; and Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 3.
133 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, pp. 25-26.

- augmentation of the South West Pipeline through construction of a bi-directional C50 compressor station at Winchelsea (or between Winchelsea and Iona)

- augmentation of the Northern network through the construction of approximately 27.2 km of 450 mm pipeline looping between Wollert and Wandong.

In relation to augmentation of the South West Pipeline, the AER considers APA GasNet's proposal to construct a Taurus 60 (T60) compressor at Stonehaven is neither prudent nor efficient for the following reasons:

- the lead time to secure a compressor site, easement and approvals is not a critical consideration, as suggested by APA GasNet.[134] This issue is discussed further in confidential appendix A

- while the location of Stonehaven is more optimal for west bound flows, Winchelsea provides significantly greater capacity for flows to Melbourne/Culcairn (at least 20 TJ/day for the same compressor size), with associated security of supply benefits in the event of an outage at Longford[135]

- the smaller C50 compressor at Winchelsea can be constructed at lower cost than the Stonehaven T60 option.[136]

In relation to the need for augmentation of the Northern zone, the AER considers APA GasNet's proposed capex to loop 104.1 km of pipeline between Wollert and Barnawartha would not be incurred by a prudent service provider. The extent of looping proposed is excessive due to the overstated forecast of Culcairn export demand assumed by APA GasNet. Sleeman Consulting advised that only 27.2 km of 450 mm pipeline looping to the north of Wollert is required to deliver the necessary capacity augmentation.[137] The AER considers this reduced scope of work to be prudent and consistent with achieving the lowest sustainable cost of providing services. Further, the AER considers the overall economic value of the amended Gas to Culcairn expenditure is positive, when benefits to APA GasNet and gas shippers are considered. This issue is discussed further in confidential appendix A.

The AER has not made any allowance for capex associated with re-rating the maximum allowable operating pressure of Pipeline Vic:101 to the north of Euroa.[138] APA GasNet may wish to consider the benefits of re-rating the maximum allowable operating pressure of Pipeline Vic:101 to the north of Euroa in preparing its revised access arrangement proposal.

Accounting for the amended project scope outlined above, the AER's estimate of conforming capex for the Gas to Culcairn project is $68.6 million ($2012). This estimate is based on APA GasNet's proposed costs for the Winchelsea compressor,[139] and a pro-rata scaling of

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134 APA GasNet, *BC175 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 5.

135 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, pp. 11-12.

136 APA GasNet, *BC175 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 5.

137 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 26.

138 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 26.

139 APA GasNet, *BC175 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 4.

proposed looping costs.[140] In preparing its revised access arrangement proposal, the AER considers APA GasNet should apply its standard basis of project estimation to identify the conforming capex associated with the revised looping requirement.

Western Outer Ring Main

The AER considers the proposed augmentation capex for the WORM project is not conforming capex in accordance with r. 79 of the NGR. The purported security of supply benefits provided by the project are not supported by APA GasNet's proposal, and may in any case be realisable without the project proceeding. The project is therefore not justifiable in accordance with r. 79(1)(b). Neither the proposed WORM project nor the significant alternative expenditure at the Brooklyn compressor station is required in the 2013–17 access arrangement period for the continued provision of pipeline services. The proposed capital expenditure would not be incurred by a prudent service provider, and is not consistent with achieving the lowest sustainable cost of providing services. The proposed capex is therefore not consistent with r. 79(1)(a) of the NGR.

The proposed WORM project (stages 2 and 3) provides a large diameter, high pressure interconnection to complete the gas transmission ring main to the west of Melbourne. APA GasNet proposed to complete the project in 2014, at a cost of $93.4 million ($2012). The AER sought advice from Sleeman Consulting regarding the prudence and efficiency of the WORM project.[141]

APA GasNet submitted that the need for the WORM project is driven by an unacceptable level of security of supply in the event of a major gas plant outage at Longford.[142] APA GasNet provided an independent risk study prepared by R2A Pty Ltd as evidence of the security of supply benefits provided by the WORM project. The R2A report concluded that, in the event of a supply failure from Longford, the WORM:[143]

- has minimal benefits in summer
- provides major benefits in the shoulder seasons (spring and autumn) to all existing customers
- substantially reduces a winter disruption, particularly to domestic customers and essential services, if industrial and commercial loads are dropped off.

The AER does not consider the R2A analysis supports the WORM project as proposed by APA GasNet. The R2A analysis purports to quantify the economic benefits of the WORM, while in fact quantifying the combined benefits of both the WORM and the installation of a compressor station at Stonehaven on the South West Pipeline. R2A states:[144]

> The WORM Project consists of a pipeline between Wollert and Rockbank and compressor upgrades at Wollert and Stonehaven at a net capital cost of $39.4 million.

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140 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 19.

141 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012.

142 APA GasNet, *BC083 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 2.

143 R2A, *Effectiveness of the WORM project on security of supply of the VTS*, March 2012, p. 11.

144 R2A, *Effectiveness of the WORM project on security of supply of the VTS*, March 2012, p. 4.

In fact, the WORM project scope and the $39.4 million ($2012) net cost referred to by R2A do not include the installation of the Stonehaven compressor.[145] Operation of the Stonehaven compressor is assumed under the 'post-WORM' scenario modelled by R2A, but not under the 'pre-WORM' scenario.[146] Comparing the two scenarios cannot accurately quantify the security of supply benefits of the proposed WORM project. This error has the effect of overstating the incremental gas availability provided by the WORM in the event of a Longford outage, and therefore the security of supply benefits of the WORM project.

Further to the AER's conclusion that the purported security of supply benefits of the WORM are not well supported, Sleeman Consulting advised that development of the WORM is not necessary for security of supply benefits to be realised.[147] The WORM is not required to deliver gas from Iona to the Melbourne Zone in the event of a Longford outage. The key limiting factor on gas availability from Iona to Melbourne in the event of a Longford outage is the capacity of the South West Pipeline.[148] The AER considers that the majority of the security of supply benefits identified by APA GasNet as provided by the WORM project are in fact attributable to the installation of a compressor station on the South West Pipeline. The AER is therefore not satisfied that the capex proposed for the WORM project is justifiable in accordance with r. 79(2) of the NGR. The proposed capex does not provide the system security benefits identified by APA GasNet, and is not required to maintain the integrity of services.

APA GasNet submitted that the WORM project provides a number of other benefits in addition to the security of supply benefits, including:

- simplicity of operation and increased system reliability
- avoidance of sub-optimal capex and reducing opex costs
- provision for future growth.

The AER agrees that development of the WORM would provide some operational benefits, for example through enhanced linepack management and simpler east-west flows. However, the AER agrees with the Energy Users Coalition of Victoria and Sleeman Consulting that, while these are desirable outcomes, such benefits are not easily quantifiable and do not of themselves justify the proposed expenditure.[149] Similarly, the possible contribution of the WORM project to meeting unspecified future growth requirements does not justify the project in accordance with r. 79(2) of the NGR.

APA GasNet has proposed that, if the WORM project does not proceed, significant capex will be required at the Brooklyn compressor station. APA GasNet considers this capex is sub-optimal as the Brooklyn site is already congested, and the expenditure will not contribute to

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145 APA GasNet, *BC083 - Western Outer Ring Main Redacted*, 14 May 2012, p. 17.

146 R2A, *Effectiveness of the WORM project on security of supply of the VTS*, March 2012, Appendix B, pp. 6-9.

147 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 4.

148 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 33.

149 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 38; and Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 17.

security of supply or the capacity of the VTS to accommodate future growth.[150] The AER recognises that APA GasNet's long term strategy is to downgrade the Brooklyn compressor site.[151] However, the AER does not consider that construction of the WORM in the 2013–17 access arrangement period is required to facilitate this strategy. Sleeman Consulting (and AEMO) has advised that major upgrading of the Brooklyn compressor station should not be required if the WORM is not developed.[152] Specifically, Sleeman Consulting concluded:[153]

- construction of the Sunbury loop, to be completed in 2012, was integral to APA GasNet's decision not to proceed with the redevelopment of the Brooklyn compressor station in the 2008–12 access arrangement period
- if the South West Pipeline (with compression installed) can be used to support gas delivery to Ballarat, the Brooklyn compressor station can be rationalised as proposed by APA GasNet
- alternatively, with the Sunbury loop in place the three existing Centaur compressors at Brooklyn should be capable of satisfying compression requirements. The Brooklyn compressor station will need to remain in service, but the major upgrades proposed by APA GasNet do not appear to be required, and some rationalisation may still be possible
- it is not apparent that major redevelopment of the Brooklyn compressor station is required, or would be justified, if the WORM is not developed.

Given this advice, and noting the capex for stage 1 of the WORM and compression on the South West Pipeline allowed in this decision, the AER is satisfied that significant expenditure on the Brooklyn compressor station will not be required in the 2013–17 access arrangement period.[154] This is the case regardless of whether the WORM project proceeds. To the extent that APA GasNet has sought to justify the WORM project on the basis of avoiding alternative expenditure, the AER considers that justification is not supported.[155] Neither the proposed WORM expenditure nor the alternative expenditure at Brooklyn is required in the 2013–17 access arrangement period. The proposed capital expenditure would not be incurred by a prudent service provider, and is not consistent with acting efficiently to achieve the lowest sustainable cost of providing services.

In not accepting the majority of proposed capex for the WORM project, the AER has not concluded that the WORM project might not, in the future, prove to be a prudent response to the augmentation needs of the VTS in the longer term. The AER's technical consultant and AEMO have confirmed that the completion of the outer ring main around Melbourne has merit from a technical perspective.[156] However, the proposed expenditure has not been

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150 APA GasNet, *BC083 - Gas to Culcairn Project Redacted*, 14 May 2012, pp. 9-10 and 17.

151 APA GasNet, *BC083 - Gas to Culcairn Project Redacted*, 14 May 2012, p. 9.

152 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 4; AEMO, *RE: Responses to the AER's request on APA GasNet's access arrangement proposal*, 25 July 2012.

153 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, pp. 33-37 and 39.

154 Installation of a bi-directional C50 compressor station on the South West Pipeline is part of the approved scope of the Gas to Culcairn project.

155 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 100-101.

156 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 38; AEMO, *RE: Responses to the AER's request on APA GasNet's access arrangement proposal*, 25 July 2012.

demonstrated to be required or justifiable in the 2013–17 access arrangement period. The proposed capex is therefore non-conforming in accordance with r. 79 of the NGR.

The AER has considered the level of capex associated with the WORM project which is required in the 2013–17 access arrangement period, and is conforming capex under the NGR. Sleeman Consulting identified a number of minor projects which will be required in the absence of the WORM project.[157] Assuming the installation of compression on the South West Pipeline as part of the Gas to Culcairn project, the total cost of alternative projects is approximately $0.9 million ($2012). This excludes costs related to the Rockbank pressure reduction station and Brooklyn GEA upgrade, which have been allowed as part of the refurbishment and upgrade capex, and the Kalkallo lateral project, which the AER has determined is not required in the 2013–17 access arrangement period.

Anglesea pipeline extension

The AER considers the proposed augmentation capex for the Anglesea pipeline extension is conforming capex in accordance with r. 79 of the NGR. The project is required to maintain the integrity of services to users, and is therefore justifiable under r. 79(2)(c) of the NGR.

The Anglesea pipeline extension provides a second transmission supply point to the Geelong and Bellarine area distribution system currently served by the Corio city gate station. APA GasNet proposed augmentation capital expenditure of $12.8 million ($2012) for a 15 km pipeline extension from the South West Pipeline to a new city gate station at Waurn Ponds. The project is driven by a request from the distribution network service provider to supply the new city gate station.[158]

In a separate decision, the AER has approved the distribution network capex proposal for a new city gate station at Waurn Ponds in 2015.[159] The need for, and timing of, upstream transmission network expenditure to supply the new city gate station is established by this distribution augmentation project. The AER considers the Anglesea pipeline extension is therefore justifiable under r. 79(2)(c) as the capex is necessary to maintain the integrity of services to gas users.

The AER reviewed the relevant business case submitted by APA GasNet, as well as additional costing information sought by the AER and the project assessment undertaken by JP Kenny.[160] Forecast costs have been estimated in accordance with APA GasNet's standard basis of estimation for growth projects, which the AER considers to be reasonable for the purposes of establishing base project cost estimates.[161] Based on the information provided, the AER considers the cost estimates for the project are efficient and consistent with achieving the lowest sustainable cost of providing services.

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157 Sleeman Consulting, *Review of Gas to Culcairn Project and Western Outer Ring Main Project*, July 2012, p. 37.

158 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 101-102.

159 AER, *Draft decision - SP AusNet access arrangement review 2013-17*, September 2012.

160 APA GasNet, *BC174 - Anglesea Pipeline Extension*, 3 March 2012; JP Kenny, *Access arrangement 2013-17 capex & opex review (redacted)*, 11 May 2012; and APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012 (confidential).

161 APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012 (confidential).

The AER is satisfied that the capex proposed for the Anglesea pipeline extension is conforming capex for the purposes of r. 79 of the NGR.[162]

Kalkallo lateral

The AER considers the proposed augmentation capex for the Kalkallo lateral is not conforming capex in accordance with r. 79 of the NGR. The AER has not approved capex proposed by the downstream distribution network service provider for a new city gate in the Kalkallo area. The proposed mains extension capex to supply the new city gate would therefore not be incurred by a prudent service provider acting efficiently.

The Kalkallo lateral project provides a transmission connection to a proposed new city gate station to serve a significant housing and industrial development at Kalkallo. The need for the project is therefore driven by the need and timing to supply the new city gate station.[163]

The AER has not accepted the distribution network capex proposal for a new city gate station to supply the development near Kalkallo (known as Merrifield) in 2014. The need for, and timing of, upstream transmission network expenditure to supply the new city gate station is therefore not established. In the absence of the new city gate station, the proposed mains extension capex would not be incurred by a prudent service provider. The AER is therefore not satisfied that the capex proposed for the Kalkallo lateral conforms with r. 79(1)(a) of the NGR.

Nevertheless, the AER sought to assess the proposed costs of the project, and reviewed the business case submitted by APA GasNet, as well as additional costing information sought by the AER and the project assessment undertaken by JP Kenny.[164] Forecast costs have been estimated in accordance with APA GasNet's standard basis of estimation for growth projects, which the AER considers to be reasonable for the purposes of establishing base project cost estimates.[165] Based on the information provided, the AER considers the cost estimates for the project are efficient and consistent with r. 74(2).

The AER also considered whether the project as proposed is justifiable under r. 79(2) of the NGR. The AER assessed the Net Present Value (NPV) analysis provided by APA GasNet in support of the Kalkallo project. The NPV analysis shows that, at the prevailing tariff on the assumed incremental gas volumes, the present value of the expected incremental revenue to be generated by the project exceeds the present value of the proposed capex.[166] The AER therefore considers the proposed capex would be justifiable in accordance with r. 79(2)(b) of the NGR.

However, the AER notes that the scope and cost of the Kalkallo lateral is influenced by the timing and location of the WORM project. The AER has not approved capex proposed for the WORM project as conforming capex in the 2013–17 access arrangement period. In the

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162 With the exception of labour cost escalation as discussed in section 3.4.3 of this attachment.

163 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 102.

164 APA GasNet, *BC173 - Kalkallo*, 3 March 2012; JP Kenny, *Access arrangement 2013-17 capex & opex review (redacted)*, 11 May 2012, p. 56; and APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012, pp. 7-9 (confidential).

165 APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012 (confidential); and APA GasNet, *Basis of estimation - growth projects*, 29 May 2012 (confidential).

166 APA GasNet, *B-4 VTS NPV analysis - Kalkallo*, 29 March 2012 (confidential).

absence of the WORM project, the required length and cost of the Kalkallo lateral is significantly increased.[167] In those circumstances, were the Kalkallo project found to be prudent, the recoverable portion of the capex costs would be dependent on the level of the prevailing tariff. Should the recoverable amount not cover the total cost of the investment, APA GasNet would have the option under r. 83 of the NGR to seek approval from the AER to levy a surcharge to recover this shortfall.

Warragul loop

The AER considers the proposed augmentation capex for the Warragul loop is conforming capex in accordance with r. 79 of the NGR. The forecast incremental gas volumes relating to the project have been arrived at on a reasonable basis and represent the best forecast possible in the circumstances. The incremental revenue provided by the project has a positive net present value, and the project is therefore justifiable under r. 79(2)(b) of the NGR.

Looping of the Warragul lateral pipeline was proposed by APA GasNet in the 2008–12 access arrangement period, and a partial recovery of project costs allowed by the ACCC.[168] However, the expected load increase did not eventuate and APA GasNet did not undertake the project. APA GasNet now forecast that the Warragul city gate will breach the required minimum pressure by winter 2014.[169]

To ensure the forecast load growth for the Warragul city gate submitted by APA GasNet was reasonable and the best forecast possible in the circumstances, the AER sought to confirm the quantum and timing of load increases forecast by a major industrial customer in the Warragul area. Information provided by the industrial customer confirmed the expected load increases as forecast by APA GasNet.[170] The AER therefore considers that the need and timing of the proposed augmentation is established.

APA GasNet undertook a thorough analysis of possible augmentation options. The AER agrees that the proposed 150mm pipeline looping option is the most prudent and efficient option available to provide the necessary capacity augmentation by 2014, while also catering for future growth.

The AER reviewed the relevant business case submitted by APA GasNet, as well as additional costing information sought by the AER and the project assessment undertaken by JP Kenny.[171] Forecast costs have been estimated in accordance with APA GasNet's standard basis of estimation for growth projects, which the AER considers to be reasonable for the purposes of establishing base project cost estimates.[172] Based on the information provided, the AER considers the cost estimates for the project are efficient and consistent with achieving the lowest sustainable cost of providing services.

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167 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 102.

168 ACCC, *Final decision - GasNet Australia - revised access arrangement 2008-12*, 30 April 2008, pp. 44-45.

169 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 102.

170 *Email to the AER*, 20 June 2012 (confidential).

171 APA GasNet, *BC172 - Warragul Looping*, 3 March 2012; JP Kenny, *Access arrangement 2013-17 capex & opex review (redacted)*, 11 May 2012, pp. 54-56; and APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012, pp. 1-4 (confidential).

172 APA GasNet, *Response to AER information request 3, Part 3*, 29 May 2012 (confidential); and APA GasNet, *Basis of estimation - growth projects*, 29 May 2012 (confidential).

The AER assessed the NPV analysis provided by APA GasNet in support of the Warragul looping project. The NPV analysis shows that, at the prevailing tariff, the present value of the expected incremental revenue to be generated by the project exceeds the present value of the proposed capex.[173] The AER therefore considers the proposed capex is justifiable in accordance with r. 79(2)(b) of the NGR.

The AER is satisfied that the capex proposed for the Warragul loop is conforming capex for the purposes of r. 79 of the NGR.[174]

Refurbishment and upgrade capital expenditure

APA GasNet has forecast $54.2 million ($2012) of refurbishment and upgrade capex over the 2013–17 access arrangement period.[175] The AER approves $53.2 million ($2012) of APA GasNet's proposed refurbishment and upgrade capex because the AER does not accept APA GasNet's proposed labour cost escalators. The AER considers $53.2 million ($2012) is sufficient for APA GasNet to maintain the safety, reliability and integrity of the VTS over the 2013–17 access arrangement period.[176] The AER also considers that this amount is prudent and efficient.[177]

Table 3.7 provides a summary of the significant refurbishment and upgrade projects and the costs forecast by APA GasNet. The highest forecast refurbishment and upgrade project cost is $8.6 million ($2012) for the installation of pig traps with the next highest at $4.0 million ($2012) for the actuation of mainline valves project. APA GasNet has provided business cases for each of the refurbishment and upgrade projects over $0.5 million ($2012) outlining the requirement and justification of each project. The AER has reviewed the business cases submitted by APA GasNet and assessed its proposed refurbishment and upgrade capex program on the basis of whether the key project drivers identified by APA GasNet comply with the conforming capital expenditure criteria in r. 79 of the NGR. In particular, the AER considers:

- the proposed Capacity Management expenditure is necessary to maintain or increase the flexibility and utilisation of existing assets. The AER considers that the proposed expenditure on the Rockbank Pressure Reduction Station, Iona Compressor Station Control System and Springhurst Compressor Station Cooler Upgrade is required to maintain appropriate gas flows throughout the VTS

- the proposed Replacement expenditure is necessary to replace assets or components that are unable to be maintained, perform poorly or are no longer required. The AER considers it prudent that APA GasNet replace assets that no longer perform effectively or have become obsolete

- a gas transmission business is required to maintain the structural integrity of its high pressure pipelines. The AER considers that APA GasNet's proposed Pipeline Integrity expenditure is necessary to mitigate the associated safety and reliability risks in operating high pressure pipelines. In particular, the AER considers that the investment proposed by APA GasNet in relation to its in-line inspection pigging program and installation of pig

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173 APA GasNet, *B-4 VTS NPV analysis - Warragul*, 29 March 2012.

174 With the exception of labour cost escalation as discussed in section 3.4.3 of this attachment.

175 APA GasNet, *VTSAACapexForecastFINAL120706.xls*, 6 July 2012.

176 NGR, r. 79(2)(c).

177 NGR, r. 79(1)(a).

traps is prudent given the physical environment its coated steel pipes are exposed to. This is consistent with good industry practice

- a gas transmission business is also required to mitigate the risks faced by its facilities and pipelines to expected hazards. The AER considers that APA GasNet's proposed Facilities Integrity capex program effectively reduces known risks faced by its facilities and pipelines. The AER considers that investing in upgrades to its facilities and pipelines to mitigate known hazards rather that replacing assets is prudent

- APA GasNet's proposed Risk Mitigation expenditure to reduce system wide risk or to increase the level of protection is prudent. In particular, the AER considers expenditure to install anti-surge and fast stop valves, fire protection systems and automated mainline valves necessary for the safe operation of the VTS. This is consistent with good industry practice

- APA GasNet's proposed provision of Emergency inventory in the form of emergency pipe and fittings and equipment to ensure the safety of its workers and the local community is necessary to manage emergency risks. The AER considers that there are potential operational benefits of APA GasNet owning safety equipment rather than relying on hire companies and contractors as is the current situation.

On the basis of its review, the AER is satisfied that the refurbishment and upgrade projects are necessary to maintain the safety, reliability and integrity of the VTS.[178] The AER considers that this is consistent with observations made by the Energy Users Coalition of Victoria that although the drivers for the underspend during the 2008–12 access arrangement period remain essentially unchanged, the forecast refurbishment and upgrade program at about $10 million per year appears to be reasonable when considering APA GasNet's expenditure for the past five years averages this amount.[179]

The AER considers that although APA GasNet's proposed refurbishment and upgrade capex program is necessary to maintain the safety, reliability and integrity of the VTS, it does not comply with r. 74(2) of the NGR because the AER does not accept APA GasNet's proposed labour cost escalators.

Non-system capital expenditure

The AER does not approve APA GasNet's forecast of $16.4 million ($2012) for non-system capex to support the VTS and ensure the provision of pipeline services to AEMO. The AER approves $16.2 million ($2012) of APA GasNet's proposed non-system capex because the AER does not approve APA GasNet's proposed labour cost escalators.

APA GasNet has allocated a forecast cost of $9.2 million ($2012) for the redevelopment of its Dandenong office facility.[180] APA GasNet has justified this expenditure on the basis that the investment will provide APA GasNet with a purpose built development on 68 hectares of land that will include an operations building, storage shed, office building and significant gas transmission infrastructure.[181] APA GasNet has identified a number of problems with the current facility including a lack of space, inappropriate building materials (including asbestos

178 NGR, r. 79(2)(c).

179 Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 19.

180 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 117.

181 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 117-118.

cladding), ongoing repair and maintenance and no scope for business growth.[182] APA GasNet's allocation of the total forecast cost of $11.5 million ($2012) for the Dandenong redevelopment is based on the VTS's use of the building.[183]

The AER considers that the redevelopment of the Dandenong office facility is necessary for APA GasNet to maintain the integrity of its services.[184] The AER accepts that the current site at Dandenong has shortfalls that impede APA GasNet's operating efficiency and exposes APA GasNet to risks associated with non-compliance of OHS requirements. The AER has reviewed the forecast cost of the redevelopment provided by a quantity surveyor, which included detailed estimates for the design, engineering and construction costs of the proposed new building.[185] Cost estimates that were not included in the quantity surveyors estimates were developed by APA GasNet based on its knowledge of comparable work at other APA Group locations. The AER considers the forecast cost of the redevelopment represents an efficient cost and is consistent with r. 79(1)(a) and r. 74(2) of the NGR.

The AER considers the apportionment of $9.2 million ($2012) (80 per cent of the total forecast cost to the regulated portion of the VTS) by APA GasNet to the VTS for the redevelopment of the APA Group's Dandenong office facility is reasonable. The AER considers APA GasNet's approach to apportioning the total redevelopment costs to the VTS is appropriate. APA GasNet based its allocation on the proportion of staff assigned to VTS-specific functions to be located in the new Dandenong office and the floor space they would occupy over a five year period. The AER also considers there are likely to be some scale economies in building design and construction costs to APA GasNet by including non-VTS APA Group staff at the Dandenong office facility.

The Energy Users Coalition of Victoria challenged the need for the proposed new buildings at the APA GasNet site and submitted that the buildings could be leased at a lower cost and included as an operating expense.[186] The AER has considered the Energy Users Coalition of Victoria's submission but is satisfied that the operational requirements of APA GasNet's business are such that the proposed buildings are required to be consolidated in a single location together with APA GasNet's other operational infrastructure. The AER also considers it unlikely that APA GasNet would be able to locate a suitable single site to lease.

The other major driver for forecast non-system capex is an upgrade and migration of APA GasNet's SCADA system to the APA Group's ClearSCADA system at a forecast cost of $3.8 million ($2012). APA GasNet submitted that this expenditure is justified because the gradual migration to a common SCADA platform would mean that the APA Group could access significant economies of scale in its SCADA operations and maintenance and reduce key personnel and other risks associated with specialist SCADA knowledge requirements across its business.[187] The AER considers that APA GasNet's proposed SCADA system upgrade is prudent in that it would allow the efficient and effective monitoring of asset performance and diagnosis of initial asset faults in the VTS. By having a standard platform and in-house

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182 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 117-118.
183 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 118.
184 NGR, r. 79(2)(c)(ii).
185 APA GasNet, *Response to AER information request 3, Part 3,* 1 June 2012, p. 30 (confidential).
186 Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 20.
187 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 118-119.

support, the AER considers that the SCADA system upgrade project will increase APA GasNet's ability to maintain and modify the system, reduce operational risks and improve reliability and operational performance.

The Energy Users Coalition of Victoria submitted that APA GasNet's existing IT systems have been adequate for service provision and that regulated revenue should not include costs for APA GasNet to harmonise its IT systems with that of the APA Group.[188] The AER does not accept the Energy Users Coalition of Victoria's proposition as the AER considers that there are likely to be ongoing maintenance and operational issues with APA GasNet's existing SCADA system and that APA GasNet's SCADA performance would benefit from this investment. The AER considers that APA GasNet's proposed SCADA upgrade expenditure complies with the conforming capital expenditure criteria in r. 79 of the NGR and should therefore be included in the projected capital base under r. 78 of the NGR.[189]

The AER considers that although APA GasNet's proposed non-system capex is necessary to maintain the safety, reliability and integrity of the VTS, it does not comply with r. 74(2) of the NGR because the AER does not accept APA GasNet's proposed labour cost escalators.

3.4.3 Adjustments to labour cost escalation

As shown in Table 3.8, the AER has revised down the labour cost escalation that was proposed by APA GasNet.

Table 3.8 APA GasNet proposed and AER approved labour cost escalation rates (%)

	2013	2014	2015	2016	2017
APA GasNet proposed internal labour	-0.22	7.38	5.39	1.27	0.13
AER approved internal labour	1.1	1.1	1.2	0.9	1.1
APA GasNet proposed external contracted labour	4.5	2.1	1.1	0.2	2.1
AER approved external contracted labour	0.6	0.8	1.0	0.4	0.9

Source: BIS Shrapnel, *Final Report prepared for APA Group: Real cost escalation forecasts to 2017 - Australia and Victoria,* March 2012 and AER analysis.

[188] Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 20.

[189] APA GasNet, *Access arrangement submission*, 31 March 2012, p 119.

Details of the AER's assessment of APA GasNet's labour cost escalators is discussed in appendix C. The impact of the amendment to APA GasNet's proposed labour cost escalators is shown in Table 3.9.

Table 3.9 Comparison of APA GasNet proposed and AER approved capex including labour cost escalation adjustment over the 2013–17 access arrangement period

	APA GasNet proposal (million $2012)	AER approved excluding AER labour escalation adjustments (million $2012)	AER approved including AER labour escalation adjustments ($million 2012)	Variance between APA GasNet proposed and AER approved including labour escalation adjustment (per cent)
Augmentation	270.3	85.2	84.5	68.7%
Refurbishment and upgrade	54.2	54.2	53.2	1.8%
Non-system	16.4	16.4	16.2	1.2%
Total capital expenditure	340.8	155.7	153.8	54.9%

Source: AER analysis.

3.4.4 Equity raising costs

Equity raising costs are incurred when network service providers are required to raise equity. The AER's equity raising cost benchmark allowance allows for costs in the form of dividend reinvestment plan costs and seasoned equity offerings. Equity raising costs would be incurred by a prudent service provider acting efficiently. Accordingly, the AER provides an allowance to recover an efficient amount of equity raising costs where a service provider's capex forecast is large enough to require an external equity injection (to maintain the benchmark 60 per cent gearing level).

To determine benchmark equity raising costs the AER relies on a method that was initially discussed in a 2007 Allen Consulting Group (ACG) report.[190] This method was amended in the AER's decisions for the ACT, NSW and Tasmanian electricity service providers.[191] The AER has applied this method in subsequent decisions for other electricity and gas service providers.[192] This approach has recently been further refined, as discussed and applied in the Powerlink final decision and in this draft decision.[193]

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190 ACG, *Estimation of Powerlink's SEO transaction cost allowance–Memorandum*, 5 February 2007.

191 AER, *Final decision, Australian Capital Territory distribution determination 2009–10 to 2013–14*, April 2009, appendix H; AER, *Final decision, New South Wales distribution determination 2009–10 to 2013–14*, April 2009, appendix N; AER, *Final decision, TransGrid transmission determination 2009–10 to 2013–14*, April 2009, appendix E; AER, *Final decision, Transend transmission determination 2009–10 to 2013–14*, April 2009, appendix E.

192 AER, *Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, October 2010; and AER, *Final Decision, Jemena Gas Networks, Access arrangement proposal for the NSW gas networks ,1 July 2010 – 30 June 2015*, June 2011.

193 AER, *Final decision Powerlink Transmission determination 2012–13 to 2016–17*, April 2012, pp. 151-2.

Broadly, the AER's method applies the cash flow analysis in the post–tax revenue model (PTRM) to determine the required benchmark equity raising cost associated with forecast capex. This involves identifying a hierarchy of three methods for equity raising, with differing equity raising costs and availability for each method. This approach adopts the "pecking order" theory of capital structure. This theory predicts that an efficient service provider will seek to raise capital starting from the lowest cost forms and moving to higher cost forms as the lower cost forms are exhausted.[194] Specifically, the AER's application of this approach involves

- First, service providers use retained earnings as a source of equity:
  - Annual retained earnings are calculated as the residual of internal cash flows less dividends to shareholders. Retained earnings for each year are converted to real dollar terms and totalled to determine retained earnings for the entire access arrangement period
  - Dividends are set to be just sufficient to match the distribution of imputation credits consistent with the AER's gamma assumptions. For gas service providers, the AER adopts a payout ratio of 70 per cent
  - The assumed debt component of forecast capex is equal to 60 per cent of the annual change in the RAB
  - The equity component of forecast capex for each year is calculated as the residual of the total forecast capex and the assumed debt component. Similar to retained earnings, the equity component of forecast capex for each year is converted to real dollar terms and totalled to determine the equity component for the entire access arrangement period.
- Second, service providers use dividends reinvestment plans:
  - The amount of equity raised in this manner is capped. It is assumed that a maximum of 30 per cent of dividends paid are returned to the service provider via a dividend reinvestment plan. The total of reinvested dividends required for the access arrangement period, therefore, is determined as the minimum of the sum of the real reinvested dividends for each year and the shortfall in retained earnings required to fund the equity component of forecast capex.
- Third, service providers use seasoned equity offerings encompassing both rights issues and placements.

The requirement for external equity funding via seasoned equity offerings is the shortfall, if any, in retained earnings required to fund the equity component of forecast capex and the total of reinvested dividends.

Based on the need for any dividend reinvestment plans and seasoned equity offerings, the AER assigns transaction unit costs for each form of equity funding. These figures are based on the AER's empirical review in assessing the benchmark costs for raising equity finance:

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194 ACG, *Estimation of Powerlink's SEO transaction cost allowance–Memorandum*, 5 February 2007

- Retained earnings – 0 per cent
- Dividend reinvestment plans – 1 per cent of total dividends reinvested
- Seasoned equity offerings – 3 per cent of total external equity required.

The AER considers that these unit costs represent the efficient costs required to raise equity in current market conditions. This is because they have been suitably estimated by the AER[195] and ACG,[196] and subsequently reviewed.[197]

The total benchmark equity raising cost is then amortised over the weighted average standard asset life of APA GasNet's RAB to provide the equity raising cost allowance associated with forecast capex in the 2013–17 access arrangement.

The AER considers that this method represents the approach that a prudent service provider acting efficiently would apply in raising equity, given its particular capital raising requirements. This is because the method:

- assumes that service providers first use the cheapest sources of equity
- takes account of all the likely sources of equity
- takes account of the requirements of a prudent service provider acting efficiently, by using the inputs and outputs of the PTRM as found by the AER to be efficient.

The AER has applied the updated ACG equity raising method to estimate the indicative costs and total allowance for APA GasNet, shown in Table 3.11. The AER will update this analysis again for the final decision based on the final capex allowance to be determined at that time.

APA GasNet did not propose equity raising costs in its initial proposal.[198] However, in response to an AER information request, APA GasNet stated that this was an oversight.[199] Subsequently, in a late submission to the AER, APA GasNet proposed equity raising costs of $2.71m (real, 2012) over the access arrangement period.[200] The method used by APA GasNet did not incorporate the adjustments that the AER made to the equity raising cost method in the April 2012 Powerlink final decision (the final decision was not available at the time of APA GasNet's initial proposal).

The AER has determined APA GasNet's efficient benchmark equity raising costs and in so doing has taken account of APA GasNet's late submission. The submission calculated equity raising costs broadly in accordance with the AER's preferred method, however;

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195 Final decision, *TransGrid transmission determination 2009–10 to 2013–14*, April 2009, pp. 233–244.

196 ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004, pp. xiii and 65.

197 Handley, *A note on the cost of raising debt and equity capital,* April 2009.

198 The costs were not proposed in APA GasNet's Access Arrangement submission, and although the costs were calculated in the PTRM based on the 2004 ACG report method, APA GasNet did not add the cost to its RAB.

199 APA GasNet, *response to Information Request No. 6*, 8 June 2012.

200 APA GasNet, *response to Information Request No. 6 - followup*, 6 July 2012; and *B-2 VTS Regulated Revenue Model REVISED 120706.xls,* 9 July 2012.

1. APA GasNet modified the calculation of dividends by excluding tax depreciation from the calculation201

2. The proposal did not use the AER's updated calculation method, which was made in the AER's April 2012 Powerlink decision.

On the first of these issues, the AER does not agree with APA GasNet's modified equity raising cost calculation method. APA GasNet submitted that tax depreciation should be excluded in the dividend calculation because tax depreciation is a non-cash item.[202] APA GasNet's argument appears misconceived. The dividend calculation is based on after-tax cash flows. Tax depreciation is an input into determining the level of tax. Tax is a cash item. Therefore, tax depreciation (which is a non-cash item) is required because it is an input into the tax calculation (which is a cash item), and tax is an input into the dividend calculation. Therefore, the AER does not accept that a modification to its standard method is necessary based on APA GasNet's justification that tax depreciation is a non-cash item.

Regarding the second issue, after considering the equity raising costs proposed by APA GasNet for its 2012–17 access arrangement, the AER modified its estimation method so that it accommodated the netting of future equity raising surpluses against prior deficits. The AER made this adjustment because it is reasonable to assess equity raising costs over the entire access arranging period. This reflects management control over the timing of equity offerings (if required). To achieve this, the AER converted retained cash flows, the equity portion of the capex funding requirements and reinvested dividends from nominal dollar term estimates to real dollar term estimates. The AER then determined the subsequent requirement for equity raising costs across the entire access arrangement period.[203] This approach removes the need for implicit assumptions regarding the timing of equity raisings. It also ensures that the allowance for equity raising costs for the access arrangement period reflects the external equity that is forecast to be required.[204] The AER considers this updated method more appropriate and provides a better benchmark for equity raising costs. The AER will therefore require APA GasNet to incorporate this adjustment into its access arrangement.

Based on the AER’s method, the cash flow analysis calculated in the PTRM for APA GasNet's benchmark equity raising cost is shown in Table 3.10 and Table 3.11. Table 3.10 sets out (in nominal terms) the derivation of the required new equity for the network service provider. The second part of the cashflow analysis (in real terms) derives the benchmark allowance for raising this equity and is set out in Table 3.11. These tables demonstrate that APA GasNet does not require an equity raising cost allowance based on the level of forecast capex.

Benchmark equity raising costs

The AER has applied its updated equity raising costs method along with the updated PTRM inputs and outputs to determine that APA GasNet requires no benchmark equity raising costs.

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201 APA GasNet, *response to Information Request No. 6 - followup*, 6 July 2012

202 APA GasNet, *response to Information Request No. 6 - followup*, 6 July 2012

203 In contrast, the AER's previous cash flow analysis calculated dividend assessments, cash flows and funding requirements in nominal dollar terms only. Based on these nominal values, the cash flow analysis determined annual dividend reinvestment plan and seasoned equity offering costs. The annual costs were converted into real dollar term (2011–12) estimates, and totalled to provide the equity raising cost allowance for the entire regulatory control period. For the refinements, see rows 38 to 52 of the 'Equity raising cost-capex' tab in the AER's final decision PTRM for APA GasNet.

204 AER, *Final decision Powerlink Transmission determination 2012–13 to 2016–17*, April 2012, pp. 151-2.

Table 3.10 AER's final decision cash flow analysis for APA GasNet's benchmark equity raising cost ($million, nominal)

Cash flow analysis	Total ($million, nominal)	Notes
Dividends	34.16	Set to distribute imputation credits assumed in the PTRM (70 per cent).
Dividends reinvested	10.25	Availability of reinvested dividends, capped at 30 per cent dividends paid.
Capex funding requirement	161.11	Forecast capex funding requirement (including half year WACC adjustment).
Debt component	66.36	Set to equal 60 per cent of annual change in RAB.
Equity component	94.75	Residual of capex funding requirement and debt component.
Retained cash flow available for reinvestment	116.29	Exclude dividends reinvested.
Equity required	21.55	Equals equity component less retained cash flows.

Source: AER analysis.

Table 3.11 AER's final decision cash flow analysis for APA GasNet's benchmark equity raising cost ($million, 2012–13)

Cash flow analysis	Total ($million, 2012–13)	Notes
Equity component	88.77	Residual of capex funding requirement and debt component.
Retained cash flow available for reinvestment	108.05	Exclude dividends reinvested.
Equity required	19.28	Equals equity component less retained cash flows.
Dividends reinvested	9.54	Availability of reinvested dividends, capped at 30 per cent dividends paid.
Dividend reinvestment plan required	0.00	Required reinvested dividends.
Seasoned equity offerings required	0.00	Required seasoned equity offerings (SEOs).
Cost of dividend reinvestment plan	0.00	Required reinvested dividends multiplied by benchmark cost.
Cost of seasoned equity offerings	0.00	Required SEOs multiplied by the benchmark cost.
Total equity raising costs	0.00	Sum of costs of dividend reinvestment plan and SEOs. To be added to the RAB at the start of

	the access arrangement period.

Source: AER analysis

3.4.5 Speculative capital expenditure account

APA GasNet has included a provision allowing for non-conforming capex that is not recovered through a capital contribution or surcharge to be included in a speculative capital expenditure account in accordance with r. 84 of the NGR.[205]

APA GasNet has not proposed or identified any speculative capital expenditure that would be included in such an account or set out any particular justification for the account.[206]

The discussion in this attachment does not cover the application of a rate of return to expenditure in a speculative capital expenditure account. This is considered in attachment 4 of this draft decision.

The AER considered submissions on the operation of a speculative capital expenditure account from BHP Billiton (BHPB) and the Energy Users Coalition of Victoria (EUCV). These submissions focused on the proposed rate of return to apply to the account, and are discussed in attachment 4.

The AER considers that under r. 84(1) of the NGR any non-conforming capex assessed by the AER, once made, could be added to a speculative capital expenditure account where such non-conforming capex is not to be recovered through a surcharge or capital contribution[207].

Recovery by means of a surcharge or capital contribution may be preferable options to the use of a speculative capital expenditure account, depending on the type or volume of expenditure and the circumstances.

The AER considers that an example of speculative capex may be where a service provider considers that increases in capacity at the time of construction of new assets is warranted but the AER determines that it is non-conforming capital expenditure because it is not justified by demand. The service provider may proceed with the construction because it considers that demand growth in the area will be considerably higher than the demand growth that the AER considers will occur. In such an event, the difference between the expenditure considered by the AER to be conforming capex and the cost of the pipe laid by the service provider may be speculative capex if the expenditure is not recovered through a surcharge or capital contribution.

Subsequently, it may become evident that due to changes in the type or volume of services, the extension becomes conforming capex, as assessed by the AER under r. 84(3) of the NGR. In this situation, the relevant portion of the expenditure that was previously non-conforming capex may be rolled into the capital base at the commencement of the next access arrangement period, together with the return accrued to the expenditure during the

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205 APA GasNet, *Access arrangement effective 1 January 2013 to 31 December 2017*, 31 March 2012, pp. 6-7; and APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 123, 126.

206 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 126.

207 NGR, r. 79.

period that it was in the fund. The service provider, however, takes on the risk that such expenditure may never become conforming capex.

The rate of return, whether this is the rate used to determine the reference tariff or a different rate, may affect whether a service provider would seek to have non-conforming capex entered into the speculative capex account.

The AER also considers that should capex be added to a speculative capital expenditure account, it would be necessary for a service provider to record when that capex is added to the account and the nature of the capex including the amount. Such information will be relevant to the AER's assessment should it consider whether such capex has become conforming capex and should be rolled into the capital base under r. 84(3) of the NGR. Any determination made by the AER on non-conforming capex during the course of a reset and under r. 80 of the NGR may also be relevant to such an assessment.

Consistent with the inclusion of a provision in the 2008–12 access arrangement for the establishment of a speculative capex account, the AER considers provision for a speculative capex account in the 2013–17 access arrangement is appropriate. Such an account, however, should be consistent with the r. 84 of the NGR provisions and not promote the construction of non-prudent investment. The AER therefore considers that APA GasNet should amend its access arrangement to reflect the following:

Consistent with r. 84 of the NGR, in order for capex to be added to a speculative capex account, after the capex has been made, the service provider must inform the AER that the capex is:

1. not to be recovered through a surcharge or a capital contribution
2. otherwise conforming but for the type or volume of the service associated with the capex.

At that time, the AER will determine the rate of return on the speculative capex account, based on the risk associated with that particular investment, as discussed in attachment 4.

Capex that is non-conforming capex only because of the type or volume of the service may become conforming capex should the type or volume of services related to such capex change. Such a decision will be made by the AER in accordance with r. 84(3).

The regulatory framework should not discourage prudent investment. As set out in the NGO, prudent investment is in the long term interests of end users. The AER recognises there is a possibility that some expenditure may be prudent when made, but not recoverable from reference tariff users for some time (if at all) because it does not pass r. 79(2) of the NGR when made. That is, the capex would be prudent but non-conforming capex. Placing prudent non-conforming capex in the speculative capex account until such time as it becomes conforming is in the interests of consumers. On the other hand, the regulatory regime should not encourage investment which is not prudent when made. Imprudent investment is not in the long term interests of end users. Accordingly, the cost of such expenditure is appropriately borne by a service provider's shareholders. The AER's proposed amendments to APA GasNet's access arrangement seek to promote this balance.

As noted above, the AER considers in order for the AER to conduct an assessment under r. 84(3) of the NGR, information on the timing and nature of any capex added to a speculative capital expenditure account must be provided to the AER at the time of that assessment.

3.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 3.1 Make all necessary amendments to reflect the AER's draft decision on conforming capital expenditure for the 2013–17 access arrangement period, as set out in Table 3.2.

Revision 3.2 Amend section 3.2 of the access arrangement to reflect the AER's draft decision on the operation of the speculative capital expenditure account to ensure that:

Consistent with r. 84 of the NGR, in order for capex to be added to the speculative capital expenditure account, after the capex is made, APA GasNet must inform the AER that the capex is:

1. not to be recovered through a surcharge or a capital contribution

2. otherwise conforming but for the type or volume of the service associated with the capex.

4 Rate of return

The rate of return is an input to the building block approach that the Australian Energy Regulator (AER) uses to determine total revenue for each regulatory year of the access arrangement period. The rate of return is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.[208]

The AER calculated APA GasNet's return on capital building block by multiplying the rate of return with the value of its projected capital base. Consistent with APA GasNet's access arrangement proposal and previous AER gas decisions, the AER adopted a rate of return that is based on a nominal vanilla weighted average cost of capital (WACC) formulation.

4.1 Draft decision

The AER does not approve APA GasNet's proposed (indicative) rate of return of 9.06 per cent. The AER withholds its approval because, in the AER's opinion, 7.16 per cent (subject to updating) is a preferable alternative that is commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.[209]

APA GasNet's proposed rate of 9.06 per cent is based on market data from November-December 2011. The AER's draft decision rate of 7.16 per cent is based on market data from July-August 2012. APA GasNet's proposed rate of return method, if also applied to market data from July-August 2011, would result in a proposed rate of 7.99 per cent.

Both APA GasNet's proposed rate of return method, and the AER's draft decision method, are to be applied using market data for the risk free rate and debt risk premium (DRP) updated closer to the time of the final decision.

The AER considers a 7.16 per cent rate of return (subject to updating) provides APA GasNet with a reasonable opportunity to recover at least the efficient costs of capital financing. Consequently, the AER expects APA GasNet will be able to attract funds to support the efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers.

The AER agrees with the following aspects of APA GasNet's proposed rate of return method:

- adopting the capital asset pricing model (CAPM) to calculate the cost of equity
- adopting the yield on 10 year Commonwealth Government Securities (CGS) as the proxy for the risk free rate
- adopting an equity beta of 0.8.
- specifying the cost of debt as the debt risk premium over the risk free rate

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208 NGR, r. 87.

209 The AER's adoption of this rate is subject to the risk free rate and debt risk premium parameters being updated closer to the date of the final decision.

- determining the debt risk premium by defining the benchmark bond as a 10 year Australian corporate bond with a BBB+ credit rating and measuring the benchmark bond rate using the extrapolated Bloomberg BBB rated seven year fair value curve
- extrapolating the Bloomberg BBB rated seven year fair value curve to a 10 year maturity (consistent with the definition of the benchmark bond) using paired bond analysis[210]
- adopting a 60 per cent gearing ratio
- adopting the inflation forecasting method based on short term Reserve Bank of Australia (RBA) forecasts and the mid-point of the RBA's inflation targeting band

But the AER does not agree with the following aspects of APA GasNet's proposal:

- the value for the market risk premium (MRP). The AER adopts a MRP of 6 per cent instead of APA GasNet's proposal of 8.5 per cent, as explained in section 4.3.3.
- the value of the equity beta in the rate applied to APA GasNet's speculative capex account. The AER will not set a rate of return on the speculative capex account at this time, as explained in section 4.3.10.

Table 4.1 sets out the individual WACC parameters and consequent (indicative) rate of return determined by the AER.

Table 4.1 AER's draft decision on APA GasNet's rate of return (nominal)

Parameter	Previous ACCC decision	APA GasNet proposal	AER draft decision
Nominal risk free rate	6.29%	3.99%a	2.98% [a]
Equity beta	1.0	0.8	0.8
Market risk premium	6%	8.5%	6%
Debt risk premium	3.09%	3.92% [a]	3.76% [a]
Gearing level	60%	60%	60%
Inflation forecast	2.68%	2.5% [a]	2.5% [a]
Gamma	0.50	0.25	0.25
Nominal post-tax cost of equity	12.29%	10.79% [a]	7.78% [a]
Nominal pre-tax cost of debt	9.38%	7.91% [a]	6.74% [a]
Nominal vanilla WACC	10.55%	9.06% [a]	7.16% [a]

Source: ACCC decision; APA GasNet, Access arrangement submission, 31 March 2012 and AER analysis.

[210] The paired bonds extrapolation method was determined by PwC, in a report commissioned by APA GasNet and the Victorian gas distribution service providers. However, PwC (and subsequently APA GasNet) appears to have incorrectly applied the selection criteria outlined in its proposal to select the relevant paired bonds. Accordingly, the AER has corrected this error in applying APA GasNet's proposed paired bonds extrapolation method. PwC, *SP AusNet, Multinet Gas, Envestra and APA Group: Estimating the benchmark debt risk premium*, March 2012.

(a) Indicative only. The risk free rate, debt risk premium and inflation forecast will be updated closer to the date of the final decision.

The rate of return in this draft decision (7.16 per cent) is similar to the rate of return determined by the AER recently in the APTPPL final decision (7.31 per cent).[211] However, the rate of return in this decision for APA GasNet is lower than the rate of return determined by the AER in decisions before that time. The fact that the overall rate of return in this decision is lower than in previous decisions does not of itself make it unreasonable. The cost of debt in this decision makes up 60 per cent of the overall rate of return. The AER and APA GasNet agree on the approach to determining the cost of debt. The cost of debt has fallen by approximately one per cent compared with AER decisions from earlier this year.[212] Hence, the AER and APA GasNet agree that this reduction reflects prevailing conditions in the market for funds and the risks involved in providing reference services. This provides the AER with a degree of comfort that a fall in the overall rate of return, in itself, is not unreasonable.

APA GasNet's concerns surround the cost of equity and the extent to which the cost of equity determined by the AER in this decision is lower than that determined in previous decisions. A lower cost of equity contributes to a lower overall rate of return. The one point of disagreement between the AER and APA GasNet on the cost of equity for reference services is over the appropriate value for the MRP.

The AER acknowledges that APA GasNet was concerned with the impact of the lower risk free rate on its overall rate of return and that this was a driving factor in APA GasNet proposing a higher MRP. The AER has carefully considered the consequences of the low CGS yields and is confident that CGS yields remain the most appropriate proxy of the risk free rate in Australia. This position is supported by advice from the Reserve Bank of Australia (RBA). The AER has also considered whether or not the MRP should be increased from that used in previous decisions. The AER remains of the view that a 6 per cent MRP is commensurate with prevailing conditions in the market for funds.

4.2 Assessment approach

In this section, the AER considers:

- The requirements of the national gas law and rules on the rate of return
- The approach to selecting a well accepted model and approach for determining the rate of return
- The approach to determination each parameter within that well accepted approach and model
- The approach to reasonableness checks on the overall rate of return

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[211] AER, *Final decision: APT Petroleum Pipeline Pty Ltd, Access arrangement final decision, Roma to Brisbane Pipeline 2012–13 to 2016–17*, August 2012, p. (AER, *Final decision: APTPPL access arrangement*, August 2012).

[212] AER, *Final distribution determination, Aurora Energy Pty Ltd 2012–13 to 2016–17*, April 2012, p. 29, (AER, *Final decision: Aurora distribution determination*, April 2012)

4.2.1 Requirements of the national gas law and rules on the rate of return

In this section the AER considers the requirements of the NGR and NEL on the rate of return, including in the interpretation of relevant provisions of the NGR in recent Tribunal decisions.

Rule 87 of the NGR states:

> 1) The rate of return on capital is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.
>
> 2) In determining a rate of return on capital:
>
> a) it will be assumed that the service provider:
>
> i) meets benchmark levels of efficiency; and
>
> ii) uses a financing structure that meets benchmark standards as to gearing and other financial parameters for a going concern and reflects in other respects best practice; and
>
> b) a well accepted approach that incorporates the cost of equity and debt, such as the Weighted Average Cost of Capital, is to be used; and a well accepted financial model, such as the Capital Asset Pricing Model, is to be used.

The AER understands the rule operates as follows:

- Rule 87(1) describes the objective in determining the WACC but not how to achieve the objective.
- Rule 87(2) describes how to achieve the objective, including through a well accepted approach (such as the WACC) and through a well accepted financial model (such as the CAPM).
- Rule 87(1) informs the selection of input parameters for the well accepted approach and well accepted financial model. Those input parameters must reflect prevailing conditions in the market for funds and the risk involved in providing reference services.

This interpretation is consistent with the Australian Competition Tribunal's (Tribunal) position in two recent decisions: the ATCO (formerly WA Gas Networks) matter and the DBNGP matter.[213] It is also consistent with the AER's approach in previous decisions.[214] The AER thus applied this approach in making its draft decision on APA GasNet's rate of return.

A submission from BHP Billiton on APA GasNet's proposal interpreted rule 87 slightly differently:[215]

> APA GasNet cannot say that it has used a well accepted financial model if its application of that model involves (as it does in relation to the MRP) the use of idiosyncratic methods—that are not well accepted—for determining key variables in that model. That is the case even if it expresses that model in a way that is well accepted.[216]

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213 Australian Competition Tribunal, *Application by WA Gas Network Pty Ltd (No 3) [2012] ACompT*, 8 June 2012, paragraphs 61-66; see also Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraphs 80–84, 100–103.

214 AER, *Final decision: APTPPL access arrangement*, August 2012, pp. 58-59.

215 BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012.

216 BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012, pp. 11-12.

The AER considers BHP raised an important question about the interpretation of rule 87. That is, by requiring a well accepted approach or model to be used, to what extent does rule 87(2)(b) also require the empirical method for calculating the underlying parameters to be well accepted?

The empirical method does not have to be well accepted. There are elements of the CAPM that are fundamental to its use. An example is the assumption that only systematic risk is compensated for. To depart from this assumption would mean that the well accepted model is not being used consistently. The empirical method must, therefore, be consistent with the fundamental elements of the CAPM and associated theory.

BHP argued that the empirical method must also be well accepted. This is not an express requirement of rule 87. The empirical method that is applied is a matter of discretion, taking into account the objective of the rate of return stated in rule 87(1) and the NGO.

Furthermore, it may not always be practically possible to determine a well accepted empirical method. There are often a number of empirical methods that can be used to determine a particular parameter; the MRP is one example. In this case, the AER did not apply BHP's interpretation that the empirical method must also be well accepted.

Rule 87 is a full discretion provision. This means the AER may, but is not bound to, approve APA GasNet's proposed rate of return if that rate complies with, and is consistent with, the NGL's and NGR's requirements and criteria. The AER has the discretion to withhold its approval it considers a preferable alternative exists that complies with, and is consistent with, those requirements and criteria. Further, if an access arrangement contains a fixed principle on the rate of return then that fixed principle is binding on the AER and the service provider for the period for which the principle is fixed.[217]

If the AER does not approve APA GasNet's access arrangement, then the AER must formulate an access arrangement that accounts for:

- the matters that the NGL and NGR require an access arrangement to include
- the service provider's access arrangement proposal, and
- the AER's reasons for refusing to approve that proposal.[218]

This list is not exhaustive, and the service provider's proposal is not the only source of information that the AER considers when assessing the proposed rate of return. Other regulatory processes provide many relevant information sources, because issues with the cost of capital are generally not specific to a service provider. Further, many issues have evolved across a long history of consideration by the AER and other regulators.

The AER considers information that includes:

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[217] NGR r. 99 (3).
[218] NGR r. 64(2).

- previous AER decisions, including the AER's 2009 review of WACC parameters for electricity service providers (the WACC review) and resulting Statement of Regulatory Intent (SRI)
- the service provider's proposal
- expert reports commissioned by the AER, the service provider and other stakeholders
- the decisions of the Tribunal
- the decisions of other economic regulators, particularly in Australia
- submissions.

In performing or exercising an economic regulatory function or power, the AER must do so in a manner that will (or is likely to) contribute to the national gas objective.[219] Either the AER's approval or withholding of its approval of APA GasNet's proposed rate of return—and in the case of the latter the AER's determination of a preferable rate of return—is an AER economic regulatory function or power. The national gas objective is:

> … to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

In addition, the AER must account for the revenue and pricing principles when approving or making the parts of an access arrangement that relate to a reference tariff.[220] The rate of return is such a part, so the AER must account for the following:

- A service provider should have a reasonable opportunity to recover at least the efficient costs that it incurs in providing reference services
- A service provider should have effective incentives to promote economic efficiency in the reference services that it provides. That economic efficiency should include efficient investment in, or connection with, a pipeline that the service provider uses to provide reference services.
- A reference tariff should allow for a return that matches the regulatory and commercial risks from providing the reference services to which that tariff relates.
- A reference tariff should account for the economic costs and risks of potential under or over investment by a service provider in a pipeline that the service provider uses to provide pipeline services.[221]

4.2.2 Selection of well accepted approach and model

In its access arrangement proposal, APA GasNet proposed the WACC approach, weighted 40 per cent to equity and 60 per cent to debt. APA GasNet also proposed to calculate:

- the cost of equity using the CAPM, and

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219 NGL s. 28(1).
220 NGL s. 28(2)(a)(i)
221 NGL, s. 24

- the cost of debt as the summation of the risk free rate and DRP.

The AER approves both APA GasNet's approach to determining the rate of return and models to determine the cost of equity and cost of debt. The weighted average cost of capital is a well accepted approach to determining the rate of return. The models proposed by APA GasNet to determine the cost of equity and debt are also well accepted.[222]

4.2.3 Approach to the determination of specific parameters

Risk free rate

The risk free rate measures the return that an investor would expect from an asset with no default risk. As with other WACC parameters, the risk free rate should reflect prevailing conditions in the market for funds. It cannot be directly observed, but bonds issued by the Australian Government (CGS) are its most appropriate proxy . This is because the risk of the government defaulting on these bonds is low. CGS yields are readily observable.

The AER accepts APA GasNet's proposed approach for calculating the risk free rate for both the cost of debt and the cost of equity. (APA GasNet provided the AER with an averaging period on a confidential basis.) The approach involves observing the yield on 10 year CGS over a short period (10–40 days) commencing as close as possible to the beginning of the regulatory period. This approach produces a risk free rate that reflects prevailing conditions in the market for funds.[223] This approach was articulated in the WACC review in 2009, and the approach is consistent with other recent decisions by the AER.

Market risk premium

The AER accepts the use of the yield on 10 year CGS as the proxy for the risk free rate. To maintain consistency within the CAPM, the AER estimated a 10 year forward looking MRP.

The MRP is the expected return over the risk free rate that investors require to invest in a well diversified portfolio of risky assets. It represents the risk premium that investors who invest in such a portfolio can expect to earn for bearing only non-diversifiable (systematic) risk. The MRP is common to all assets in the economy and not specific to an individual asset or business.

While the MRP cannot be directly observed, methods are available to infer investor expectations at any point in time. These methods include examining historical excess returns, conducting surveys of the MRP used by practitioners and academics, employing the dividend growth model (DGM) and using other financial market indicators such as an implied volatility approach. The National Gas Law and Rules (NGL and NGR) do not specify a particular method for measuring the MRP.

Academic literature and reports by regulated entities[224] recognise the evidence available for estimating the MRP is imprecise and subject to interpretation. Experts do not agree on either

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222 Australian Competition Tribunal, *Application by WA Gas Network Pty Ltd (No 3) [2012] ACompT*, 8 June 2012, paragraph 64.

223 NGR, rule 87(1); Section 4.3.2 below contains evidence for why this approach is consistent with the rules.

224 See, for example, VAA, *Market risk premium, a review paper*, August 2008, pp. 3–4.

the appropriate method or the assumption for different methods. In addition, each method has strengths and limitations, and may give conflicting outcomes.[225] For these reasons, judgment must be exercised in determining an MRP value for determining an appropriate rate of return. The Australian Competition Tribunal recognised this problem in the recent Envestra decision.[226]

The AER considers the MRP should be based on considerations relevant to the MRP. Maintaining the integrity of each parameter promotes robustness in the parameter's estimation. While that integrity is important, the AER also recognises the economic interdependencies between parameters when they exist. Consistent with previous AER decisions, the AER determined an appropriate value for the MRP by assessing a range of evidence, including:

- historical excess returns, which represent the additional return that investors could have earned by investing in a diversified portfolio of shares (including appropriate adjustments for any imputation credits earned on this portfolio). The AER accounts for these estimates because investors' experience informs their expectations of the forward looking MRP.

- survey based estimates. Surveys of market practitioners and academics provide information on the expected forward looking MRP and its application. The AER acknowledges survey results need to be treated with caution.

- DGM estimates. Cash flow based measures of the MRP generally employ a dividend discount model. One such model is the DGM, which values a stock by estimating the next dividend to be paid and then assumes dividends per share will increase in perpetuity by a constant growth rate. By rearranging the equation, we can derive the implied cost of equity from the current share price. Replacing individual stock parameters for market parameters implies the MRP equals the next period's market dividend yield plus expected market growth rate in dividends per share minus the risk free rate.[227] The AER notes DGM estimates are highly sensitive to input assumptions.

- the views of consultants:

    - CEG uses three approaches to estimate the cost of equity. Two use the DGM analysis and the other favours adjusting the normal levels of cost of equity based on the current market evidence.

    - Capital Research uses DGM to directly estimate the forward looking MRP.

    - NERA Economic Consulting's regime switching model estimates the current probability of market being in a high volatility state and derives an MRP estimate from this probability.

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225 See, for example, R. Mehra and E.C. Prescott, *Journal of Monetary Economics*, The equity premium, a puzzle, 15, 1985, pp. 145–61; A. Damodoran, Equity risk premiums (ERP), determinants, estimation and implications, September 2008, p. 1; J.S. Doran, E.I. Ronn and R.S. Goldberg, A simple model for time-varying expected returns on the S&P 500 Index, August 2005, pp. 2–3.

226 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 4*, 11 January 2012, paragraph 146.

227 AER, *Final decision: Electricity transmission and distribution network service providers: Review of the weighted average cost of capital (WACC) parameters*, 1 May 2009, p. 216-217, (AER, *Final decision: WACC review*, May 2009).

- A McKenzie and Partington report considered four areas of evidence and concluded the AER should use a stable long run MRP by placing weight on historical excess returns and survey evidence.

- Lally broadly supported the AER method to estimate the MRP.

- The VAA implied volatility approach derives the one year MRP estimate from the Black-Scholes option pricing formula for 12 month ASX200 index call options and then estimates a geometric average MRP over five years.

- The SFG method considers other financial market indicators (implied volatility, credit spread and dividend yield) as relevant factors in estimating a 10 year forward looking MRP.

- recent practice among Australian regulators. MRP is an economy wide measure that other regulators in Australia determine under the same CAPM framework.

The AER interpreted the information available, accounting for the advantages and limitations of each of the five types of evidence. It then reviewed evidence across all these areas to help decide the appropriate forward looking 10 year MRP for this draft decision. In the case of complex and conflicting evidence, the AER exercised regulatory judgment. For the reasons set out in section 4.3.3 and appendix B, the AER placed limited emphasis on the DGM, the regime switching models, implied volatility and other financial market indicators in estimating the 10 year forward looking MRP.

Equity beta

The AER approach for this draft decision begins with conceptual analysis of equity beta, then proceeds with rigorous empirical analysis using a comparator set of listed firms that best match the benchmark. Finally, the equity beta estimate is cross checked against other estimates derived from less relevant data, such as overseas firms or other regulated sectors.

The conceptual analysis undertaken by the AER frames the later empirical analysis. In the AER approach the empirical analysis is the primary determinant of equity beta, even though it is not the first step. Further, although the cross checks use empirical evidence, this is given less weight because of the reduced relevance of these firms (overseas or in other industry sectors) to the characteristics of the benchmark firm.

In evaluating both the conceptual and empirical evidence, the AER sought, advice from finance experts Professor McKenzie and Associate Professor Partington of the University of Sydney.[228]

In arriving at the estimate of the equity beta, the AER has regard to the level of precision in the available empirical evidence, consistent with the AER's previous regulatory practice.

[228] M. McKenzie, and G. Partington, *Report to the AER: Estimation of the equity beta (conceptual and econometric issues) for a gas regulatory process in 2012,* 3 April 2012, (McKenzie and Partington, *Estimation of equity beta*, April 2012).

Debt risk premium

The DRP is the margin above the nominal risk free rate that a debt holder would require in order for it to invest in a benchmark efficient service provider. When combined with the nominal risk free rate, the DRP represents the return on debt and is an input for calculating the WACC.

The AER's assessment approach for this draft decision is consistent with that adopted in the AER's recent final decision for the Roma to Brisbane Pipeline.[229] That is, the AER has estimated the DRP using:

- an appropriate benchmark
- a method used to estimate the DRP that conforms to these benchmark parameters.

Benchmark

The AER adopts a 10 year Australian corporate bond with a BBB+ credit rating as the benchmark for estimating the DRP. This benchmark assumption was also adopted by APA GasNet.

Method used to estimate the DRP

For this draft decision, the AER uses the following method to estimate the 10 year DRP:

- the Bloomberg BBB rated fair value curve to estimate the (base) seven year DRP
- the average annual increment observed across bonds of differing maturities issued by the same company, to extrapolate the seven year DRP estimate to 10 years.

AER observations on recent Tribunal decisions and bond issuances

The AER has previously noted analysis demonstrating the extrapolated Bloomberg BBB rated fair value curve resulted in a DRP higher than that indicated from market evidence.[230] In particular, this evidence included observed bond data and independent market commentary.

Further, the AER has previously proposed a means of estimating the DRP which made use of market evidence on Australian bond yields.[231] Prior to the implementation of this approach in a final decision, however, the Tribunal released its decision for the Envestra and APT Allgas reviews.[232] Notably, the Tribunal stated that the Bloomberg fair value curve should be used to determine the DRP unless there are sound reasons to depart from that practice. Moreover, any alternative method should be determined in consultation with the relevant regulated

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229 AER, *Final decision: APTPPL access arrangement*, August 2012. .

230 AER, *Draft decision: Powerlink; Transmission determination*, November 2011, pp. 225–229.

231 More specifically, the AER proposed to set the DRP as the average of nine bonds with characteristics that were similar to the benchmark (7–13 years maturity, BBB/BBB+/A- credit rating, fixed/floating, not callable or subordinated, Australian issuance). AER, *Draft decision: Aurora distribution determination*, November 2011, pp. 216–219, 238–253.

232 Australian Competition Tribunal, *Application by Envestra Limited (No 2)* [2012] ACompT 3, 11 January 2012; see also Australian Competition Tribunal, *Application by APT Allgas Energy Ltd* [2012] ACompT 5, 11 January 2012.

entities and other interested parties.[233] In light of these Tribunal statements, the AER relied on the extrapolated Bloomberg fair value curve for estimating the DRP. The AER was particularly mindful of the Tribunal's recommendation that a public consultation process be completed before an alternative methodology was adopted.

Subsequently, the Tribunal has made two decisions that also dealt with the determination of the DRP.[234] These decisions upheld the use of the 'bond-yield approach' adopted by the ERA.[235] That is, an alternative bond yield approach to that used by the AER in which the DRP was estimated by averaging observed bond yields that met certain criteria.[236] The Tribunal did, however, direct the ERA to amend the simple averaging process used to aggregate these bond yields.[237] The Tribunal also provided guidance on the relevance of various criteria and the use of a more complex weighted average.[238] Such a weighted average was implemented by the ERA on remittal.[239]

If the bond-yield approach (with the weighting method adopted in the ERA's revised decision) was applied to APA GasNet, the DRP would be 2.72 per cent.[240] This is below the DRP of 3.82 per cent derived using the extrapolated Bloomberg fair value curve (as per APA GasNet's proposed method).[241]

Additionally, the AER has observed recent bond issues from firms which have similar characteristics to the benchmark firm. These are shown in Table 4.2, below:

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233 Australian Competition Tribunal, *Application by Envestra Limited (No 2)* [2012] ACompT 3, 11 January 2012, paragraphs 95, 118, 120–121; see also Australian Competition Tribunal, *Application by APT Allgas Energy Ltd* [2012] ACompT 5, 11 January 2012.

234 Specifically, for the West Australian gas distribution network owned by WA Gas Networks Pty Ltd (now known as ATCO Gas Australia), and for the Dampier to Bunbury Natural Gas Pipeline owned by DBNGP (WA) Transmission Pty Ltd. See Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12, 8 June 2012; and Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012.

235 Though the AER and ERA operate under different legislative instruments, the sections relevant to the determination of the rate of return are identical. Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12, 8 June 2012, paragraphs 167, 180; and Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012, paragraphs 280–282, 287.

236 Specifically, all bonds (sourced from Bloomberg) were from Australian companies, denominated in Australian dollars and issued in Australia. Further, bonds could be either fixed or floating and either bullet, callable or putable. Different scenarios used other slightly different criteria, such as a minimum term (two or five years), and a range of credit ratings (BBB-/BBB/BBB+ or BBB/BBB+).

237 Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12, 8 June 2012, paragraphs 176, 180, 187; Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012, paragraphs 290, 310–313.

238 More specifically, the Tribunal endorsed the use of the ERA's 'scenario 2', which encompassed a minimum credit rating of BBB and a minimum term of two years. It also suggested that it would be appropriate to apportion weight by considering both term to maturity and issuance amount for the relevant bonds.

239 ERA, *Revised decision, Access arrangement revisions for the Mid-West and South-West Gas Distribution System*, 25 June 2012, pp. 5–12.

240 Based on APA GasNet's indicative averaging period, this 'bond-yield approach' estimate incorporates 60 bonds with an average term to maturity of 5.94 years.

241 This estimate reflects the paired bonds extrapolation sample proposed by APA GasNet.

Table 4.2 Observed recent bond issuances—network service providers

Issuer	Date of issue	Amount ($million)	Type	Term (years)	Yield at issue (per cent)	DRP (per cent)
SPI Electricity and Gas	21 JUN 2012	205	Fixed	10	5.95	2.96
Powercor Australia	19 APR 2012	200	Fixed	5	5.80	2.51
United Energy Distribution	3 APR 2012	200	Fixed	5	6.50	2.95
ETSA Utilities	1 MAR 2012	200	Fixed	5	6.27	2.60
SPI Australia	10 FEB 2012	400	Fixed	5	6.29	2.75

Source: Bloomberg.

Consistent with the AER's observations previously, the AER considers that the Bloomberg fair value curve continues to provide DRP estimates which are higher than other potential approaches (such as the ERA's approach). The Bloomberg fair value curve also provides estimates which are high in comparison to recent bond issuances from firms with similar characteristics to the benchmark firm. For these reasons, the AER has commenced an internal review into alternatives to the Bloomberg fair value curve. The AER will advise of a public consultation process on the development of an alternative in due course.

Forecast inflation

The AER adopts the methodology that was used in its previous regulatory decisions. This methodology involves:

- forecasting inflation for each of the next 10 years, consistent with the use a 10 year term for the risk free rate and other WACC parameters
- taking a geometric average of these values to estimate a 10 year forecast inflation rate
- adopting the RBA's headline inflation forecasts from its latest Statement on Monetary Policy for as many future years as the RBA publishes inflation forecasts, and
- adopting the mid-point of the RBA's inflation target (2.5 per cent) for the remaining futures years out to year 10.

4.2.4 Reasonableness check on overall rate of return

In section 4.2.3, the AER sets out its approach to the determination of each parameter within the overall rate of return. In addition, the AER has undertaken reasonableness checks on the overall rate of return. These checks involve having regard to RAB multiples as well as the discount rates in broker reports.

Overall, the AER determines reasonable estimates for the input parameters into the CAPM (a well accepted financial model), which in turn feeds into the WACC (a well accepted approach)[242]. It gives limited consideration to the overall WACC estimates, in accordance with the relevant legislation.

4.3 Reasons for draft decision

In forming this draft decision, the AER has considered an extensive range of material on the rate of return. This includes APA GasNet's access arrangement proposal, the Victorian gas distribution service providers' proposals, and the submissions into these reviews from users. The AER has also sought a range of expert advice to assist in making these decisions—from the RBA, Treasury, AOFM, Professor McKenzie, Associate Professor Partington and Associate Professor Lally.

In this review, APA GasNet proposed a higher MRP (8.5 per cent) because it considered the AER's approach to the cost of equity in previous decisions resulted in a cost of equity that is too low in current market conditions.[243] The Victorian gas distribution service providers held a similar concern but proposed a different approach.[244] They proposed a 6 per cent MRP but adopted a long run historical average risk free rate (5.99 per cent) for the cost of equity.

On the other hand, BHP Billiton submitted that the MRP is between 5–6 per cent.[245] The Energy Users Coalition of Victoria (EUCV) considered the AER should adopt a 5 year term for the risk free rate and an equity beta of 0.65.[246] The 5 year term was adopted by the ERA in its access arrangement decision for the Dampier to Bunbury Natural Gas Pipeline (DBNGP).[247] The Tribunal found no error in ERA's position on this matter.[248] Incorporating any of the changes proposed by users to the term, equity beta or MRP would result in a lower cost of equity than applying the AER's approach from previous decisions.

In this draft decision, the AER has maintained its cost of equity approach of adopting a prevailing risk free rate (currently 2.98 per cent), an equity beta of 0.8 and a 6 per cent MRP.

In this review, APA GasNet proposed adopting the extrapolated Bloomberg fair value curve to estimate the DRP.[249] This results in a DRP of 3.82 based on current market data.[250] The Victorian gas distribution service providers also proposed this approach.[251] BHP Billiton

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242 NGR, r. 87.

243 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 141.

244 Envestra, Access arrangement information, 31 March 2012, p. 158; SP AusNet, *Access arrangement information*, 30 March 2012, p. 189; Multinet, *Access arrangement information*, 30 March 2012, p. 154

245 BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012, p. 9.

246 Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal*, 18 June 2012, pp. 57 -58

247 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunburry Natural Gas Pipeline*, October 2011, pp. 130.

248 Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012, paragraph 137.

249 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 134-139.

250 This estimate reflects the paired bonds sample proposed by APA GasNet.

251 Envestra, *Access arrangement information*, 30 March 2012, p. 160-161; SP AusNet, *Access arrangement information*, 30 March 2012, pp. 185-186; Multinet, *Access arrangement information*, 30 March 2012, p172-173.

considered this method was appropriate but also considered there was merit in the AER exploring alternative methods.[252]

On the other hand, the EUCV considered the DRP should be no more than 195 basis points above the risk free rate (based on a 5 year term).[253] The EUCV noted this resulted in a DRP similar to the ERA's approach.

In the ATCO and DBNGP matters, the Tribunal upheld the use of the 'bond yield' approach adopted by the ERA.[254] Under this approach the DRP is estimated by averaging observed bond yields that meet certain criteria.[255] The Tribunal did, however, direct the ERA to amend the simple averaging process used to aggregate these bond yields.[256] The Tribunal also provided guidance on the relevance of various criteria and the use of a more complex weighted average.[257] Such a weighted average was implemented by the ERA on remittal.[258] If the bond-yield approach (with the weighting method adopted in the ERA's re-determination) was applied to APA GasNet, the DRP would be 2.72 per cent.[259]

Consistent with the AER's observations previously, the AER considers that the Bloomberg fair value curve continues to provide DRP estimates which are higher than other potential approaches (such as the ERA's approach). The Bloomberg fair value curve also provides estimates which are high in comparison to recent bond issuances from firms with similar characteristics to the benchmark firm. For these reasons, the AER has commenced an internal review into alternatives to the Bloomberg fair value curve. The AER will advise of a public consultation process on the development of an alternative in due course. However, the AER does not expect to implement any new method in time for APA GasNet's forthcoming access arrangement period. This follows the Tribunal's previous comments on the consultation approach that should be adopted in the development of any new approach.[260]

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252 BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012, p. 17.

253 EUCV, *Submission to the AER: APA GasNet access arrangement proposal*,18 June 2012, p. 50.

254 Though the AER and ERA operate under different legislative instruments, the sections relevant to the determination of the rate of return are identical. Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12, 8 June 2012, paragraphs 167, 180; and Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012, paragraphs 280–282, 287.

255 Specifically, all bonds (sourced from Bloomberg) were from Australian companies, denominated in Australian dollars and issued in Australia. Further, bonds could be either fixed or floating and either bullet, callable or putable. Different scenarios used other slightly different criteria, such as a minimum term (two or five years), and a range of credit ratings (BBB-/BBB/BBB+ or BBB/BBB+).

256 Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12, 8 June 2012, paragraphs 176, 180, 187; Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14, 26 July 2012, paragraphs 290, 310–313.

257 More specifically, the Tribunal endorsed the use of the ERA's 'scenario 2', which encompassed a minimum credit rating of BBB and a minimum term of two years. It also suggested that it would be appropriate to apportion weight by considering both term to maturity and issuance amount for the relevant bonds.

258 ERA, *Revised decision, Access arrangement revisions for the Mid-West and South-West Gas Distribution System*, 25 June 2012, pp. 5–12.

259 Based on APA GasNet's indicative averaging period, this 'bond-yield approach' estimate incorporates 60 bonds with an average term to maturity of 5.94 years.

260 Australian Competition Tribunal, *Application by Envestra Limited (No 2)* [2012] ACompT 3, 11 January 2012, paragraphs 95, 118, 120–121; see also Australian Competition Tribunal, *Application by APT Allgas Energy Ltd* [2012] ACompT 5, 11 January 2012.

In this draft decision, the AER has maintained adoption of the extrapolated Bloomberg BBB rated fair value curve. This currently provides a cost of debt of 6.74 per cent, or DRP of 3.76 per cent.[261]

Taking APA GasNet's proposal and submissions from stakeholders together, the AER is satisfied that the rate of return in this draft decision (subject to updating) is commensurate with prevailing conditions in the market for funds and the risks involved with providing reference services.

4.3.1 The Capital Asset Pricing Model (CAPM)

A financial model must be a well accepted model if it is to be used for determining a return on capital. The Sharpe Lintner CAPM is a well accepted financial model. As noted by the AER during the WACC review, the Sharpe Lintner CAPM has been consistently and constantly adopted by regulators and market practitioners. The AER is not aware of any instances where an Australian regulator has adopted an alternative model. Truong, Partington and Peat found that 72 per cent of Australian businesses who responded to their survey adopt the (Sharpe) CAPM in formulating their capital budgeting decisions.[262]

APA GasNet proposed to use the Sharpe Lintner CAPM to determine the cost of equity.[263] The AER accepts APA GasNet's proposal to use the Sharpe Lintner CAPM to determine the cost of equity for use in the WACC because it is a well accepted financial model and will produce results commensurate with prevailing market conditions.

4.3.2 Risk free rate

The AER agrees with APA GasNet's proposed method for estimating the risk free rate.[264] The method determined in this draft decision reflects prevailing conditions in the market for funds. The AER considers this to be the case because CGS yields represent the most appropriate proxy for the risk free rate because:

- CGS are low risk
- the CGS market is liquid and functioning well, as confirmed by advice from the Reserve Bank of Australia (RBA), the Australian Treasury and the Australian Office of Financial Management (AOFM)[265]
- the RBA advised 'CGS yields are the most appropriate measure of a risk free rate in Australia'.[266]

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261 This estimate reflects an adjustment to APA GasNet's proposed extrapolation approach. This adjustment is discussed in detail in attachment 4 of this draft decision.

262 AER, *Final decision - WACC Review*, May 2009, p. 335.

263 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 152.

264 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 132-133.

265 Australian Treasury and Australian Office of Financial Management, *Letter to the ACCC: The Commonwealth Government Securities Market*, 18 July 2012, p. 2 (Treasury and AOFM, *Letter regarding the CGS Market*, July 2012).

266 Reserve Bank of Australia, *Letter to the ACCC: The Commonwealth Government Securities Market*, 16 July 2012, (RBA, *Letter regarding the CGS market*, July 2012).

Further, the AER considers the most appropriate averaging period for determining the risk free rate is a short period (as close as possible to the start of the regulatory period) because:

- at any point in time, the prevailing risk free rate is the benchmark that the expected return on a risky investment must exceed
- prevailing 10 year CGS yields reflect the risk free rate over the appropriate forward looking investment horizon (which is 10 years)
- CGS yields are market determined—that is, prevailing CGS yields reflect the return that investors are willing to receive on an investment that is almost default risk free in current market conditions
- this approach promotes the regulatory objective that the present value of a service provider's expected revenue should match the present value of a service provider's expected expenditure (plus or minus any efficiency rewards or penalties)
- the use of prevailing CGS yields is consistent with the use of the building block model because this model is designed to uphold the present value principle
- the use of prevailing CGS yields is consistent with the use of the CAPM. In the ActewAGL matter, both the expert for the AER (Associate Professor Lally) and the expert for the service provider (Greg Houston) agreed on this matter.[267]
- this approach provides an unbiased method for determining the risk free rate
- advice from Professor McKenzie and Associate Professor Partington, and from Associate Professor Lally supported the use of a prevailing risk free rate.[268]

The AER recognises that CGS yields are near historical lows, but that fact does not invalidate any of the above reasons . The current historically low CGS yields are not surprising, and reflect what would be expected of a well functioning risk free rate proxy in current demand and supply conditions. In the Telstra matter, the Australian Competition Tribunal stated 'it is not unusual for yields to move from time to time in order to reflect prevailing market conditions and the expectations about the prospect for prices into the future'.[269]

CGS yields—the most appropriate proxy for the risk free rate

CGS are low default risk securities issued by the Australian Government. The risk free rate measures the return an investor would expect from an asset with no default risk. Each of the

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267 Federal Court of Australia, ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639, 8 June 2011, paragraph 148.

268 M. McKenzie, and G. Partington, *Report to the AER: Supplementary report on the equity market risk premium*, 22 February 2012, pp. 11–-12, (McKenzie and Partington, *Supplementary report on the MRP*, February 2012); M. Lally, *The risk free rate and the present value principle*, 22 August 2012, p. 3 (Lally, *Risk free rate and present value*, August 2012).

269 Australian Competition Tribunal, *Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010, paragraph 417.

three major credit rating agencies issued its highest possible rating to the Australian Government.[270]

The spreads between CGS yields and the yields on other Australian dollar denominated securities have widened in recent years.[271] On this increase, the RBA advised:

> This widening indeed confirms the market's assessment of the risk free nature of CGS and reflects a general increase in the risk premia on other assets.[272]

In the recent DBNGP matter, the Australian Competition Tribunal stated:

> The Tribunal notes here that the risk free rate of return is a clearly defined, if abstract, concept. It measures the return on a bond that carries no risk for the investor. It is widely accepted that the closest approximation to such a bond will be government debt.[273]

Further, the RBA and Australian Treasury advised the ACCC on two occasions that the CGS market is liquid and functioning well.[274] The ACCC sought the first set of advice (received August 2007)[275] in response to a NERA report submitted by SP AusNet Both the RBA and Australian Treasury at that time suggested nominal CGS yields were an appropriate proxy for the risk free rate.[276] On the other hand, both suggested indexed CGS yields were unlikely to provide an appropriate proxy for the real risk free rate.[277] The AER subsequently ceased using indexed CGS to determine inflation expectations.[278]

In July 2012, the Treasury and AOFM stated:

> The nominal CGS market is liquid and continues to display the attributes of a well-functioning market.

In support of this position, they listed several indicators of liquidity:

- the turnover of Treasury bonds, which steadily increased from around $60 billion per month in early 2009 to almost $300 billion per month in June 2012 (inclusive of repurchase transactions)

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270 Standard and Poor's, viewed 17 August 2012, www.standardandpoors.com/prot/ratings/entity-ratings/en/au/?entityID=268976&sectorCode=SOV; Moody's, viewed 5 September 2012; Moody's, viewed 5 September 2012, http://www.moodys.com/credit-ratings/Australia-Government-of-credit-rating-75300; Fitch Ratings, viewed 5 September 2012, http://www.fitchratings.com/gws/en/esp/issr/80442187.

271 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

272 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

273 Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraph 116.

274 'Liquidity means that you do not have to accept a discount from true value if you want to sell the asset quickly.' Brealey, R., Myers, S., Partington, G., and Robinson, D., Principles of Corporate Finance, The McGraw-Hill Companies, 2007, p. 1082.

275 RBA, *Letter to the AER*, August 2007; Australian Treasury, *The Treasury Bond yield as a proxy for the CAPM risk-free rate*, August 2007.

276 RBA, *Letter to the AER*, August 2007, p. 1; Australian Treasury, *The Treasury Bond yield as a proxy for the CAPM risk-free rate*, August 2007, p. 1.

277 RBA, *Letter to the AER*, August 2007, p. 1; Australian Treasury, *The Treasury Bond yield as a proxy for the CAPM risk-free rate*, August 2007, p. 1.

278 AER, *Final decision: SP AusNet Transmission determination - 2008-09 to 2013-14*, January 2008, p. 12.

- bid-offer spreads, which fell between 2008 and June 2012[279]
- repurchase ('repo') margins. The 'repurchase agreement rates on CGS do not indicate any degree of 'tightness''.[280]

A recent speech by Rob Nicholl, chief executive officer of the AOFM, also supported the conclusion that the CGS market is liquid.[281] His comments suggested the AOFM has confidence that the CGS market is "resilient and highly functional".[282]

Further, the Australian Government has a policy of issuing sufficient CGS to ensure liquidity in the market.[283] The Australian Treasury and AOFM stated:

> In the context of the 2011-12 Budget, the Government consulted a panel of financial market participants and financial regulators as part of its deliberations on the future of the CGS market. The panel concluded that to maintain a liquid and efficient bond market that supports the futures market and the requirements of the new global bank and liquidity standards, the CGS market should be maintained at around 12 to 14 per cent of GDP over time. The projected amount of CGS on issue over the forward estimates should remain marginally higher than these levels.[284]

The liquidity of the CGS market provides the AER with confidence that market prices accurately reflect investor expectations and market conditions.

Appropriate averaging period and method

The AER considers the best method for determining an appropriate risk free rate is to use an averaging period as close as possible to the beginning of the regulatory period. The following sections outline why the AER holds this view.

Prevailing 10 year CGS yield is a forward looking 10 year rate

The prevailing 10 year CGS yield is a forward looking rate. The prevailing 10 year CGS yield varies over time, but this variation does not mean the yield is a 'short term' rate. Rather, according to the expectations theory on the term structure of interest rates, at any point in time the yield on long dated bonds (such as 10 year CGS) incorporates the market's expectation of the yield on shorter dated bonds over the next 10 years. The expectations theory on the term structure of interest rates is explained in section 2.2.1. This theory is generally regarded as an important part of the expectation of the term structure of interest rates.[285]

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279 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.

280 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

281 Rob Nicholl, *After the Storm - Does it Get Easier?*, Australian Business Economists Speech, Sydney, 22 May 2012.

282 Rob Nicholl, *After the Storm - Does it Get Easier?*, Australian Business Economists Speech, Sydney, 22 May 2012, p. 7.

283 Initially stated in 02-03 Budget, www.budget.gov.au/2003-04/bp1/html/bst7.htm; reaffirmed in 11-12 Budget, www.budget.gov.au/2011-12/content/bp1/html/bp1_bst7-03.htm

284 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 3.

285 The 'liquidity premium' theory and the 'preferred habitat' theory identify other important determinants of the term structure of debt. Elton et. al., Modern Portfolio Theory and Investment Analysis 8th ed. (2010), pp. 516–-521. These concepts are discussed further in Appendix B.

CGS yields are market determined

CGS yields are set in a market. Changes in yields for securities traded in a liquid market are likely to reflect the actions of many market participants at each point in time. So, market determined CGS yields are likely to reflect prevailing conditions in the market for funds. On its own, a price that is low relative to historical averages is not a sign that CGS are no longer a good proxy for the risk free rate. The current CGS yields are likely to reflect strong demand from foreign investors and a general re-assessment of the value of a risk free asset. Lower yields (higher prices) are an expected outcome from increased demand for those assets.

The Treasury and the AOFM noted this point:

> The weak and fragile global economy has put downward pressure on benchmark global long-term bond yields, and is driving investors into high quality government debt. The AER believed that applying an averaging period that is closely aligned to the date of the final determination provides an unbiased rate of return that is consistent with the market conditions at the time of the final determination.[286]

An alternative conclusion might be that CGS are currently overpriced. If the price of CGS exceeds their fair value, then the corresponding yield will be 'too low'. But, to draw such a conclusion, the AER would need information superior to that of market participants, or it must 'know better' than the many traders whose interactions set the price of CGS. The AER does not possess a greater ability, expertise or knowledge than market participants and traders to counter any market determination.

In previous advice, Professor McKenzie and Associate Professor Partington explained the relationship between the prevailing risk free rate and investment decisions:

> There seems to be an implication in some of the submissions that there is something wrong with using the government bond rate as the risk free rate when government bond rates are low. The fundamental point to be made is that the government bond rate sets the current benchmark that a risky project has to beat. Clearly there is little point in taking on a risky project if you can get the same or higher return by investing in a government bond. The government bond thus sets a benchmark; the time value of money.[287]

They also advised:

> At the time of writing investors can invest in a 10 year government bond at yield of 3.84%. So a ten year project that offers say 4.5% is worth considering if the risk is low enough. The fact that government bond yields were higher in the past does not make 4.5% a bad deal, or 3.84% too low a benchmark. We see no reason to switch from using the current 10 year government bond yield as the proxy for the risk free rate.[288]

Since the AER received this advice in February 2012, the 10 year CGS yield has further decreased. For the 20 business days ending on 10 August, it was 2.98 per cent. The logic in Professor McKenzie and Associate Professor Partington's advice continues to apply. In prevailing market conditions, 2.98 per cent is the benchmark that a risky project must exceed. So, what is the appropriate risk premium above this rate that reflects market conditions and the risk in providing reference services? In the Sharpe-Linter CAPM, the risk premium is the

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[286] Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 1.

[287] McKenzie and Partington, *Supplementary report on the MRP*, February 2012, pp. 11–12. Note: The advice was provided for the AER's final determination on Aurora. Many of the contentions made in that process are also being made in this process.

[288] McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p. 12.

product of the equity beta and the MRP. The AER considers the appropriate equity beta and MRP in sections 4.3.5 and 4.3.3 respectively.

In the Telstra matter, the Australian Competition Tribunal acknowledged CGS yields vary over time:

> It is not unusual for yields to move from time to time in order to reflect prevailing market conditions and the expectations about the prospect for prices into the future. A downward movement in yields over this period is therefore hardly anomalous, given market conditions.[289]

Prevailing CGS yields are consistent with the CAPM

For the following reasons, using a CGS yield estimated as close as practical to the beginning of the access arrangement period is consistent with the CAPM. The AER and APA GasNet agreed the CAPM is an appropriate model for estimating the cost of equity. Inputs to a model must be appropriate for using in that model,[290] so individual equity parameters in this decision must be consistent with the CAPM framework.

The CAPM uses the most current information to derive the rate of return. In theory, it would use the risk free rate on the day (in this case, the beginning of the regulatory period), as recognised by the Federal Court in *ActewAGL Distribution v The Australian Energy Regulator* [2011] FCA 639 (the ActewAGL matter).[291]

During the ActewAGL matter, Associate Professor Lally for the AER and Greg Houston for APTPPL agreed on the best approach to estimating the risk free rate that is consistent with the CAPM. The Federal Court acknowledged this agreement:

> There was no dispute between the experts that the CAPM theory suggests that, ideally, the nominal risk-free rate input will be calculated on the day of the final determination.[292]

Associate Professor Lally also advised:

> In relation to the Sharpe-Lintner model, this model always requires a risk free rate prevailing at a point in time for some subsequent period rather than a historical average and application of the model to a regulatory situation would require the risk free rate prevailing at the beginning of a regulatory period.[293]

The risk free rate needs to be consistent with the building block approach and present value principle

For the risk free rate, an averaging period that is as close as practical to the start of the regulatory period promotes consistency with the building block model and the present value

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289 Australian Competition Tribunal, *Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010, paragraph 417.

290 Discussed further in section 4.2.1

291 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639*, 8 June 2011, paragraph 119.

292 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639,* 8 June 2011, paragraph 119.

293 Lally, *Risk free rate and present value*, August 2012, p. 3.

principle. The NGR prescribe the use of the building block model when the AER is calculating the total revenue allowance. The model has a long history in regulation in Australia.[294]

An important principle of the building block model is the present value principle. In a 2011 paper on public utility regulation in Australia, Dr Darryl Biggar explained the origins of the building block model and what it seeks to achieve.[295] The present value principle in a regulatory context requires:

> The present value of the regulated firm's revenue stream should match the present value of its expenditure stream, plus or minus any efficiency incentive rewards or penalties (the present value principle).[296]

In his report for the AER, Lally advised this present value principle is met when the risk free rate is estimated at the beginning of the regulatory control period.[297] Lally also considered the proposition of using a long term historical average risk free rate. (Appendix B discusses long term averaging periods.) He advised this approach would not meet the present value principle.[298]

The averaging period should be short

A short averaging period provides a reasonable estimate of the prevailing rate while not exposing service providers to unnecessary volatility. It is a pragmatic alternative to using a risk free rate that precisely ensures the present value principle holds. The rate of return must be estimated in a manner consistent with not only that principle, but also the building block model and the CAPM. Lally stated all three require a risk free rate estimated at the beginning of the regulatory period[299]—literally, the first market price on the first day of the regulatory period.[300] He noted:

> ... the use of this transaction would expose the regulatory process to reporting errors, an aberration arising from an unusually large or small transaction, and a rate arising from a transaction undertaken by a regulated firm for the purpose of influencing the regulatory decision.[301]

A short term averaging period as close as practically possible to the regulatory period provides a pragmatic alternative. While the present value principle requires the use of the prevailing rate on the first day of the regulatory period, that approach would be unreasonable and impractical. It would be unreasonable because it would expose the service provider to potential distortions, as Lally described. And it would be impractical because the AER and the service provider could not enact the decision until after the beginning of the regulatory period,

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294 Biggar, D., *Public utility regulation in Australia: Where have we got to? Where should we be going, Working paper no. 4, ACCC/AER working paper series*, July 2011.

295 Biggar, D., *Public utility regulation in Australia: Where have we got to? Where should we be going, Working paper no. 4, ACCC/AER working paper series*, July 2011, p. 58. A similar description of the building block model supported by more detailed analysis can be found in Biggar, D., *Incentive regulation and teh building block model*, 28 May 2004, pp. 2-21, accessed on 27 August 2012, <http://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=ACE2004&paper_id=133>.

296 Lally, *Risk free rate and present value*, August 2012, pp. 5-6

297 Lally, *Risk free rate and present value*, August 2012, p. 3

298 Lally, *Risk free rate and present value*, August 2012, p. 3

299 Lally, *Risk free rate and present value*, August 2012, p. 3

300 Lally, *Risk free rate and present value*, August 2012, p. 7

301 Lally, *Risk free rate and present value*, August 2012, p. 7

which may be after the final decision date. An averaging period between 10 and 40 business days in length provides a practical and reasonable solution.[302]

On the other hand, Lally noted a long term average would more significantly violate the present value principle without providing any pragmatic gain:

> Rates averaged over a much longer historical period would be inconsistent with the present value principle, i.e., they would violate it without offering any incremental pragmatic justification.[303]

The AER does not consider a long term averaging period is an appropriate and reasonable departure from the present value principle.

The method is unbiased

Determining the averaging period in advance helps achieve an unbiased risk free rate. For this reason, the AER's approach to determining the risk free rate in this decision is unbiased.

Service providers have an incentive to seek a WACC that is as high as possible, because it will increase their profits. If a service provider can select an averaging period by looking at historical yields, they may introduce an upward bias[304] because they can select a period with the highest yield available. But, when an averaging period is agreed or specified in advance regulatory gaming is less likely because the risk free rate is unknown for that future period.

The possibility of upward bias also applies to a long term average. Determining the averaging period for a long term average introduces arbitrariness, and no long term averaging period is clearly superior for use. The AER does not consider historical estimates are needed in this case, because a proxy for the risk free rate is readily available. It thus considers a short averaging period, determined in advance, minimises the likelihood of bias.

4.3.3 Market risk premium

APA GasNet proposed a prevailing MRP of 8.5 per cent based on NERA, CEG and Capital Research reports.[305] It raised three concerns with the AER's approach to setting the MRP:

- The AER failed to recognise the negative relationship between the risk free rate and the MRP.
- The increase of MRP to 6.5 per cent in the WACC review should not be considered a robust estimate.
- The AER used market commentary to conclude the MRP has returned to 'normal' levels.[306]

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302 AER, *Final decision—WACC Review*, May 2009, pp. 173-174

303 Lally, *Risk free rate and present value*, August 2012, p. 7.

304 M. Lally, *Expert Report of Martin Thomas Lally*, February 2011, pp. 9-10. Lally's comments in this report were made about a specific approach proposed in the relevant determination but are consistent with the approach taken by the AER in this decision.

305 NERA, *Prevailing conditions and the market risk premium,* March 2012; CEG, *Internal consistency of risk free rate and MRP in the CAPM,* March 2012; Capital Research, *Forward estimate of the market risk premium: update,* March 2012.

APA GasNet submitted its proposed MRP is consistent with:

- the NERA regime switching estimate of 8.44 per cent
- the NERA DGM estimate of 7.69 per cent
- CEG's DGM estimate of 8.52 per cent
- Capital Research's DGM estimate of 9.56 per cent.[307]

The AER does not accept APA GasNet's proposed MRP of 8.5 per cent. Applying the approach in section 4.2.3, the AER considered an MRP of 6 per cent is the best estimate in the circumstances and reflects prevailing conditions in the market for funds. Further, the preferred MRP value meets the objectives of rules 72(1), 74 and 87 of the NGR.

Given evidence on the MRP is imprecise, the AER considers it is reasonable to assess a range of evidence to estimate the MRP. From that information, the AER considers an MRP of 6.0 per cent is the best estimate in the circumstances and given prevailing conditions in the market for funds, for the following reasons:

- Historical excess returns provided a range of 4.9–6.1 per cent if calculated on an arithmetic mean basis and a range of 3.0–4.7 per cent if calculated on a geometric mean basis.
- Professor McKenzie and Associate Professor Partington advised the AER that a 6 per cent MRP estimate was appropriate. Associate Professor Lally broadly supported the AER's method for estimating the MRP.
- MRP is an economy wide measure, and other regulators in Australia have consistently adopted an MRP estimate of 6 per cent under the same CAPM framework.
- In Envestra, ATCO and DBNGP matters, the AER and the ERA determined 6 per cent as the best estimate of the MRP based on the available evidence. The Australian Competition Tribunal was open for the regulators to adopt 6 per cent for the MRP in these decisions.
- Surveys of market practitioners consistently supported 6 per cent as the most commonly adopted value for the MRP. They also indicated that the average MRP adopted by market practitioners was approximately 6 per cent.

The AER discusses these considerations in the sections below.

In reaching this view, the AER also considered the main arguments raised by APA GasNet in support of an 8.5 per cent MRP, as well as:

- DGM estimates
- other approaches suggested by consultants
    - CEG approaches

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306 APA GasNet, *Access arrangement submission,* 31 March 2012, pp, 141–6.

307 APA GasNet, *Access arrangement submission,* 31 March 2012, pp, 146–7.

- Capital Research DGM estimates
- the NERA regime switching model
- the SFG method (implied volatility, credit spread and dividend yield)
- the VAA implied volatility glide path approach

- market commentary
- reasons for the AER's departure from the WACC review.

The AER discusses these considerations in appendix B.

Historical excess returns

Historical excess returns estimate the realised return that stocks have earned in excess of the 10 year government bond rate. So, they are likely to inform investors' expectations of future returns. The AER observed the latest historical excess returns (which can be directly measured) are 4.9–6.1 per cent based on arithmetic averages and 3.0–4.7 per cent based on geometric averages. It considers these estimates support a forward looking long term MRP of 6 per cent. Given 6 per cent is towards the top of the quoted range, it is more likely to overstate the MRP based on historical excess returns.

Although not strictly forward looking, historical excess returns have predominantly been used to estimate the MRP on the assumption that investors base their forward looking expectations on experience. The Tribunal recognised this view in the DBNGP matter.[308] In a regulatory context, the use of historical excess returns has advantages, as supported by McKenzie and Partington in their December 2011 MRP report:

- The estimation methods and the results are transparent.
- The estimation methods have been extensively studied and the results are well understood.
- Historical estimates are widely used and have support as the benchmark method for estimating the MRP in Australia.[309]

A few studies indicated there is no better forecast of excess returns than the historical average.[310] Goyal and Welch examined the performance of variables that academic literature suggested as good predictors of the equity premium. These variables include dividend yield, earnings price ratio, corporate bond returns and volatility. Goyal and Welch found:

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308 Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14,* 26 July 2012, paragraph 153.

309 M. McKenzie, and G. Partington, *Report to Corrs Chambers Westgarth: Equity market risk premium*, 21 December 2011, pp. 5–6, (McKenzie and Partington, *Equity market risk premium*, December 2011).

310 Boudoukh, Richardson and Whitelaw, *Myth of long-horizon predictability,* Review of financial studies, July 2008, vol. 21, no. 4, pp. 1577–605; Timmermann, *Elusive return predictability,* International journal of forecasting, January – March 2008, vol. 24, no. 1, pp. 1–18; Goyal and Welch, *A comprehensive look at the empirical performance of equity premium,* Review of financial studies v, 2008, vol. 21 n, no. 4, pp. 1455–1508.

> As of the end of 2005, most models have lost statistical significance, both IS [in-sample] and OOS [out-of-sample]. OOS, most models not only fail to beat the unconditional benchmark (the prevailing mean) in a statistically or economically significant manner, but underperform it outright.[311]

The long term averages of historical excess returns, adjusted to incorporate an imputation credit utilisation rate (theta) of 0.35[312], produce a range of 4.9–6.1 per cent (based on arithmetic averages) and 3.0–4.7 per cent (based on geometric averages) over the periods 1883–2011, 1937–2011, 1958–2011, 1980–2011 and 1988–2011 (table 1.2). The starting point for each of the five estimation periods was chosen because the quality of the underlying data sources changed (in 1883, 1937, 1958 and 1980) and the imputation tax system was introduced (in 1988).[313]

Table 4.3 Historical excess return estimates—, assuming a use rate of distributed imputation credits of 0.35 (per cent)

Sampling period	Arithmetic mean	Geometric mean
1883–2011	6.1[a]	4.7
1937–2011	5.7[a]	3.7
1958–2011	6.1[a]	3.5
1980–2011	5.7	3.1
1988–2011	4.9	3.0

a. Indicates estimates are statistically significant at the 5 per cent level using a two tailed test.
Source: Handley.[314]

After considering strengths and weaknesses of each estimation period, the AER considers all five periods are relevant for the following reasons:

- Longer time series contain a greater number of observations, so produce a more statistically precise estimate.
- Significant increases in the quality of the data becoming available in 1937, 1958 and 1980.
- More recent sampling periods more closely accord with the current financial environment, particularly since financial deregulation (1980) and the introduction of the imputation credit taxation system (1988).[315]

311 Goyal and Welch, *A comprehensive look at the empirical performance of equity premium,* Review of financial studies v, 2008, vol. 21 n, no. 4, p. 1504.

312 The 0.35 value for theta is consistent with the Australian Competition Tribunal's position in *Application by Energex Limited (Gamma) (No 5) [2011] ACompT9*, November 2009.

313 Brailsford, Handley and Maheswaran, *Re-examination of the historical equity risk premium in Australia,* Accounting and Finance, vol. 48, 2008, pp. 85-86.

314 Handley, *An estimate of the historical equity risk premium for the period 1883 to 2011*, April 2012, p. 6. Handley's estimates of the arithmetic averages starting in 1883 and 1958, updated to 2011, are confirmed by the NERA report submitted by the Victorian distribution network service providers in Aurora's revised proposal submission. Handley's and NERA's updates of the geometric average over the periods 1883–2011 and 1958–2011 differ by one basis point. The reason for this difference is unclear to the AER, but the difference appears immaterial. See NERA, *The market risk premium,* 20 February 2012, pp. 8–9.

- Shorter time series are more vulnerable to influence by the current stage of the business cycle or other (one-off) events. [316]

Arithmetic and geometric means

The AER considers the arithmetic average of 10 year historical excess returns would likely be an unbiased estimator of a forward looking 10 year return. However, historical excess returns are estimated as the arithmetic or geometric average of one year returns. If the one year historical excess returns are variable, then their arithmetic average will overstate the arithmetic average of 10 year historical excess returns. Similarly, the geometric average of one year historical excess returns will understate the arithmetic average of 10 year historical excess returns.[317]

The AER considers both the arithmetic and geometric averages are important to consider when estimating a 10 year forward looking MRP using historical annual excess returns. The Tribunal has found no error with this approach.[318] The best estimate of historical excess returns over a 10 year period is thus likely to be somewhere between the geometric average and the arithmetic average of annual excess returns. The AER considered SFG's, NERA's and Lally's views on arithmetic and geometric averages of historical excess returns in appendix B.

Bias in historical excess returns

In their December 2011 MRP report, McKenzie and Partington suggested MRP estimates based on historical data may be overstated relative to true expectations, as a result of survivorship bias.[319] According to Damodoran (2011), survivorship bias is created by estimating historical returns on only stocks that have survived.[320] Historical data excludes negative return stocks that no longer exist, which naturally results in higher return estimates. McKenzie and Partington[321] and Joye[322] supported this view. The AER notes this upward bias is a relevant consideration because the various Australian stock indexes exclude the failed

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315 In its submission to Aurora's revised proposal, NERA raised the issue that the market excess returns were less volatile before the 1950s. See: NERA, *Market risk premium*, 20 February 2012, pp. 13–20. The lack of a well developed theory behind what drives the MRP makes the AER cautious of excluding large periods of data because it does not represent a forward looking MRP. Also, other evidence suggests the historical excess returns were too high before the 1950s. See: AER, *APTPPL access arrangement draft decision*, April 2012, pp. 296297–7.
Further, the arithmetic averages of historical excess returns over 1883–2011 and 1958–2011 both produce a historical MRP of 6.1 per cent. The geometric averages are 4.7 and 3.0 respectively. Accordingly, even if the AER were to rely on only the post 1958 data, it would not change its position on the appropriate value of the MRP.

316 AER, *Final decision—WACC review,* May 2009, pp. 200, 204; Brailsford, Handley and Maheswaran, *Re-examination of the historical equity risk premium in Australia, Accounting and Finance*, 2008, vol. 48, pp. 78–82.

317 Appendix B discusses the details.

318 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT4*, 11 January 2012, paragraph 157.

319 McKenzie and Partington, *Equity market risk premium*, December 2011, pp. 6–7.

320 Damodoran, A. *Equity risk premiums: determinants, estimation and implications—the 2012 edition,* Mach 2012, p. 24.

321 M. McKenzie, and G. Partington, *Report to the AER: Review of regime switching framework and critique of survey evidence,* 27 August 2012, p. 19, (McKenzie and Partington, *MRP: regime switching framework and survey evidence*, August 2012)

322 Joye, C., *Super funds miss mark in bias to equities,* Australian Financial Review, 14 August 2012.

stocks.[323] Other arguments also suggest the historical excess returns are upwardly biased. Siegel (1999) argued unanticipated inflation means historical returns underestimate real returns on risk free assets.[324] He also argued historical returns on equity overstate returns actually realised, given historically high transaction costs and the historical lack of low cost opportunities for diversification.[325]

Lally suggested historical excess returns may underestimate the forward looking 10 year MRP when an economy has entered a major recession. But he noted Australia has not recently entered a major recession and, even if it had, the downward bias is unlikely to be very large.[326] He also noted:

> ... the fact that the AER bases its estimate of the MRP at least partly upon historical averaging of excess returns does not invalidate its claim that it is estimating the MRP for the next ten years; this estimation methodology is suitable (in conjunction with other methodologies) for estimating the MRP for the next ten years as well as for estimating the long-term average MRP. The use of historical averaging results may introduce a downward bias at the present time, but the effect is likely to be small relative to the standard deviation in the estimate and to possible upward bias in the methodology arising from significant unanticipated inflation in the 20th century.[327]

The AER considers the bias is a relevant consideration when estimating the MRP using historical excess returns. Given that 6 per cent is towards the top of the historical excess returns range, the AER considers historical excess returns provide a conservative estimate of the MRP.

Recent practice among Australian regulators

The AER notes Australian regulators consistently applied an MRP of 6 per cent in recent regulatory decisions. The regulators determined the MRP under a specific CAPM framework:

- The MRP is forward looking (not an historical measure) and cannot be directly observed.
- The MRP is for a long term (for example, 10 years), which means short term (for example, one year) market fluctuations have little relevance.
- The MRP is for a domestic CAPM, which means overseas evidence has limited relevance.

Table 4.4 shows decisions from Australian state and territory regulators dealing with electricity, gas, water, rail and postal services. It also includes decisions by the ACCC for various regulated sectors.

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323 For example, the ASX All Ordinaries Index represents the 500 largest companies listed on the ASX. Market capitalisation is the only eligibility requirement. An underperforming stock that is losing its market share would be eventually be removed from the index. See: http://www.asx.com.au/products/capitalisation-indices.htm#all_ordinaries_index.

324 Lally, *Cost of equity and the market risk premium*, 25 July 2011, p. 8

325 McKenzie and Partington, *Equity market risk premium*, December 2011, p. 7

326 Lally, *Cost of equity and the market risk premium*, 25 July 2011, p. 24.

327 Lally, *Cost of equity and the market risk premium*, 25 July 2011, p. 27.

Table 4.4 Recent regulatory decisions

Regulator	Decision date	Sector	MRP (%)
ACCC	May 2010	Postal services	6.0
QCA	June 2010	Water	6.0
QCA	September 2010	Rail	6.0
ACCC	December 2010	Rail	6.0
ERA	February 2011	Gas	6.0
ACCC	July 2011	Telecommunications	6.0
ACCC	July 2011	Water	6.0
ESCV	August 2011	Rail	6.0
ACCC	September 2011	Airports	6.0
ERA	October 2011	Gas	6.0
QCA	November 2011	Water	6.0
IPART	December 2011	Water	5.5–6.5
ESCOSA	February 2012	Water	6.0
ERA	March 2012 (draft decision)	Electricity	6.0
IPART	June 2012	Water	5.5–6.5
IPART	June 2012	Water	5.5–6.5
IPART	July 2012	Electricity	5.5–6.5

Source: ACCC,[328] ERA,[329] ESC,[330] QCA.[331] IPART[332], ESCOSA[333].

[328] ACCC, *Australian Postal Corporation, 2010 Price Notification*, May 2010 p. 80–81; ACCC, *Position Paper in relation to the Australian Rail Track Corporation's proposed Hunter Valley Rail network Access Undertaking*, 21 December 2010, p. 104; ACCC, *Inquiry to make final access determinations for the declared fixed line services, Final Report*, July 2011, p. 63; ACCC, *Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010*, July 2011, pp. 32–33; and ACCC, *Airservices Australia price notification, Final decision*, September 2011, p. 26, 29.

[329] ERA, *Final decision on WA Gas Networks Pty Ltd proposed revised access arrangement for the Mid–West and South–West Gas Distribution systems*, 28 February 2011, p. 103; ERAWA, *Final Decision,* Access Arrangement Information for the Dampier to Bunbury Natural Gas Pipeline, December 2011, p.159; ERAWA, *Draft Decision,* Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, March 2012, p 206.

[330] ESCV, *Metro proposed access arrangement, Final decision, August 2011*, p. 85.

[331] QCA, *Final Report, Gladstone Area Water Board: Investigation of Pricing Practices*, June 2010, p. 124; QCA, Final decision, Dalrymple Bay Coal Terminal 2010 Draft Access Undertaking, September 2010, p. 8; QCA, *Draft Report -,* SunWater Irrigation Price Review: 2012-17 - Volume 1, November 2011, p. 392.

[332] IPART, Final report, *Review of water prices for Sydney Desalination Plant Pty Limited*, December 2011, p. 80; IPART, Final report, *Review of prices for Sydney Water Corporation's water, sewerage, drainage and other services*, June 2012, p. 87; IPART, Final report, *Review of prices for the Sydney Catchment Authority*, June

The AER considers the decisions by other Australian regulators are relevant because the MRP is an economy wide measure. Recent decisions by other Australian regulators support the view that a forward looking MRP of 6 per cent is the best estimate in the current circumstances.

Recent Australian Competition Tribunal decisions

In 2011, Envestra challenged the AER's decisions to approve an MRP of 6 per cent for Envestra's South Australian and Queensland gas distribution businesses. Envestra claimed the AER should have accepted Envestra's proposed 6.5 per cent MRP. The Tribunal concluded the AER has scope to determine an MRP that 'is reasonably open to it on the evidence':

> The critical issue in this section of the review is whether the AER's determination of the MRP at 6% was reasonably open to it on the evidence. As has already been mentioned, there was substantial evidence before the AER, both that submitted to it by service providers and that sourced by the AER itself. This evidence was not conclusive. It was incumbent upon the AER to exercise its judgment in deciding on an appropriate MRP. ...
>
> It is not sufficient for Envestra to persuade the Tribunal that 6.5% should be preferred. It must demonstrate the unreasonableness of the decision made by the AER. Unless this can be done, the Tribunal would be merely reaching a different conclusion as to the preferable result. The mere fact that the Tribunal may prefer a different rate does not entitle it to substitute its preferred MRP for that of the AER unless a ground of review has been made out. In all the circumstances of this matter, it was reasonably open to the AER to choose a MRP of 6%.[334]

The Tribunal handed down a similar decision in its review of ATCO's (formerly WA Gas Network's) and DBNGP's access arrangements.[335] In both decisions, the ERA considered the available information and exercised its discretion to determine the appropriate MRP. The Tribunal subsequently found no error in the ERA's determination of a 6.0 per cent MRP.

Survey evidence

In estimating the MRP, the AER is estimating investors' expectations of the MRP in the future, and not simply estimating the excess stock market returns achieved in the past. It considers surveys of market practitioners and academics are relevant because they reflect the forward looking MRP as applied. The AER is aware of Tribunal's comments on the survey evidence. Applying the criteria noted by the Tribunal to the survey evidence considered in this decision,[336] the AER concluded the survey results are relevant to inform the forward looking 10 year MRP.

2012, p. 90; IPART, Final report - *Changes in regulated electricity retail prices from 1 July 2012*, July 2012, p. 102.

333 ESCOSA, *Final Advice, Advice on a Regulatory Rate of Return for SA Water – Final Advice*, February 2012, p. 50

334 Australian Competition Tribunal, *Application by Envestra Limited (No 2) [2012] ACompT 4*, 11 January 2012, paragraphs 145 and 148.

335 Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3) ACompT 12,* 8 June 2012, paragraphs 105–8.
Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14,* 26 July 2012, paragraphs 161–3.

336 Appendix B discusses this application in detail.

Survey based evidence needs to be treated with caution because the results may be subject to limitations. The relevance of some survey results depends on how clearly the survey sets out the framework for MRP estimation. This framework includes the term over which the MRP is estimated and the treatment of imputation credits. Survey based estimates may be subjective, because market practitioners may look at different time horizons and have differing views on the market risk. However, this concern may be mitigated as the sample size increases. The AER also acknowledges the Tribunal's concern about survey evidence.[337]

The AER considered survey evidence before and after the WACC review. Survey evidence before the WACC decision includes the following:

- KPMG (2005) surveyed 33 independent expert reports on takeover valuations from January 2000 to June 2005. It found the MRP adopted in valuation reports was in a 6–8 per cent range. KPMG reported 76 per cent of survey respondents adopted an MRP of 6 per cent.[338]

- Capital Research (2006) found the average MRP adopted across a number of brokers was 5.09 per cent.[339]

- Truong, Partington and Peat (2008) surveyed chief financial officers, directors of finance, corporate finance managers or similar finance positions of 365 companies included in the All Ordinaries Index at August 2004. From the 87 responses received, 38 were relevant to the MRP. They found the MRP adopted by Australian firms in capital budgeting was in a 3–8 per cent range, with an average of 5.94 per cent. The most commonly adopted MRP was 6 per cent.[340]

Survey evidence after the WACC decision includes the following:

- Bishop (2009) reviewed valuation reports prepared by 24 professional valuers from January 2003 to June 2008. It found the average MRP adopted was 6.3 per cent, and 75 per cent of these experts adopted an MRP of 6 per cent.[341]

- Fernandez (2009) surveyed university finance and economics professors around the world in the first quarter of 2009. The survey received 23 responses from Australia and found the required MRP used by Australian academics in 2008 was in a 2.0–7.5 per cent range, with an average of 5.9 per cent.[342]

- Fernandez and Del Campo (2010) surveyed analysts around the world in April 2010. The survey received seven responses from Australian analysts and found the MRP that they used in 2010 was in a 4.1–6.0 per cent range, with an average of 5.4 per cent.[343]

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337 Australian Competition Tribunal, Application by Envestra Limited (No 2) [2012] ACompT 3, 11 January 2012, paragraphs 159–63.

338 KPMG, *Cost of capital—market practice in relation to imputation credits*, August 2005, p. 15.

339 Capital Research, *Telstra's WACC for network ULLS and the ULLS and SSS businesses—review of reports by Prof. Bowman*, March 2006, p. 17.

340 Truong, G. Partington, G. and Peat, M., *Cost of capital estimation and capital budgeting practices in Australia,* Australian Journal of Management*,* June 2008, vol. 33, no. 1, p. 155.

341 Bishop, S., *A conservative and consistent approach to WACC estimation by valuers*, Value Advisor Associates, 2009.

342 Fernandez and Del Campo, *Market Risk Premium used by Professors in 2008: A Survey with 1400 Answers, IESE Business School Working Paper*, WP-796, May 2009, p. 7.

343 Fernandez and Del Campo, *Market Risk Premium Used in 2010 by Analysts and Companies: A Survey with 2400 Answers, IESE Business School*, May 2010, p. 4.

- A further survey by Fernandez et al. (2011) in April 2011 reported the MRP used by 40 Australian respondents was in a 5–14 per cent range, with an average of 5.8 per cent.[344]

- Asher (2011) surveyed 2000 members of the Institute of Actuaries of Australia. Asher reported 33 of a total of 58 Australian analysts who responded to the survey expected the 10 year MRP to be 3–6 per cent. The most commonly adopted MRP value was 5 per cent. The report also illustrated that expectations of an MRP much in excess of 5 per cent were extreme.[345]

Table 4.5 summarises the key findings of the surveys.

Table 4.5 Key findings of MRP surveys

	Numbers of responses	Mean	Median	Mode
KPMG (2005)	33	7.5%	6.0%	6.0%
CaptialCapital Research (2006)	12	5.1%	5.0%	5.0%
Truong, Partington and Peat (2008)	38	5.9%	6.0%	6.0%
Bishop (2009)	27	na	6.0%	6.0%
Fernandez (2009)	23	5.9%	6.0%	na
Fernandez and Del Campo (2010)	7	5.4%	5.5%	na
Fernandez et al (2011)	40	5.8%	5.2%	na
Asher (2011)	49	4.7%	5.0%	5.0%

Sources: KPMG (2005), Capital Research (2006), Truong, Partington and Peat (2008), Bishop (2009), Fernandez (2009), Fernandez and Del Campo (2010), Fernandez et al. (2011), Asher (2011)).

The AER considers survey measures of the MRP across different years, different survey respondents or sources, and different authors support an MRP of 6.0 per cent. For the surveys under consideration, the most commonly reported MRP was 6 per cent.

McKenzie and Partington placed significant weight on the survey evidence due to the triangulation of that evidence.[346] The idea behind the triangulation is that a specific survey might be subject to a particular type of bias (although there is no compelling demonstration of it), but that the type of bias would likely be much less consistent across surveys using different methods and different target populations.

The AER applied the available survey evidence against the criteria noted by the Tribunal in appendix B. After consideration of this analysis and McKenzie and Partington's view, the AER considers survey based estimates of the MRP are relevant to inform the forward looking MRP. Survey evidence supports a forward looking MRP of 6 per cent as the best estimate in

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344 Fernandez, Arguirreamalloa and Corres, *Market Risk Premium used in 56 Countries in 2011: A Survey with 6,014 Answers,* IESE Business School Working Paper, WP-920, May 2011, p. 3.

345 Asher, *Equity Risk Premium Survey—results and comments*, Actuary Australia, July 2011, no. 161, pp. 13–14.

346 McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p. 19
McKenzie and Partington, *MRP: regime switching framework and survey evidence*, August 2012, p. 28.

the current circumstances. Appendix B details the AER's analysis and reasons for its decision on survey evidence.

APA GasNet's main contentions

APA GasNet proposed an MRP estimate of 8.5 per cent. It submitted CEG, Capital Research, SFG and NERA reports in support of its proposal. The AER notes APA GasNet's main concerns with the AER's current approach were:

- AER's almost exclusive reliance on estimates of the historical excess returns. This approach does not adequately consider the prevailing conditions in the market for funds.
- The upward adjustment made by the AER in the WACC review was arbitrary and should not be considered as a robust estimate.
- The AER reduced the MRP back to 6 per cent effectively declaring the GFC is over. [347]

The AER understands the first concern relates to the negative relationship between the risk free rate and the MRP. It discusses this issue in section 4.3.4. The other concerns relate to the AER's decision to increase the MRP in the WACC review and subsequently decreased it back to 6 per cent. The AER discusses the reasons for its departure from the WACC review in appendix B.

APA GasNet proposed an 8.5 per cent MRP based on NERA's regime switching estimate and CEG's, NERA's and Capital Research's DGM estimates. The AER considers the proposed MRP of 8.5 per cent is not justified. The AER discusses its considerations on regime switching model and DGM estimates in appendix B.

4.3.4 Relationship between the risk free rate and the market risk premium

The AER is determining the rate of return for APA GasNet in the context of CGS yields being at an historical low. The AER and APA GasNet both adopted the Sharpe-Lintner CAPM as the accepted model for determining the cost of equity. The effect of using this lower risk free rate within the Sharpe-Lintner CAPM, all things being equal, is to lower the cost of equity from that determined by the AER in previous decisions. In this context, APA GasNet proposed an 8.5 per cent MRP.

The AER considered this interrelationship between the risk free rate and the market risk premium under the following four broad categories:

- the regulatory requirements under the NGR and NGL—specifically, whether it is appropriate in this framework for adjusting the MRP estimate to address or 'rectify' a perceived problem or difficulty in the calculation of the risk free rate
- the need for consistency in how the MRP and risk free rate are estimated
- the economic interdependencies between these two parameters—specifically, whether the MRP is high when the risk free rate is low

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[347] APA GasNet, *Access arrangement submission,* 31 March 2012, pp, 141-146.

- other regulatory systems.

Regulatory requirements

The AER has consistently maintained that each parameter should be estimated based on considerations that meet the criteria and objective set out in Rule87 of the NGR. A parameter should not be adjusted to address or rectify a perceived problem or difficulty with the calculation of another parameter. The AER understands Rule 87 operates as follows:

- Rule 87(1) describes the objective in determining the WACC but does not guide how the objective is to be achieved.
- Rule 87(2) describes how the objective is to be achieved, including through a well accepted approach (such as the WACC) and a well accepted financial model (such as the CAPM).
- Rule 87(1) informs the selection of appropriate input parameters to use in the well accepted approach and well accepted financial model. That is, input parameters must reflect prevailing conditions in the market for funds, and the risk from providing reference services.

This interpretation is consistent with the Australian Competition Tribunal's position in two recent decisions, for ATCO (previously known as WA Gas Networks) and DBNGP.[348]

The AER uses the CAPM to estimate the cost of equity to determine the WACC under rule 87(2) of the NGR. The MRP, like the risk free rate, is an input to the calculation of the cost of equity for that WACC. Maintaining the integrity of each parameter promotes rigour and robustness in the estimation of each parameter. But addressing a problem with one parameter by adjusting another parameter introduces subjectivity. The AER is unaware of any well accepted method for making such adjustments without introducing subjectivity or greater regulatory risk[349]. Rather, the AER considered a range of evidence and determined the appropriate WACC input parameters when assessing the proposed rate of return. This approach is consistent with the objectives of the NGR.

Importantly, the AER considers the input parameters will not reflect prevailing conditions in the market for funds if an otherwise appropriate parameter is altered to resolve an issue elsewhere. Lally supported this view:

> ... CEG's proposed methodology sacrifices a relevant, critical and observable parameter within the cost of equity (the current risk free rate) in order to offset alleged errors in another parameter (the market risk premium).[350]

APA GasNet did not propose a risk free rate above the prevailing rate. However, the CEG report submitted by APA GasNet recommended this approach as one of three options. Specifically, CEG recommended adopting a long term historical average risk free rate (5.99 per cent) with what it argued is a long term historical MRP of 6 per cent.

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348 Australian Competition Tribunal, *Application by WA Gas Network Pty Ltd (No 3) [2012] ACompT*, 8 June 2012, paragraphs 61–66; see also Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraphs 80–84, 100–103.

349 S. 24 (5) of the NGL

350 Lally, *Cost of equity and the MRP,* July 2012, p. 22.

For reasons set out in this decision, the AER considers a 6 per cent MRP reflects prevailing conditions in the market for funds and also the risks from providing reference services. However, even if this was not the case, the AER considers (for the reasons outline above) adjusting the risk free rate to address a perceived problem with the MRP would not be appropriate. It does not accept this approach would be preferable to its current approach to setting parameters. Further, it considers the approach would not be consistent with r. 87 of the NGR, particularly in light of the Tribunal's construction of this rule in the ATCO and DBNGP matters.

Consistency of the MRP and risk free rate estimates

APA GasNet suggested the WACC determined by the AER produces a 'downward biased return on equity' because the AER adopts an MRP that reflects the long term average and uses a risk free rate that reflects current market conditions.[351] This suggested bias is a mischaracterisation. The AER estimates a WACC that is consistent with the CAPM and requirements of the rules.

The CAPM should be estimated at the beginning of the investment period and should reflect expectations for the investment horizon.[352] Accordingly, both the risk free rate and the MRP are estimated at the beginning of the period (or rather, as close as is practically possible) and reflect expectations for the investment horizon.

Rule 87(1) of the NGR requires the AER to estimate a rate of return that reflects prevailing conditions in the market for funds. These prevailing conditions can be considered 'prevailing expectations' over the relevant forward looking investment horizon, which is 10 years.[353] Accordingly, both the risk free rate and the MRP are forward looking estimates, although estimated using different types of data.

To satisfy these requirements in practice involves the use of differing methodologies and data sources. The risk free rate is not directly observable, but a proxy for the risk free rate is directly observable. A 10 year forward looking risk free rate can be estimated based on current market data (using 10 year CGS yields as the proxy).[354] On the other hand, the MRP is unobservable and there are no reliable proxies for it that can be directly observed. Prevailing MRP estimates using current market data will not necessarily reflect forward looking expectations and are influenced by the assumptions used.[355] Accordingly, a broader set of evidence is needed to judge the MRP.

Long term historical average excess returns are one such source of evidence, and they are used on the basis that historical realised returns are likely to influence investors' expectations. The AER also considered forward looking evidence (such as survey evidence) in determining the appropriate estimate for the MRP. The use of judgement does not detract from the fact

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351 APA GasNet, Access arrangement submission, 31 March 2012, p. 142.

352 See section 4.3.2 for further discussion.

353 AER, *Final decision: WACC review*, May 2009, pp. 72–7.

354 CGS prices are observable in a market; as CGS have promised future cash flows, the prevailing yield reflects market expectations for the future. Discussed further in section 4.3.2 and Appendix B.

355 Equity prices are observable in a market; but as equities do not have promised future cash flows, it is not possible to observe a yield that accurately reflects market expectations and takes into account future cash flows. See section 4.3.3 for further discussion.

that the MRP is estimated as close as practical to the beginning of the period, and reflects expectations over the 10 year investment horizon.

Therefore, the AER does not use a short term estimate with a long term estimate. The AER uses estimates that reflect prevailing conditions and expectations over a 10 year investment horizon.

Economic interdependencies

APA GasNet submitted the MRP and the risk free rate have a negative relationship.[356] Its contention was based on a CEG report. In turn, the AER considered three aspects of this issue: the theoretical argument, the empirical evidence and the CEG chart based on the AMP method.

Theoretical argument

The AER acknowledges a possible theoretical case for a negative relationship between the risk free rate and MRP in certain circumstances. But there is no sound basis for establishing any such theoretical relationship for the duration of the relevant investment horizon. That investment horizon is a 10 year forward looking period for both the risk free rate and MRP. Additionally, as discussed below, the empirical evidence in support of such a relationship over the relevant period is not conclusive.

Lally considered:

> Although there is nothing in finance theory that supports (or rejects) a negative relationship between the CGS rate and the market risk premium, a negative relationship is plausible because the market risk premium is compensation for bearing equity risk, equity risk (volatility) seems to be greatest in depressed economic conditions, and the risk free rate also tends to be lowest in depressed economic conditions.[357]

However, Lally continued:

> ... whilst CGS yields are very low because of generally depressed world economic conditions, Australia is not experiencing depressed economic conditions. Furthermore, even if the correlation between the CGS yield and the MRP were negative, the significant issue for regulatory purposes is the strength of this relationship and especially its strength in respect of the ten year risk free rate and the ten year MRP. Market volatility (and therefore the market risk premium) might be high today but volatility (and hence the MRP) tends to rapidly subside to normal levels (French et al. 1987, Figure 1a) and the MRP for the next ten years might not then be greatly increased by a temporary upsurge in volatility.[358]

This consideration is pertinent to the AER's task because the AER is estimating a 10 year forward looking MRP. Accordingly, despite a possible tendency for the negative relationship over the short term, neither the theory nor the empirical evidence (see below) before the AER (including the material submitted by CEG) supports this relationship over longer periods.

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356 APA GasNet, *Access arrangement submission,* 31 March 2012, pp. 143–-144.

357 Lally, *Cost of equity and the MRP,* July 2012, p. 7.

358 Lally, *Cost of equity and the MRP,* July 2012, p. 7.

Empirical evidence

In response to a similar proposal submitted by Aurora, the AER's consultants, McKenzie and Partington, considered the available material. McKenzie and Partington noted some empirical evidence of a negative correlation between the short term nominal government bill yield (short term) and future nominal excess returns on the market. However, this negative correlation becomes weaker as the time horizon becomes longer. Further, the explanatory power of these regressions is low. Consequently, these regressions are unlikely to provide a reliable forecast of excess returns. McKenzie and Partington stated:

> Low explanatory power is usual for equations that predict returns, but in the current case it does mean that the effect of the yield is readily offset by random variation in other factors. In other words, random variation represents most of the excess returns. It also seems that the relation is not particularly stable. A consequence of low explanatory power and instability is that the regression between yields and excess returns is unlikely to provide a reliable forecast of excess returns.[359]

Lally noted CEG did not present any persuasive evidence of a strong negative relationship between the 10 year forward looking risk free rate and the 10 year forward looking MRP:

- The Lettau and Ludvigson (2001) paper examined the US 30 day Treasury Bill rate rather than the 10 year rate. Further, this short term negative relationship reversed after two years.
- The Smithers and Co's advice was based on 'Siegel's constant'. Siegel's arguments are concerned with real rather than nominal returns. Even in real terms, Siegel did not suggest the MRP moves inversely with the risk free rate to the point that the cost of equity is largely unchanged.
- The rise in the expected rate of return on state government debt might have been due entirely to increases in expected default losses and liquid premium relative to CGS yield. In this case, the MRP would not increase with the debt risk premium.[360]

The AER considers the concerns raised by Lally are relevant because the AER is estimating a 10 year forward looking MRP, not a forward looking MRP over a short time horizon. Based on the advice from McKenzie and Partington, and Lally, the AER concludes the empirical evidence is not strong in support of a negative correlation between the risk free rate and the MRP. It also considers any such negative relationship would not warrant adjusting the MRP to compensate for the risk free rate. Further, recent literature suggests the relationship could be positive.[361]

CEG chart based on the AMP method

The AER examined the CEG chart (reproduced below), which is based on the AMP method. CEG derived this time series by first estimating the prevailing cost of equity (the red line) and then calculating the MRP (the green line) by subtracting the prevailing 10 year CGS yield at any point in time (the blue line).[362] The red line is relatively stable over time. Subtracting the

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359 McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p.10

360 Lally, *Cost of equity and the MRP,* July 2012, pp. 8-9.

361 See Damodaran, *Equity risk premiums: determinants, estimation and implications—the 2012 edition*, March 2012, pp. 77–9.

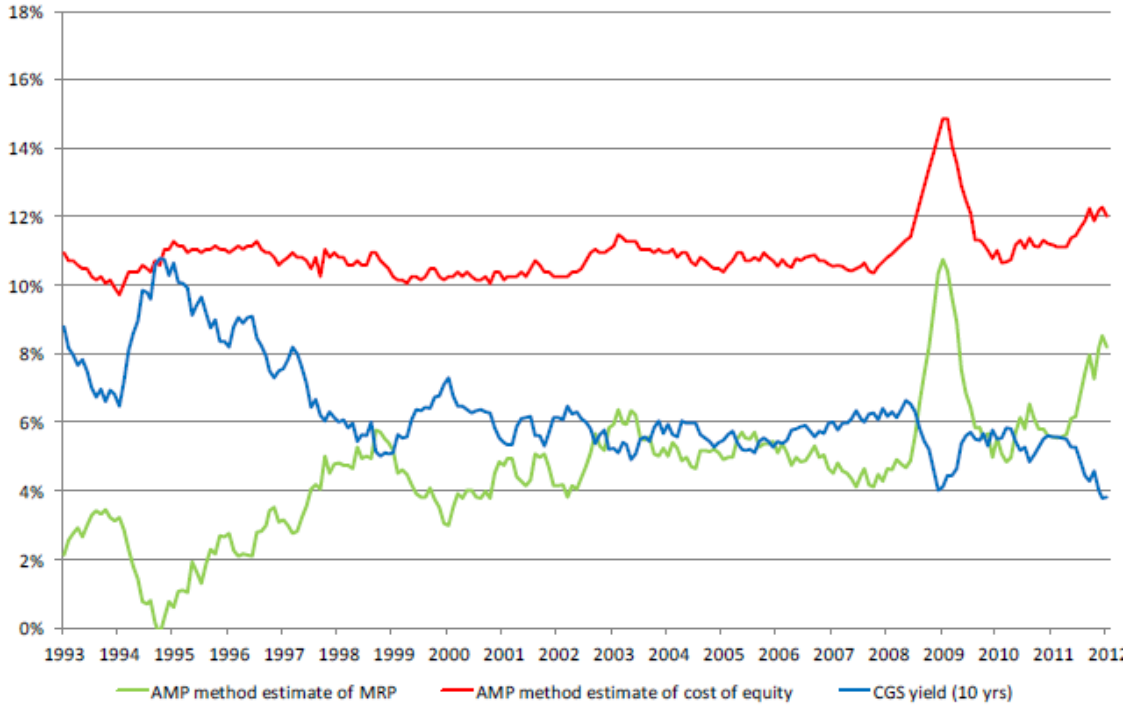
362 CEG, *Internal consistency of risk free rate and MRP in the CAPM*, March 2012, p. 17.

blue line from the red line thus creates the appearance of a strong negative correlation between the risk free rate (green line) and MRP (blue line). Lally identified this problem. He found the CEG AMP method uses a perfect offset assumption[363] and thus generates results showing a stable cost of equity over time.[364] Lally described CEG's chart as being 'predisposed' to the result that it displays.[365] For these reasons, the AER considers this chart is not valid empirical evidence of a negative relationship between the prevailing market risk premium and the prevailing risk free rate. Additionally, because CEG's AMP method is based on the DGM model, that model's general limitations (outlined in section 4.3.3) also apply to this analysis.

Lally also pointed out this method produces an MRP estimate of zero in 1994—an 'implausible' result. Combining these points, Lally concluded:

> Thus, if the perfect-offset hypothesis should be rejected in 1994 when the risk free rate was unusually high, it should also be rejected in 2012 when the risk free rate was unusually low.[366]

Figure 4.1 CEG AMP method estimate of Return on Equity and MRP relative to 10 year CGS yields



Source: CEG, Internal consistency of risk free rate and MRP in the CAPM, March 2012, figure 8.

363 By applying the AMP method, CEG assumed the market cost of equity at any point in time is the same for all future years. If, for example, the current risk free rate were unusually low, then the MRP would assume to be unusually high by an exactly offsetting amount.

364 Lally, *Cost of equity and the MRP,* July 2012, pp. 9–12, 15.

365 Lally, *Cost of equity and the MRP,* July 2012, p. 11.

366 Lally, *Cost of equity and the MRP,* July 2012, p. 15.

Other regulatory systems

CEG suggested the AER should consider regulatory precedent outside Australia when it makes its decision under Rule 87 of the NGR. CEG stated that UK and the US regulators generally support adjusting the cost of equity when risk free rates are unusually low.[367]

The AER acknowledges the UK regulators make an upward adjustment in the risk free rate when the prevailing risk free rate is low, while the US regulators tend to use the DGM to estimate the cost of equity. It considers these decisions are not comparable to those of the AER because they are made under a different legal framework. Under Rule 40 of the NGR, the AER can withhold its approval if it considers a preferable alternative exists that complies with the NGR and NGL requirements and criteria.[368]

The AER notes the risk free rate is low at the moment. However, it does not consider making an upward adjustment to the risk free rate is appropriate for the reasons set out in section 4.3.2. The AER notes DGM analysis is subject to a number of limitations when estimating a forward looking MRP. This is discussed in appendix B. In addition, Lally noted using DGM to directly estimate the cost of equity is subject to two further problems:

- The regulated business would have a very strong incentive to manipulate its dividend policy in order to maximise its regulatory return.
- This estimate does not accurately reflect the cost of equity of the regulated activity if the business also undertakes unregulated activity.[369]

The AER considers it is inappropriate to rely on DGM estimates or use long term historical risk free rate when the risk free rate is low. This is in accordance with our interpretation of the NGR. That is the AER is to determine the best estimate possible in the circumstances commensurate with prevailing conditions in the market for funds.

4.3.5 Equity beta

The equity beta provides a measure of the 'riskiness' of an asset's return compared with the return on the entire market. The equity beta reflects the exposure of the asset to systematic or 'non-diversifiable' risk, which is the only form of risk that requires compensation under the CAPM.

APA GasNet proposed an equity beta of 0.8 noting this was adopted by the AER in the most recent gas distribution decision (Envestra 2011–16), 'notwithstanding the compelling evidence that the benchmark equity beta should be at least 1.0.'[370] The AER accepts APA GasNet's proposal for an equity beta of 0.8.

The AER considers that the empirical evidence presented in the WACC review contains the best available estimate of the equity beta that would apply to a benchmark gas distribution

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367 CEG, *Internal consistency of risk free rate and MRP in the CAPM,* March 2012, pp. 33–40.

368 Rule 40 of the NGR sets out the AER's discretion in deciding on an access arrangement proposal. When the NGL and NGR do not state the AER has 'limited' discretion in relation to a decision, the AER can withhold its approval of an element of an access arrangement proposal under rule 40(3) of the NGR.

369 Lally, *Cost of equity and the MRP*, July 2012, p. 14.

370 APA GasNet ,Access arrangement submission, 31 March 2012, p. 148.

network service provider, taking into account the need to reflect prevailing market conditions and the risks involved in providing reference services. This empirical evidence indicated a point estimate of between 0.4 and 0.7 for the equity beta of electricity and gas service providers.[371] The adopting of an equity beta just above this range was in recognition of the level of imprecision around these estimates and the desirability of stability in regulatory decision making over time.[372] Since the WACC review, the AER has adopted 0.8 in each of its regulatory decisions for other gas distribution and transmission service providers. Cross checks against Australian water utilities or overseas electricity and gas networks also indicate that the equity beta set by the AER is reasonable.

The evidence referred to by APA GasNet that beta should be at least 1.0, was put forth by Envestra SA in its revised application for the 2011–16 regulatory control period. The AER's full consideration of this evidence is provided in AER's June 2011 Envestra SA final decision. In summary, but drawing directly on the analysis and conclusions in that decision, the AER considers:[373]

- The use of a foreign data to estimate CAPM inputs is a suboptimal outcome that can only be justified where there is evidence that this will produce more reliable estimates of the domestic equity beta than Australian estimates.
- The CEG report does not comprehensively evaluate the differences between Australia and the US. CEG did not consider the numerous aspects of the regulatory framework that affect the exposure of the firm to systematic risk, and which differ substantially on an international basis.
- The Australian equity beta estimates (drawn from the WACC review) are sufficiently robust, and the claims by CEG are unfounded.
- An equity beta of 0.8 would not under compensate the benchmark service provider for the risks of providing reference services. The AER has cross-checked this by obtaining a recent Grant Samuel independent report which used an equity beta estimate of 0.8 to 0.9, suggesting that the equity beta estimates for energy distribution businesses remain unchanged as a consequence of the GFC.
- CEG appeared to misinterpret the position of the New Zealand Commerce Commission's (NZCC) expert advisors.

The AER's past considerations of this matter are still relevant.

Further, the AER also notes that there is a substantial body of evidence that beta is less than 1 (and even less than 0.8), as outlined by the Energy Users Coalition of Victoria (EUCV). EUCV submitted the equity beta for APA GAsNet should be 0.65. The EUCV noted that:

- The empirical evidence undertaken during the WACC review implies a beta of 0.55.[374]

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371 AER, *Final decision - WACC Review*, 1 May 2009, pp. 239–344, May 2009.

372 Most Australian regulators had previously provided electricity and gas service providers with an equity beta of either 0.9 or 1.0. In its last decision on the RBP, the ACCC adopted an equity beta of 1.0.

373 AER, Final decision for Envestra Access arrangement proposal for the SA gas network, June 2011, 176-184

374 It is unclear how the EUCV has derived the 0.55 point estimate. The AER considers the empirical evidence from the WACC review suggested a range of 0.4-.07.

- The ESCV set the equity beta at 0.7 in March 2008 for gas distribution service providers, commenting after considerable investigation that the beta estimates using the longest period of data, range between 0.5 and 0.7.[375]

- Work undertaken by ERA that uses more recent data than that considered in the WACC review provides evidence for an equity beta of 0.65. The ERA suggests beta should be 0.65 in the draft decision for Western Power.

The EUCV considers that this evidence demonstrates that beta at 0.8 is too high.[376]

The AER acknowledges that there is empirical evidence indicating that an equity beta less than 0.8 may be reasonable. However, during the WACC review the AER also took account of other considerations including regulatory stability and the level of imprecision in the empirical estimates. Having regard to this, the AER considers 0.8 to still be reasonable at this time. However, the estimates presented by the EUCV may, together with other information, provide additional evidence to change the equity beta in the future.

The AER has given consideration to other factors, such as the need to achieve an outcome that is consistent with the NGO—in particular, the need for efficient investment in natural gas services for the long-term interests of consumers of natural gas. The AER has also taken into account the revenue and pricing principles, the importance of regulatory stability and is also mindful it has recently considered an equity beta of 0.8 to be appropriate, if not overstated, for other gas businesses. On the basis of the information presented, the AER concludes that an equity beta of 0.8 provides APA GasNet with an opportunity to recover at least its efficient costs incurred in providing reference services and meeting regulatory requirements.[377]

4.3.6 Debt risk premium

The AER accepts, in principle, APA GasNet's proposed benchmark and method for determining the DRP. The AER, however, has updated APA GasNet's proposed DRP to reflect the indicative averaging period used throughout this draft decision. This results in a DRP of 3.76 per cent.[378] The AER will again update this value for its final decisions based on APA GasNet's final averaging period.

Specifically, the AER accepts APA GasNet's proposed DRP benchmark based on an Australian corporate fixed rate bond issuance with a term to maturity of 10 years and a BBB+ credit rating.[379] This benchmark assumption has been adopted by the AER in previous gas decisions.[380] Moreover, the AER considers that the term to maturity and credit rating are two primary factors which are reflective of the risks involved in providing reference services.[381]

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375 The AER notes that ESCV effectively provided an equity beta of 0.8 by making an allowance in Total Revenue to reflect the difference in revenue from using an equity beta of 0.8 compared to an equity beta of 0.7. ESCV, *Gas access arrangement review 2008-2012 final decision – public version*, 7 March 2008, p. 13.

376 EUCV, *Application from APA GasNet, A response by EUCV*, June 2012, p. 4, 46-7.

377 S. 24(2) of the NGL.

378 This estimate also reflects the AER's amendment to the bond sample used to extrapolate Bloomberg's seven year, BBB rated fair value curve. This amendment is discussed in detail further in this document.

379 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 139.

380 For example, see AER, *Final Decision: APT Petroleum Pipeline Pty Ltd access arrangement final decision Roma to Brisbane Pipeline* 2012-13 to 2016-17, August 2012.

381 Other factors—for example, industry type—may also be relevant in determining the level of risk involved in providing reference services.

The 10 year term for the cost of debt also provides internal consistency with the use of a 10 year risk free rate.

Further, the AER accepts APA GasNet's proposed approach to establishing the DRP. In particular, the AER accepts APA GasNet's proposal to estimate the benchmark DRP solely on the Bloomberg BBB fair value curve. Notwithstanding that the AER has previously expressed concerned with the Bloomberg fair value curve, the AER is mindful of the Tribunal's recommendation that a public consultation process be completed before any alternative methodologies are considered.[382]

The AER also accepts APA GasNet's proposed method to extrapolate the Bloomberg BBB fair value curve from seven to 10 years based on the analysis of paired bonds undertaken by PwC.[383] The AER, however, does not consider that this extrapolation approach has been correctly applied by PwC.

PwC's method extrapolates the Bloomberg seven year BBB fair value curve using the average annual increment observed across pairs of bonds of differing maturities issued by the same company. PwC's criteria for selecting the sample of paired bonds included that:

- the paired bonds were part of the wider sample used by PwC when conducting their broader econometric analysis
- the shorter dated bond (of the pair) has a remaining term to maturity closest to seven years.[384]

Based on PwC's selection criteria, the AER cannot reconcile the inclusion of the paired Telstra bonds in PwC's extrapolation sample. Specifically, Telstra bonds have a credit rating of 'A' by Standard and Poors. Amongst other characteristics, the broader econometric sample used by PwC (of which the paired bonds must be a subset) only included bonds with a credit rating of 'BBB', 'BBB+' or 'A-' by Standard and Poors.[385]

Additionally, PwC's extrapolation sample included a pair of fixed rate Stockland bonds maturing in 2015 and 2020. However, a fixed rate Stockland bond matching all of PwC's selection criteria exists which matures in 2016. The AER considers that the correct application of PwC's selection criteria requires the 2016 bond to be used (instead of that maturing in 2015).

For the purposes of this draft decision, therefore, the AER has excluded the Telstra bonds from the extrapolation sample. The AER has also updated PwC's analysis to reflect the spread between the pair of Stockland bonds maturing in 2016 and 2020. The AER, however, will consider including these bonds for the final decision should APA GasNet substantiate their inclusion. The AER considers that excluding the Telstra bonds and amending the

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382 Australian Competition Tribunal, *Application by Envestra Limited (No 2)* [2012] ACompT 3, 11 January 2012, paragraphs 95, 118, 120–121; see also Australian Competition Tribunal, *Application by APT Allgas Energy Ltd* [2012] ACompT 5, 11 January 2012.

383 This is because seven years is the maximum term currently published for the Bloomberg BBB fair value curve.

384 PwC, *SP AusNet, MultiNet Gas, Envestra, and APA Group: Estimating the benchmark debt risk premium*, March 2012, p. 22.

385 PwC, *SP AusNet, MultiNet Gas, Envestra, and APA Group: Estimating the benchmark debt risk premium*, March 2012, p. 13.

Stockland pair is consistent with a benchmark DRP that reflects the risks involved in providing reference services.

In assessing APA GasNet's proposal, the AER has also taken into account the EUCV's submission.[386] The EUCV stated that the approach to determining the DRP used by the AER cannot be demonstrated to produce an efficient outcome. Further, the EUCV presented average debt premiums for each of the Victorian gas networks from the corresponding annual reports.

The AER, however, considers that the EUCV's analysis of annual report data is flawed. Most notably, it is unclear whether the average term of the debt referenced by the EUCV corresponds to the benchmark term adopted by the AER. In this context, it is inappropriate to calculate the DRP for an entire portfolio with reference only to the 10 year risk free rate.[387] This notwithstanding, the issues raised by the EUCV—for example, that the current DRP method does not reflect the full spectrum of debt options utilised by NSPs—warrant broader consideration. This is consistent with the Tribunal's recommendation to undertake a public consultation process before selecting an alternative DRP methodology.[388] For these reasons, the AER has commenced an internal review into alternatives to the Bloomberg fair value curve. The AER will advise of a public consultation process on the development of an alternative in due course.

4.3.7 Gearing ratio

The gearing ratio is the ratio of the value of debt to total capital (that is, both debt and equity) and is used to weight the costs of debt and equity when formulating the overall rate of return. Under rule 87 of the NGR, the AER needs to determine the gearing ratio based on the assumption that the service provider meets the benchmark level of efficiency.

APA GasNet proposed a gearing ratio of 60:40 (that is, 60 per cent debt).[389] The AER accepts this gearing ratio because it is supported by relevant available empirical evidence.[390] Additionally, as the AER noted in its decision for ETSA SA, when determining this gearing ratio the AER included gas businesses as close comparators to the benchmark electricity business. The AER considers that this reasoning also holds in reverse—that is, electricity businesses are close comparators for the benchmark efficient gas business.[391] For the reasons outlined in the AER's WACC review, the AER still considers that a gearing ratio of 60:40 will to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers.[392]

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386 EUCV, *Victorian gas transmission revenue reset, Application from APA Gasnet, A response by EUCV*, June 2012.

387 For example, the DRP for seven year debt should be determined with reference to the seven year risk free rate.

388 Australian Competition Tribunal, *Application by Envestra Limited (No 2)* [2012] ACompT 3, 11 January 2012, paragraphs 95, 118, 120–121; see also Australian Competition Tribunal, *Application by APT Allgas Energy Ltd* [2012] ACompT 5, 11 January 2012.

389 APA GasNet, *Access arrangement submission*, 31 March 2012, p 133, 134.

390 AER, *Final decision - WACC Review*, 1 May 2009, p. 126.

391 AER, *Draft decision: Envestra Ltd Access arrangement proposal for the SA gas network 1 July 2011 – 30 June 2016*, February 2011, p. 93.

392 NGL, s23. AER, Final decision: Electricity transmission and distribution network service providers: Review of the weighted average cost of capital (WACC) parameters, 1 May 2009, p. 116-126.

4.3.8 Forecast inflation

The AER accepts APA GasNet's proposed methodology for estimating forecast inflation. APA GasNet's proposed methodology is consistent with that adopted by the AER in previous regulatory decisions. APA GasNet recognised that inflation forecasts are likely to change over time, it adopted an indicative inflation forecast of 2.5 per cent in the access arrangement proposal, being the mid-point of the RBA inflation target.

In this draft decision, the AER updates the RBA short term inflation forecasts resulting in an indicative inflation forecast of 2.50 per cent. This is shown in Table 4.6.

Table 4.6 AER inflation forecast (per cent)

	2013	2014	2015–2022	Geometric average
Forecast inflation	2.50 [a]	2.50 [a]	2.50	2.50

Source: RBA, Statement on Monetary Policy, August 2012, p. 67.
Notes: (a) The RBA published a range of 2-3 per cent for its 2013 and 2014 forecast inflation. The AER has selected the mid-point of 2.5 per cent for the purposes of this draft decision.

For the final decision, the AER will again update the RBA's short term inflation forecasts based on the most recent RBA Statement on Monetary Policy at the time of the final decision.

4.3.9 Reasonableness checks on overall rate of return

The AER considers the approach in this decision provides a reasonable estimate of the benchmark WACC. The AER recognises the overall rate of return in this decision is lower than previous decisions. However, there is no single robust methodology for estimating the overall rate of return. The AER's reasonableness checks suggest this overall rate of return broadly accords with market expectations.

The overall rate of return is unobservable. The AER assesses overall rate of return using market data and finance theory. Techniques available to assess the overall rate of return can produce a range of plausible results. Each of these techniques has weaknesses that prevent them from being given significant weight. Nevertheless, they do provide a useful reasonableness check for the AER's primary approach. The AER examined:

- assets sales
- trading multiples
- broker WACC estimates
- recent decisions by other regulators
- the relationship between the cost of equity and the cost of debt.

For this draft decision, the AER determines a nominal vanilla WACC of 7.16 per cent. This is based on a cost of equity of 7.78 per cent, a cost of debt of 6.74 per cent and a gearing level

of 60 per cent. The cross checks listed above suggested this regulated rate of return is not unreasonable:

- Recent regulated assets have generally been sold at a premium to the RAB. In addition, Grant Samuel and brokers' reports identified recent RAB trading multiplies are consistently greater than one (averaging around 1.2). This evidence provides the AER with a degree of confidence that its current approach in calculating the rate of return is reasonable.

- The overall rate of return does fall below the range of estimates found in broker reports (7.76-10.02 per cent). However, the AER notes broker WACC technique is subject to known limitations and inherent imprecision. Further, broker WACC estimates do not demonstrate the overall rate of return is unreasonable.

- This overall rate of return is in line with recent regulatory decisions made by other Australian regulators (6.45-9.08 per cent).

- Consistent with previous decisions, the AER determined cost of equity is greater than the cost of debt for this draft decision.

Appendix B explores each of return reasonableness check techniques in detail.

4.3.10 Rate of return for speculative capex account

Rule 84 provides for the inclusion of a speculative capex account in a full access arrangement. Under rule 84, an access arrangement may provide that the amount of non-conforming capex, to the extent not recovered through a surcharge or capital contribution, may enter into the speculative capital expenditure account. While in the account, the capex increases at a rate determined by the AER. If at any time the type or volume of services changes so that capex becomes conforming, then the value of the conforming capex plus the accrued return is rolled into the RAB at the commencement of the next access arrangement period.[393] Rule 84 is a full discretion provision.

APA GasNet has proposed a rate of return on the speculative capital expenditure account, which would adopt all the regulated WACC parameters, except equity beta where it proposes an equity beta of 1.2 instead of 0.8. APA GasNet proposed the higher return to:

- compensate for the additional risk to the gas network that the non-conforming investment may never result in any additional revenue; and

- incentivise it to undertake prudent non-conforming investments.[394]

BHP Billiton (BHPB) and the Energy Users Coalition of Victoria (EUCV) made submissions on APA GasNet's proposal for a higher rate of return on its speculative capex account. These users held different views on the appropriate rate of return for APA GasNet's speculative capex account.

The EUCV submitted that speculative investment might face greater risk and that a higher equity beta is reasonable. It considered that the equity beta should be set between 0.8 and

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393 NGR, r. 84

394 APA GasNet, Access arrangement submission, 31 March 2012, p. 153.

1.0.[395] In contrast, BHPB considered that APA GasNet did not provide sufficient information to support its argument that the rate should be higher to compensate it for additional risk.[396]

Consistent with r 84, the AER's draft decision is to set a return on the speculative capex account after the capex has been made—as flagged in section 3.4.5. Different speculative projects may have different risks, and hence it may be appropriate to set different returns. The AER considers that aligning the rate of return with the risk profile of the particular speculative capex will promote efficient investment in services. As APA GasNet has not proposed or identified any speculative capex that might be appropriate to add to a notional fund, the AER does not consider that it needs to set a rate of return on the speculative capex account at this time. Notwithstanding this draft decision, the following considerations on the proposed rate of return will be relevant at the time that speculative capex is made and identified for inclusion in the account. At that time the AER will set a rate of return appropriate to that investment. The AER would not accept APA GasNet's proposal for a 1.2 equity beta for equity for its speculative capex account on the basis of the information provided by APA GasNet in its initial access arrangement proposal. This is because:

- APA GasNet has not provided a strong rationale for why 1.2, specifically, is an appropriate equity beta for its speculative capex account. The justification presented by APA GasNet for this quantification was based on a misrepresentation of its own proposal.
- APA GasNet has not proposed or identified any speculative capex that would be added to the account and therefore it is not clear to the AER that investment in the speculative capex account faces greater risk such as to warrant a different equity beta than provided for reference services.
- Even if investment in the speculative capex account does face greater risk, it is not clear to the AER that the risk is driven by systematic risk factors. The Sharpe Lintner CAPM has been proposed by APA GasNet and accepted by the AER as the well accepted model to estimate the cost of equity component of the rate of return. Under the Sharpe Lintner CAPM, only systematic risk is compensated for.

The AER does not consider that APA GasNet has justified a return on the speculative capex account of the WACC with specifically a 1.2 beta. BHPB also holds this view. BHPB considered that APA GasNet's argument that the higher rate should be determined by applying an equity beta of 1.20 appeared to be arbitrary, and was not supported by any evidence.[397] The AER agrees that there should be some analysis or reasonable basis to support a proposed return. Otherwise, it is unlikely that any return set would accord with the NGO.[398]

APA GasNet justified its proposed 1.2 equity beta for speculative capex on the basis that:

> ... APA GasNet submits that the beta applicable to its business should be 1.0. In order for the rate of return on speculative investment to reflect the greater risk relative to the core pipeline, it is necessary to adopt a beta value greater than 1.0. APA GasNet proposes

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395 EUCV, *A response by Energy Users Coalition of Victoria*, June 2012, p. 62.

396 BHPB, *Response to the Proposed Revisions to the Victorian Transmission System Access Arrangement*, 29 June 2012, p. 18.

397 BHPB, *Response to the Proposed Revisions to the Victorian Transmission System Access Arrangement*, 29 June 2012, p. 18.

398 NGL, s. 24.

> that the rate of return on speculative investment should be based on a beta value of 1.2.[399]

The basis used by APA GasNet to support 1.2 beta is a misrepresentation of its proposal. The above reasoning assumed APA GasNet proposed a 1.0 equity beta for reference services. However, it actually proposed a beta of 0.8.[400] Further, the AER has discussed in section 4.3.5 that the appropriate beta for APA GasNet is 0.8. Accordingly, as APA GasNet's only criteria for its speculative capex equity beta is that it must be greater than that for references services, then 0.85, 0.9, 1.0 and 1.1 are equity betas that could also have been suggested. APA GasNet's arguments provide no rationale why 1.2 in particular is appropriate.

More generally, APA GasNet's basis for receiving a higher return on speculative capex is to compensate for the risk that the non-conforming investment may never result in any additional revenue.[401] Putting aside the fact that no speculative capex has been identified for inclusion in the account, the AER, has not been provided with any information to suggest that capex that might enter the account is any different to APA GasNet's other capex. Thus, on the information provided by APA GasNet to date, the AER is not convinced that setting a return higher than the WACC would promote efficient investment in, natural gas services for the long term interests of consumers of natural gas with respect to price.[402]

During the WACC review, the AER considered whether volume risk was a type of systematic risk. It concluded that it is arguable as to whether volume risk is a systematic risk factor.[403] This is important because APA GasNet made an adjustment to the beta parameter of the WACC to determine its proposed return on the account. However, the WACC compensates a network service provider for only systematic risk. APA GasNet's proposal to the AER does not make it clear that speculative capex has greater systematic risk than that for references services.

While the AER will not set a return on the speculative capex account until such time as APA GasNet identifies particular capex to be included in the account, at that time APA GasNet would need to provide more analysis and explanation to justify a return higher than that for reference services.

4.4 Revisions

The AER proposes the following revisions to make APA GasNet's access arrangement proposal acceptable:

Revision 4.1:

Make all necessary amendments to reflect the AER's draft decision on the rate of return on capital for the access arrangement period, as set out in Table 4.1 of this attachment.

399 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 153, 154.
400 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 148.
401 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 153.
402 NGL, section 23.
403 AER, *Explanatory statement: WACC review final decision*, December 2008, p. 194.

5 Depreciation

When determining the total revenue for APA GasNet, the AER must decide on the depreciation for the projected capital base (or return of capital).[404] Regulatory depreciation is used to model the nominal asset values over the 2013–17 access arrangement period and the depreciation allowance in the total revenue requirement. The AER's draft decision on APA GasNet's annual regulatory depreciation allowances is outlined in this attachment.[405] The AER's consideration of specific matters that affect the estimate of regulatory depreciation over the 2013–17 access arrangement period is also outlined in this attachment. These include:

- the standard economic lives for depreciating new assets associated with forecast capex
- the remaining economic lives for depreciating existing assets in the opening capital base.

5.1 Draft decision

The AER approves APA GasNet's proposal to use the straight-line method to calculate the regulatory depreciation allowance as set out in the post-tax revenue model (PTRM). However, the AER does not approve APA GasNet's proposed regulatory depreciation allowance of $157.5 million ($nominal) for the 2013–17 access arrangement period.[406] This is because of the AER's required adjustments for this draft decision. These include:

- the proposed approach for modelling the return of capital (and return on capital) over the 2013–17 access arrangement period
- the proposed remaining economic lives as at 1 January 2013.

The AER does not accept APA GasNet's proposed approach for modelling the return of capital (and return on capital) over the 2013–17 access arrangement period. APA GasNet proposed to change its depreciation approach to one that brings forward the cash flow it receives from customers. The AER considers that APA GasNet's proposed forecast depreciation approach does not meet the requirements of the NGR regarding the promotion of efficient growth of the market for reference services.[407]

The AER approves APA GasNet's proposed standard economic lives assigned to each of its asset classes for the 2013–17 access arrangement period. This is because they are consistent with the ACCC's approved standard economic lives for the 2008–12 access arrangement period.

The AER accepts APA GasNet's proposed weighted average method to calculate the remaining economic lives as at 1 January 2013. In accepting the weighted average method, the AER has updated APA GasNet's remaining economic lives as at 1 January 2013 to reflect the revised capital base roll forward for the 2008–12 access arrangement period.

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404 NGR, r. 76(b).

405 Regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the annual inflation indexation (positive) on the projected capital base.

406 APA GasNet, *Access arrangement information*, March 2012, p. 10.

407 NGR, r. 89(1)(a).

The AER's draft decision regarding other components of APA GasNet's proposal also affect the calculation of the regulatory depreciation allowance. These are discussed in other attachments and include:

- the projected opening capital base (attachment 2)
- forecast net capex (attachment 3)
- forecast inflation (attachment 4).

The AER's draft decision on APA GasNet's total regulatory depreciation allowance over the 2013–17 access arrangement period is $56.2 million ($nominal) as shown in Table 5.1. This represents a reduction of $101.3 million ($nominal) or 64.3 per cent of APA GasNet's proposed total regulatory depreciation allowance.

Table 5.1 AER's draft decision on APA GasNet's depreciation allowance ($million, nominal)

	2013	2014	2015	2016	2017	Total
Straight-line depreciation	24.6	26.0	29.5	31.2	29.8	140.9
Less: indexation on opening capital base	15.3	15.8	17.7	18.0	18.0	84.8
Regulatory depreciation	9.3	10.2	11.8	13.2	11.7	56.2

Source: AER analysis.

5.2 APA GasNet's proposal

APA GasNet proposed a forecast regulatory depreciation allowance of $157.5 million ($nominal) over the 2013–17 access arrangement period, as set out in Table 5.2. To calculate the depreciation allowance, APA GasNet proposed: [408]

- to depreciate a historical cost capital base using straight-line depreciation. APA GasNet's proposed approach results in no indexation of the capital base for inflation. Therefore, the estimate of straight-line depreciation would match the regulatory depreciation allowance because there is no offsetting indexation adjustment.
- standard economic lives as set out in its proposed PTRM for depreciating new assets associated with forecast capex.
- remaining economic lives as set out in its proposed PTRM for depreciating existing assets in the opening capital base.

[408] APA GasNet, *Access arrangement submission*, March 2012, p. 127-129.

Table 5.2 APA GasNet's proposed depreciation allowance ($million, nominal)

	2013	2014	2015	2016	2017	Total
Depreciation allowance	26.7	27.3	34.5	35.5	33.5	157.5

Source: APA GasNet, *Access arrangement information*, March 2012, p. 10.

5.3 Assessment approach

In its access arrangement proposal, APA GasNet must provide a forecast of depreciation for the 2013–17 access arrangement period, including a demonstration of how the forecast is derived on the basis of the proposed depreciation method.[409] The depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff. The depreciation schedule may consist of a number of separate schedules, each relating to a particular asset or class of asset.[410] In making a decision on the proposed depreciation schedule, the AER is to assess the compliance of the proposed depreciation schedule with the depreciation criteria set out in the NGR.[411] The AER must also take into account the depreciation schedule approved in the 2008–12 access arrangement period,[412] the NGO and the revenue and pricing principles.[413]

The AER's discretion under the depreciation criteria is limited.[414] The depreciation criteria state that the depreciation schedule should be designed:

- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services[415]
- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets[416]
- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets[417]
- so that (subject to the rules about capital redundancy), an asset is depreciated only once[418]

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409 NGR, r. 72(1)(c)(ii).
410 NGR, rr. 88(1) and 88(2).
411 NGR, r. 89.
412 NGR, schedule 1, r. 5(1)(d).
413 NGL, s 28; NGR r. 100(1). The NGO is set out in NGL, s. 23. The revenue and pricing principles are set out in NGL, s. 24.
414 NGR, rr. 89(3) and 40(2). The example provided in r. 40(2) states: The AER has limited discretion under r. 89. Rule 89 governs the design of a depreciation schedule. In dealing with a full access arrangement submitted for its approval, the AER cannot, in its draft decision, insist on change to an aspect of a depreciation schedule governed by r. 89 unless the AER considers the change is necessary to correct non-compliance with a provision of the Law or an inconsistency between the depreciation schedule and the applicable criteria. Even though the AER might consider change desirable to achieve more complete conformity between the depreciation schedule and the principles and objectives of the Law, it would not be entitled to give effect to that view in the decision making process.
415 NGR, r. 89(1)(a).
416 NGR, r. 89(1)(b).
417 NGR, r. 89(1)(c).

- so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs[419]

The depreciation criteria also state that to comply with the rule regarding efficient growth in the market for reference services, a substantial amount of depreciation may be deferred.[420]

Regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the annual inflation indexation (positive) on the projected capital base. The AER's PTRM employs the straight-line method for calculating depreciation and the regulatory depreciation allowance is an output of the PTRM.[421] The AER considers that the straight-line method satisfies the depreciation criteria.[422] This is because the straight-line method smooths changes in the reference tariffs, promotes efficient growth of the market, allows assets to be depreciated only once and over its economic life, and allows for a service provider's reasonable needs for cash flow. APA GasNet used a modified version of the AER's PTRM for calculating its forecast depreciation. The AER has assessed APA GasNet's regulatory depreciation allowance by analysing APA GasNet's proposed inputs to the PTRM for calculating depreciation. These inputs include:

- the opening capital base as at 1 January 2013
- the forecast net capex in the 2013–17 access arrangement period
- the forecast inflation rate for the 2013–17 access arrangement period
- the standard economic life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the 2013–17 access arrangement period
- the remaining economic life for each asset class—used for calculating the depreciation of existing assets associated with the opening capital base as at 1 January 2013.

The AER's determinations affecting the first three inputs in the above list are discussed elsewhere: opening capital base (attachment 2), forecast net capex (attachment 3) and forecast inflation (attachment 4). The AER's decision on the required amendments to APA GasNet's proposed regulatory depreciation allowance reflects the AER's determinations on these building block components. The AER's assessment approach on the remaining two inputs in the above list is set out below.

In general, the AER considers that consistency in the standard economic life for each asset class across access arrangement periods will allow reference tariffs to vary smoothly over time. This will promote efficient growth in the market for reference services.[423] The AER's standard method for determining the remaining economic lives is the weighted average

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418 NGR, r. 89(1)(d).
419 NGR, r. 89(1)(e).
420 NGR, r. 89(2).
421 The AER's PTRM was developed based on the post-tax building block approach set out in the National Electricity Rules. Given that APA GasNet has proposed the post-tax building block approach for its access arrangement, the PTRM can be used to calculate the revenue requirement.
422 NGR, r. 89.
423 NGR, r. 89(1)(a).

method.[424] The weighted average method rolls forward the remaining economic life for an asset class from the beginning of the earlier access arrangement period. This approach reflects the mix of assets within that asset class, when they were acquired over that period (or if they were existing assets at the beginning), and the remaining value of those assets (used as a weight) at the end of the period. The AER will assess the outcomes of other approaches against the outcomes of this standard approach.

5.4 Reasons for draft decision

The AER's draft decision on APA GasNet's regulatory depreciation allowance is $56.2 million ($nominal) over the 2013–17 access arrangement period.

The AER does not accept APA GasNet's proposed regulatory depreciation allowance of $157.5 million ($nominal) for the 2013–17 access arrangement period. This is mainly because APA GasNet's proposed forecast depreciation approach does not meet the requirement of the NGR regarding the promotion of efficient growth of the market for reference services.[425]

The AER approves APA GasNet's proposed standard economic lives and the proposed weighted average method to calculate the remaining economic lives as at 1 January 2013. However, the AER has updated APA GasNet's remaining economic lives as at 1 January 2013 to reflect thes revised capital base roll forward for the 2008–12 access arrangement period.

In addition, the AER has made changes to other building block components of APA GasNet's proposal that impact on the proposed regulatory depreciation allowance.

5.4.1 Change of depreciation approach

The AER does not accept APA GasNet's proposed forecast depreciation approach. The AER considers that it would not promote efficient growth of the market for reference services in accordance with the NGR.[426] The AER is concerned with the incentives created by APA GasNet's proposed approach and the potential for unnecessarily high prices in the short to medium term. There appear to be no offsetting benefits to users arising from the proposed approach that could be considered to be in customers' long term interests. Nor does the AER consider that continuation of the current approach would impinge upon APA GasNet's reasonable cash flow needs consistent with the NGR.[427]

APA GasNet proposed to change its method for modelling the return of capital (and return on capital) over the 2013–17 access arrangement period from that used previously in the 2008–12 access arrangement. Its previous approach was consistent with the AER's standard approach to modelling the returns. APA GasNet's proposed approach has not been adopted

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424 The AER considers this depreciation method to be a generally superior approach. Its reasons were outlined in its decision on the RFM for electricity transmission network service providers. See AER, *Explanatory statement, Proposed amendment, Electricity transmission network service providers, Roll forward model*, August 2010, pp.5–6.

425 NGR, r. 89(1)(a).

426 NGR, r. 89(1)(a).

427 NGR, r. 89(1)(e).

for (or proposed by) any business regulated by the AER to date. Under APA GasNet's proposal:

- The opening capital base is based on historical costs and is not indexed for inflation over the 2013–17 access arrangement period. In contrast the AER's approach does index the capital base by the forecast rate of inflation when forecasting the revenue requirements (and subsequently indexed by actual inflation during the roll forward of the capital base in future access arrangement reviews).

- The return on capital for each year is determined based on multiplying the nominal WACC by the historical cost value of the opening capital base of the relevant year.

- The regulatory depreciation allowance in each year is equal to the straight-line depreciation amount. Because the capital base is not indexed for inflation, there is no required offsetting inflation adjustment to the depreciation allowance (that is, there is no negative depreciation/revaluation gain to be accounted for) as occurs under the AER approach.

The change in approach alters the profile of APA GasNet's cash flow over the useful life of its assets (for both new and existing assets). Compared to the current approach, the proposed approach brings forward cash flows for APA GasNet by requiring customers to pay a greater proportion of an asset's costs earlier in its life (or remaining economic life in the case of existing assets).[428]

APA GasNet did not offer any explanation for its change of approach in its proposal. APA GasNet stated that its proposal to adopt a historical cost capital base and apply the straight-line method for depreciation to this capital base would result in revenue recovery that is net present value (NPV) neutral over the life of its assets, albeit with a different profile of cash flows.[429] It used a simplified example to demonstrate this. In response to a request from the AER for further explanation for its proposed change of approach, APA GasNet stated that its proposal complies with the NGR[430] and therefore no further explanation is necessary.[431] In a subsequent meeting with APA GasNet staff on various matters, bringing forward cash flows was suggested by APA GasNet staff as a key motivation for the change of approach.[432] APA GasNet indicated that it anticipated a lower rate of return (given recent AER decisions) for the 2013–17 access arrangement period than for the 2008–12 access arrangement period, and that the change of approach offers a legitimate means for APA GasNet to maintain its cash flows. APA GasNet reiterated that it did not consider it was in violation of any NGL/NGR provisions on depreciation.[433]

The AER does not consider that continuation of the current depreciation approach would impinge upon APA GasNet's reasonable cash flow needs consistent with the NGR.[434] APA GasNet's financing, non-capital and other costs are met by the various other building blocks of APA GasNet's total revenue requirement. Further, the AER can smooth the forecast

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428 The costs of an asset over its useful life will include both the return on, and return of, capital.
429 APA GasNet, *Access arrangement submission*, March 2012, p. 128.
430 NGR, rr. 73 and 88.
431 APA GasNet, *Response to AER Information Request No. 12*, 20 June 2012.
432 A meeting between AER and APA GasNet staff on 12 July 2012.
433 APA GasNet, *E-mail, Vic GAAR - GasNet - 12 July meeting re depreciation profile*, 31 July 2012.
434 NGR, r. 89(1)(e).

revenues over the 2013–17 access arrangement period through the X factors that are set in its decision.

The AER considers that APA GasNet's proposed approach could result in a revenue profile that is effectively NPV neutral over the life of the assets, just as the AER's standard approach does. However, the AER considers that APA GasNet's proposed approach does not comply with the NGR, which states that reference tariffs should be determined in a way to promote the efficient growth in the market for reference services.[435] There are several reasons to expect APA GasNet's proposal will inhibit efficient growth of the market. These include:

- Inefficient asset utilisation–Depreciation schedules which provide for price paths that encourage inefficient utilisation of assets, that is, under or over utilisation of the asset at different times in its life cycle.
- Unnecessary high prices in the short to medium term–These could discourage gas usage and downstream investment.
- Inefficient management of assets–Incentives to manage assets based on reasons other than the efficient provision of reference services.

Each of these reasons is discussed in greater detail below.

Inefficient asset utilisation

The AER considers that there are three possible methods for determining revenue profiles using straight-line depreciation and asset lives based on their expected usefulness:

3. Applying a real WACC to a capital base indexed for inflation to determine the return on capital and applying straight-line depreciation to the indexed capital base to determine the return of capital.
4. Applying a nominal WACC to a capital base indexed for inflation to determine the return on capital and applying straight-line depreciation to the indexed capital base, and an adjustment for the inflation of the capital base, to determine the return of capital (the AER's standard approach)
5. Applying a nominal WACC to a capital base at historical costs to determine the return on capital and applying straight-line depreciation to the historical cost capital base to determine the return of capital (APA GasNet's proposal).

All three methods essentially lead to a NPV revenue profile over the life of the asset.[436] Some Australian jurisdictional regulators have adopted the first approach in their regulation of network industries.[437] However, the AER is not aware of any regulators adopting the approach in APA GasNet's proposal.

The first and second approaches above deliver the same cash flow outcomes. The cash flows of these methods lead to a relatively flat revenue profile which is expected to generate relatively stable prices, and a relatively even utilisation of the asset over its life. In contrast,

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435 NGR, r. 89(1)(a).

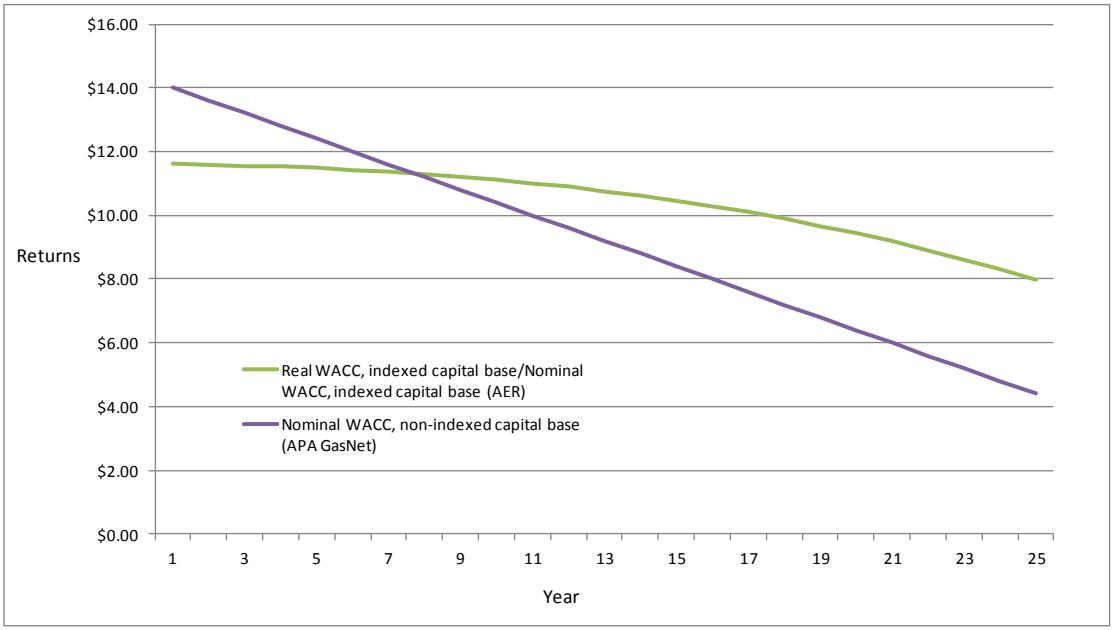
436 This observation is made from a business perspective. For customers the outcomes could be quite different in NPV terms if the customers of today are not the same as those in the future.

437 For example, IPART used this approach for its NSW Electricity Distribution Pricing for 2004/05 to 2008/09.

the third method proposed by APA GasNet front loads cash flows and consequently produces a steeper revenue profile leading to higher prices early in the asset's life, and lower prices later in the asset's life.[438]

Figure 5.1 shows the revenue profiles derived from the three methods by expanding on the example provided by APA GasNet.[439] It shows recovery of revenue over the assumed entire useful life of an asset of 25 years, with a real WACC of 7.32 per cent, CPI of 2.5 per cent and nominal WACC of 10 per cent. The cost of the asset is initially $100.

Figure 5.1 Forecast revenue profiles under different approaches to capital base indexation



The AER considers that APA GasNet's approach is likely to lead to inefficient growth of the market if it unnecessarily discourages demand early in an asset's life (due to the relatively higher prices at this time) and then encourages greater use near the end of its life (due to relatively lower prices). The outcomes under APA GasNet's proposed approach are at odds with what would be expected by efficient growth of the market. In an efficient market relatively lower prices could be expected initially to encourage use of new assets and to attain economies of scale and scope on the network. While APA GasNet's network may be relatively mature, the change of approach would also affect any future extensions and expansions to the network where demand would be less mature with ongoing implications for customers. To this end, the NGR recognises that a substantial proportion of depreciation may have to be deferred to encourage utilisation.[440]

Further, as an asset nears the end of its useful life it would become more susceptible to breakdowns. In this case, over utilisation might be encouraged through inefficiently low prices. Replacement may be required sooner than otherwise necessary in such circumstances.

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438 This assessment assumes inflation is positive.

439 APA GasNet, *Access arrangement submission*, March 2012, p. 129.

440 NGR, r. 89(2).

In its submission, AGL set out its views on a desirable price path. It stated that any significant changes in network costs should be gradual and incremental. AGL suggested that any steep rate of change in network costs should be managed through the access arrangement.[441] The AER considers that APA GasNet's proposed depreciation approach, by encouraging a steeper price path, goes against these customer interests.

Unnecessary high prices in the short to medium term

APA GasNet's proposed approach would represent a switch away from the AER's standard approach. Over the 2013–17 access arrangement period and based on APA GasNet's proposed inputs,[442] APA GasNet would recover $764.5 million in revenues under its proposed approach, compared to $662.9 million if it maintained the AER's approach. This represents a 15.3 per cent increase in revenues over the 2013–17 access arrangement period.

The AER considers that the magnitude of this revenue increase is significant and is likely to cause unnecessary high prices in the short to medium term to customers. This scenario could discourage gas usage and downstream investment. There has been no change in costs to the service provider that would warrant such a price impact.

Even if the additional revenues from the change of approach are offset by falls in other building block components, such as the rate of return and consequently the return on capital, the price impact cannot be ignored. Customers would expect prices to fall if the rate of return and other cost components are reduced. The regulatory regime is not intended to shield a service provider from such reductions. The AER considers the price impact should be measured against this counterfactual, notwithstanding the NGR regarding APA GasNet's reasonable cash flow needs.[443]

The steeper recovery profile of revenues under APA GasNet's approach (as shown above) also means that all future capex will be recovered more quickly. Any step up in capex (regardless of its purpose) will cause a greater step up in revenues than would be the case under the AER's approach. APA GasNet's proposed approach effectively amplifies any step changes in capex for all future periods. The AER does not consider that such an outcome encourages efficient growth in the market for reference services.

In its submission, AGL stated that it aims to ensure customers were not subject to unreasonable steep cost fluctuations and that this depended in large part on the predictability of network costs. AGL submitted that effective management of network cost will encourage the development of long term offers and create opportunities for better financial planning and management.[444] The AER considers that APA GasNet's proposed change of depreciation approach is not consistent with these customer interests.

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441 AGL, Submission to the AER: APA GasNet access arrangement proposal, 29 June 2012, p. 3.

442 All inputs, such as capex and opex, proposed by APA GasNet were maintained for this calculation. Inputs presented in nominal dollar terms were converted to real dollar terms as required for the AER's PTRM. APA GasNet's model also included an error that applied a half 'nominal' WACC to capex figures that were already in nominal end of year values. A half 'real' WACC should have been applied. This error is corrected by the adoption of the AER approach.

443 NGR, r. 89(1)(e).

444 AGL, Submission to the AER: APA GasNet access arrangement proposal, 29 June 2012, p. 3.

Inefficient management of assets

APA GasNet's proposed approach leads to a lower depreciated historical cost valuation of the capital base relative to a continuation of the AER's approach. This may create an incentive for APA GasNet to replace assets sooner than may otherwise be the case, so as to be able to earn a return on the replacement cost of a new asset. Such an incentive is at odds with the efficient provision of reference services. The significance of this incentive will depend on other factors such as the approved rate of return. Customers are concerned that assets which are depreciated too soon could be replaced before it is really necessary.[445] The AER considers the creation of such an incentive is not consistent with efficient development of the market or the NGO with regards to the promotion of efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers.

APA GasNet may also be encouraged to sell assets where the potential sale price exceeds the depreciated historical cost of the capital base. This incentive is reduced if the capital base is indexed as under the AER's approach. Such an incentive need not deter efficient development of the market, although it is not an incentive based on the consideration of customers' long term interests.

5.4.2 Standard economic lives and remaining economic lives

The AER approves APA GasNet's proposed standard economic lives assigned to each of its asset classes for the 2013–17 access arrangement period. The AER considers that the proposed standard economic lives are consistent with the ACCC's approved standard economic lives for the 2008–12 access arrangement period.[446] APA GasNet did not propose any new asset classes for the 2013–17 access arrangement period.

The AER accepts APA GasNet's proposed weighted average method to calculate the remaining economic lives as at 1 January 2013. In accepting the weighted average method, the AER has updated APA GasNet's remaining economic lives as at 1 January 2013 to reflect the AER's adjustments to APA GasNet's remaining economic lives as at 1 January 2008 in the RFM.[447] The RFM requires the remaining economic lives as at 1 January 2008 for each asset class as inputs. The AER has reviewed APA GasNet's calculation of the weighted remaining economic lives as at 1 January 2008.[448] It found that the remaining economic lives as at 1 January 2008 in the proposed RFM reflected the remaining economic lives as at 1 January 2007. The AER also identified an error in APA GasNet's formulae used to calculate the remaining economic lives as at 1 January 2007. Therefore, the AER has corrected the remaining economic lives as at 1 January 2007 and rolled them forward to 1 January 2008 by taking into account actual capex for 2007. These adjustments result in slightly longer remaining economic lives as at 1 January 2008 compared to those in APA GasNet's proposed RFM.

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445 This concern is reflected in a recent rule change proposal to the AEMC to require fully depreciated assets that are still useful to remain in service. AEMC reference: ERC0136.

446 ACCC, *Final decision: GasNet Australia—revised access arrangement 2008–12*, 30 April 2008, pp. 56-60.

447 APA GasNet submitted a revised capital base roll forward to the AER on 10 July 2012. However, it did not revise the remaining economic lives as at 1 January 2008 which are required inputs for the RFM. See APA GasNet, *Response to AER information request - Revised models*, 6 July 2012, p.1; APA GasNet, *Revised RFM*, 10 July 2012.

448 APA GasNet, *Response to AER information request No. 7*, 6 June 2012, p. 2 and '2006 RABv2 - weighted lives.xls' model.

The AER's adjustments to APA GasNet's opening capital base to take into account asset disposals also have a consequential impact to the remaining economic lives as at 1 January 2013 (see attachment 2).

The AER's draft decision on APA GasNet's standard economic lives and remaining economic lives[449] for each of its asset classes for the 2013–17 access arrangement period is set out in Table 5.3.

Table 5.3 AER's draft decision on APA GasNet's standard and remaining economic lives as at 1 January 2013 (years)

Asset classes	AER's approved standard economic life	APA GasNet's proposed remaining economic life	AER's approved remaining economic life
Pipelines	55	26.4	29.3
Compressors	30	21.5	23.6
City gates and field regulators	30	23.8	24.0
Odourant plants	30	23.6	22.3
Gas quality	10	0.0	0.9
Other	5	4.1	4.1
General buildings	60	33.5	34.5
General land	n/a	n/a	n/a

Source: APA GasNet, *PTRM*, March 2013; AER analysis.

5.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 4.1: Make all necessary amendments to reflect the AER's draft decision on the proposed forecast regulatory depreciation allowance for the 2013–17 access arrangement period, as set out in Table 5.1.

Revision 4.2: Make all necessary amendments to reflect the AER's draft decision on the proposed method for modelling the return of capital (and return on capital) for the 2013–17 access arrangement period, as set out in section 5.4.1.

[449] At the time of this draft decision the roll forward of APA GasNet's capital base includes capex estimate for 2011 and 2012. The AER requires APA GasNet's revised proposal to submit actual capex for 2011. APA GasNet may also include an updated capex estimate for 2012 in its revised proposal. These capex figures are used to calculate the weighted average remaining tax asset lives of the assets. Therefore, the AER may recalculate APA GasNet's remaining tax asset lives using the method approved in this draft decision to reflect actual 2011 capex and updated 2012 capex estimate for the final decision.

Revision 4.3: Make all necessary amendments to reflect the AER's draft decision on the remaining economic lives as at 1 January 2013, as set out in Table 5.3.

6 Operating expenditure

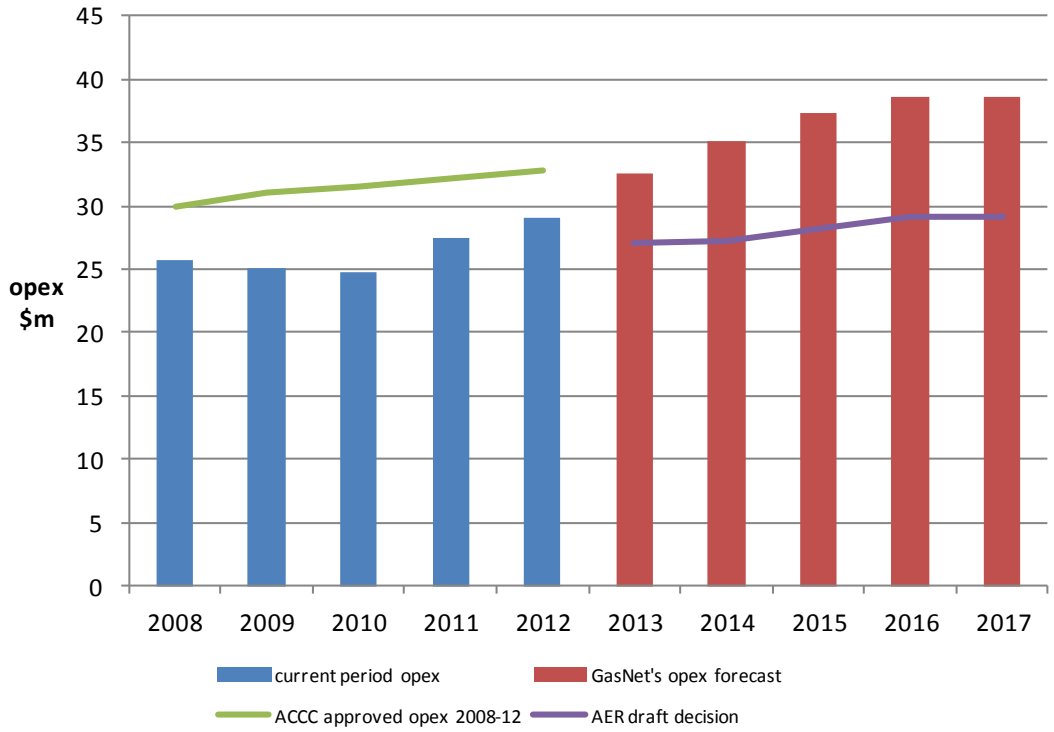
6.1 Draft decision

The AER's draft decision is not to approve a forecast of opex of $182.2 million ($2012) for the 2013–17 access arrangement period for APA GasNet. The AER is not satisfied that APA GasNet's forecast of opex for the 2013–17 access arrangement period complies with the opex criteria and the criteria for forecasts and estimates.[450]

The AER instead considers a forecast opex of $140.6 million ($2012) complies with the criteria governing opex and the criteria for forecasts and estimates.[451]

Figure 6.1 shows how the AER's draft decision compares to APA GasNet's proposal, its opex in the 2008–12 access arrangement period, and the opex approved by the ACCC for the 2008–12 access arrangement period.

Figure 6.1 Comparison of APA GasNet's historical and forecast opex, and AER draft decision ($million, 2012)



Source: APA GasNet's RIN submission. Note that figures from 2011 onwards are forecasts.

Table 6.1 sets out the AER's draft decision on APA GasNet's opex allowance for the 2013–17 access arrangement period.

[450] NGR, rr. 74, 91.
[451] NGR, rr. 71, 91.

Table 6.1 Comparison of APA GasNet's proposal, and AER draft decision ($million, 2012)

	2013	2014	2015	2016	2017	Total
APA GasNet proposed	32.58	35.15	37.39	38.56	38.56	182.25
AER draft decision	27.03	27.30	28.15	29.06	29.07	140.61
Difference	–5.55	–7.85	–9.24	–9.50	–9.49	–41.63

Source: AER analysis.

6.2 APA GasNet's proposal

6.2.1 Summary

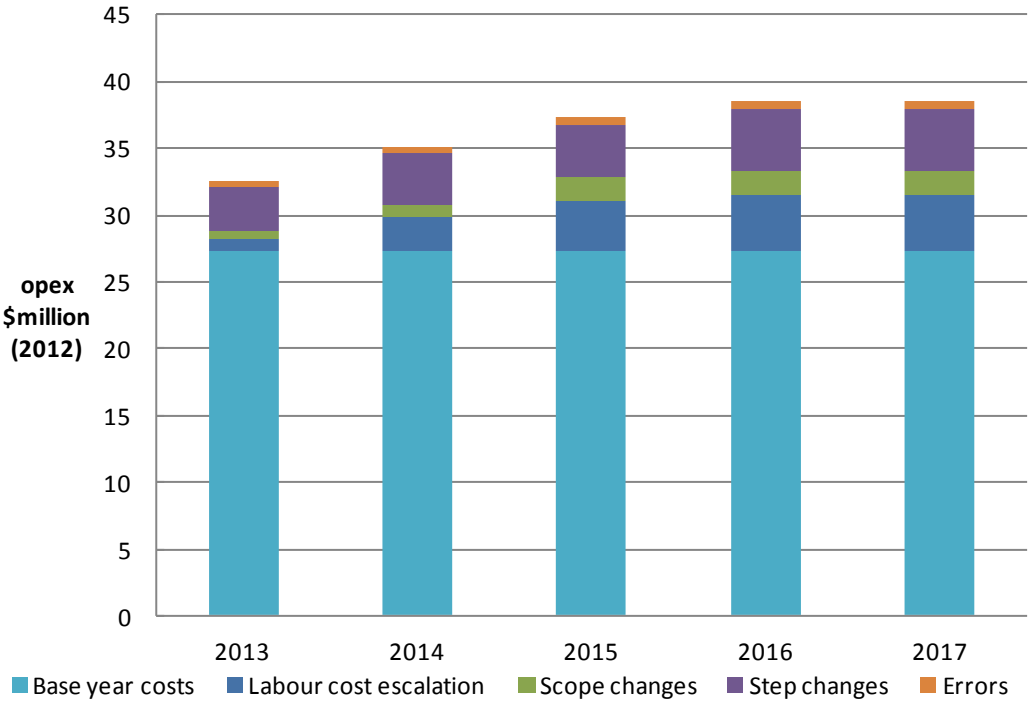
APA GasNet has proposed total opex of $182.2 million ($2012) for the 2013–17 access arrangement period, a 38 per cent real increase compared to the 2008–12 Access arrangement.[452] Figure 6.2 disaggregates APA GasNet's proposals into five different cost categories:

- base year costs
- labour cost escalation
- scope changes
- step changes; and
- errors[453]

[452] APA GasNet, *Access arrangement submission*, March 2012, tables 9.2 and 9.6.

[453] In response to AER information request 6, APA GasNet acknowledged some errors in its submitted proposal. APA GasNet, *Response to AER information request 6*, 8 June 2012.

Figure 6.2 Disaggregation of APA GasNet's proposal ($million, 2012)



Source: APA GasNet RIN submission.

6.2.2 Forecasting methodology

APA GasNet forecast its 2013–17 opex allowance using a base year roll forward methodology.[454] APA GasNet submitted that there is a fixed principle at clause 7.2(h) of its 2008–12 Access arrangement which limits the scope of APA GasNet's discretion in developing its opex forecast, and the AER's discretion in assessing APA GasNet's opex forecast.[455] APA GasNet submitted that it prepared its operating expenditure forecast in accordance with this fixed principle.[456] Clause 7.2(h) of its 2008–12 Access arrangement states:

> In calculating the allowable revenues for operations and maintenance expenditure for the Fourth Access Arrangement Period, the Regulator must:
>
> (i) comply with the requirements of the Code;
>
> (ii) take into account the actual operating costs in 2011, adjusted for the change in forecast operating costs between 2011 and 2012 and, to avoid doubt, not taking into account the efficiency gain (loss) made in 2012;
>
> (iii) take into account forecast changes in workload, taxes, Regulatory Events, insurance premiums and other relevant costs between 2011 and each year of the Fourth Access Arrangement Period; and
>
> (iv) take into account a percentage trend factor.

454 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.
455 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 163.
456 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 163.

On this basis, APA GasNet applied the following methodology to forecast its 2013–17 opex allowance:

- used 2011 as the base year
- adjusted the base year as necessary to reflect changes in policy or approach for operating expenditure
- applied step and scope changes compared to the base year, including nonannual operating expenditure
- applied a percentage trend factor.[457]
- APA GasNet also proposed a number of allowances which supplement the total forecast opex.[458]

6.2.3 Base year

APA GasNet proposed 2011 as the opex base year, in accordance with the fixed principle.[459] APA GasNet proposed base year opex of $27.5 million ($2012).[460]

6.2.4 Base year adjustments

APA GasNet proposed to adjust its base year expenditure for four non-recurrent opex items. Additionally, APA GasNet applied forecast escalation, based on expected escalation over the 2013–17 access arrangement period to arrive at the 2012 expected opex (Table 6.2).[461]

Table 6.2 Base year adjustments proposed by APA GasNet ($million, 2012)

Opex item	
Unadjusted 2011 opex	27.50
Change in capitalisation policy	–1.16
Recalculation of cost allocations between regulated and non-regulated functions	0.30
ESV levy increase	0.09
Insurance costs	0.53
Expected escalation of base year costs in 2012	1.35
Expected opex in 2012	28.61

Source: APA GasNet, Access arrangement proposal.[462]

457 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.
458 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 180.
459 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 166.
460 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.
461 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.
462 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 166.

6.2.5 Step changes

APA GasNet proposed 13 step changes totalling $20.26 million ($2012) over the 2013–17 access arrangement period. The largest forecast step change is attributed to the impact of carbon costs. Table 6.3 provides a summary of the proposed changes. The details of these step changes are discussed in the following sections.

Table 6.3 Proposed step changes for APA GasNet ($million, 2012)

Step change	2013	2014	2015	2016	2017	Total
Environmental net gain obligations	0.12	0.20	0.22	0.22	0.22	0.98
Safety management studies	0.18	0.18	0.18	0.18	0.18	0.90
Hazardous areas dossiers	0.25	0.25	0.25	0.25	0.25	1.25
ESV levy rises	0.03	0.06	0.06	0.06	0.06	0.27
Increases in electricity costs	0.03	0.06	0.10	0.14	0.18	0.51
Carbon costs	2.15	2.28	2.47	2.70	2.82	12.43
Expanded apprenticeship program	0.16	0.24	0.24	0.24	0.24	1.12
Western district depot	0.08	0.08	0.08	0.08	0.08	0.40
Heating facilities	0.20	0.20	0.10	–	–	0.50
Line valve actuator overhauls	–	0.15	0.10	0.04	0.02	0.30
Pressure vessel inspections	0.05	0.03	0.04	–	0.02	0.14
Restore hard standing	0.04	0.08	0.08	0.08	0.08	0.36
Reset costs	–	–	–	0.66	0.44	1.10
Total step changes	**3.29**	**3.81**	**3.91**	**4.65**	**4.59**	**20.26**

Source: APA GasNet, Access arrangement proposal. [463]

6.2.6 Network growth (scope changes)

APA GasNet proposed additional opex of $7.0 million ($2012) for the 2013–17 access arrangement period for opex related to three new compressor stations and six pipeline extensions.[464]

Table 6.4 APA GasNet's proposed scope changes ($million, 2012)

Step change	2013	2014	2015	2016	2017	Total
Compressor Stations	0.45	0.75	1.05	1.05	1.05	4.36
Pipelines	0.19	0.22	0.72	0.76	0.76	2.66

[463] APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 176–7.
[464] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 176.

Total Scope changes	0.64	0.98	1.77	1.81	1.81	7.02

Source: APA GasNet, Access arrangement proposal.

6.2.7 Real cost escalation

After making the appropriate scope and step changes APA GasNet escalated its forecast opex for expected real cost increases, forecast by BIS Shrapnel.[465] APA GasNet escalated its gas network related internal labour using BIS Shrapnel's forecast increases in average weekly ordinary time earnings (AWOTE) for the Victorian electricity, gas and water sector. It escalated general internal labour by forecast increases in the property and business services sector AWOTE and it escalated contract labour by forecast increases in the Victorian construction sector.

All non-labour operating costs have been escalated by CPI.

6.2.8 Allowances

APA GasNet submitted that its forecast opex is supplemented by a number of other allowances to make up the total forecast opex allowance. Table 6.5 provides a summary of the allowances proposed by APA GasNet.

Table 6.5 APA GasNet's proposed allowances ($million, 2012)

Step change	2013	2014	2015	2016	2017	Total
Efficiency carryover mechanism allowance	2.0	0.4	–2.2	–3.3	0.0	–3.1
Reset costs	1.1	0.0	0.0	0.0	0.0	1.1
Debt raising costs	0.4	0.4	0.5	0.5	0.5	2.3
Revenue cap allowance*						
Other Allowances	0.2	0.2	0.2	0.2	0.2	1.0
Total Allowances	**3.7**	**1**	**–1.5**	**–2.6**	**0.7**	**1.3**

Source: APA GasNet, *Access Arrangement Revision Proposal Submission*, 31 March 2012, p. 185.
* APA GasNet submitted that these values will not be available until later in 2012 and 2013.

6.3 Submissions

The Energy Users Coalition of Victoria (EUCV) provided a submission in which it raised concerns regarding the forecast increase in APA GasNet's opex allowance.[466] The EUCV considered that there is no need to adjust APA GasNet's opex for the step changes proposed

[465] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 177.
[466] Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 7.

by APA GasNet. The AER's consideration of specific comments made by the EUCV are discussed in the relevant sections of this attachment.[467]

Australian Power and Gas (APG) made a submission in relation to the direct carbon costs, which APA GasNet indicated it may incur. APG submitted that, as liability on the operational controller (facility) at this point is identified as pertaining to fugitive related emissions APG believes that carbon costs under this Access arrangement should distinctly be categorised as fugitive emission related carbon costs only.[468]

6.4 Assessment approach

The AER has limited discretion in assessing opex.[469] The AER is required to assess APA GasNet's forecast opex to decide whether it is satisfied the forecast opex complies with applicable criteria prescribed by the NGL and NGR.[470] The AER must approve each element of APA GasNet's proposed opex if satisfied it complies with, and is consistent with, the criteria prescribed in the NGL and NGR. As noted in section 6.2 APA GasNet has a fixed principle which limits the scope of APA GasNet's discretion in developing its opex forecast, and the AER's discretion in assessing APA GasNet's opex forecast. The AER has applied fixed principle 7.2.

The AER assessed APA GasNet's proposed opex against the criteria governing opex established by r. 91 of the NGR, and the forecasts and estimates criteria established by r. 74 of the NGR: [471]

91 Criteria governing operating expenditure

(1) Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

(2) The AER's discretion under this rule is limited.

74 Forecasts and estimates

(1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.

(2) A forecast or estimate:

(a) must be arrived at on a reasonable basis; and

(b) must represent the best forecast or estimate possible in the circumstances.

The AER has amended APA GasNet's proposal to conform with rr. 74 and 91 of the NGR taking into account where relevant, transitional provisions of the NGR.[472]

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467 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 27.

468 Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012, p. 5.

469 NGR, rr. 91(2) and 40(2).

470 NGR, rr. 91 and 40(2).

471 NGR, rr. 74(2) and 91(2).

472 NGL, Schedule 3 clause 3(1)(b).

As part of its assessment, the AER has compared historical expenditure with that proposed to better understand the key drivers behind APA GasNet's proposed forecast.

The AER has also taken into consideration any benchmarking studies provided. APA GasNet has submitted a benchmarking report from KPMG to support its forecast corporate costs. Benchmarking studies of this nature are valuable inputs to the forecasting process. However the assumptions that underlie such studies are subjective and therefore have only been used as a supplement to other analyses.

In forming its views the AER has also considered advice from Deloitte Access Economics (DAE) on labour cost escalators.

6.5 Reasons for decision

The AER's draft decision is not to accept APA GasNet's forecast opex. The AER considers that several elements of APA GasNet's proposals do not comply with opex criteria or the criteria for forecasts and estimates.[473]

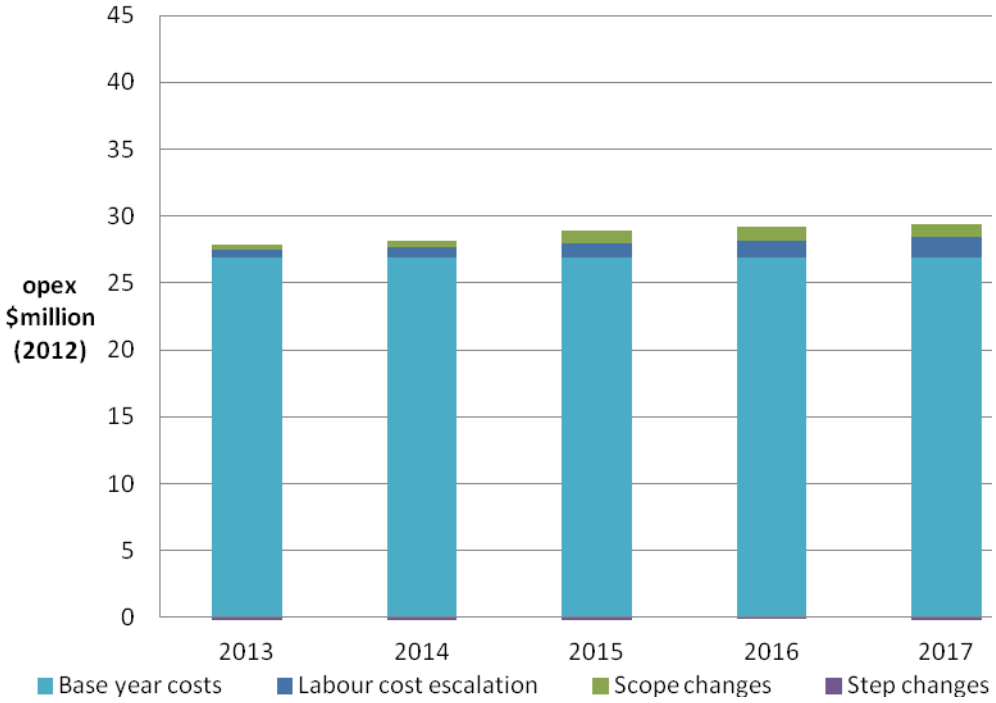
Discussion of the AER's reasoning is presented under the following headings:

- forecasting base year opex
- escalation of base year opex
- step changes
- allowances

Figure 6.3 disaggregates the AER's draft decision on opex for APA GasNet into different cost categories.

[473] NGR, rr. 91 and 74.

Figure 6.3 Disaggregation of AER draft decision on APA GasNet opex ($million, 2012)



Source: AER analysis.

6.5.2 Forecasting base year opex

APA GasNet proposed a base year of 2011. As stated in section 6.2.2, APA GasNet's 2008–12 Access arrangement includes a fixed principle which relates to the manner in which APA GasNet's opex for the 2013–17 access arrangement period is calculated.

Transitional arrangements under the National Gas Rules provide that in deciding whether to approve an access arrangement revision proposal for a transmission access arrangement, the AER must take into account any provisions of the transitional access arrangement that were fixed principles under section 8.47 of the National Gas Code, for the period for which they were fixed.[474] Accordingly the AER has taken into account fixed principle clause 7.2(h) when calculating APA GasNet's opex allowance for the 2013–17 access arrangement period.

APA GasNet forecast opex using a base year roll forward methodology and proposed 2011 as the base year.[475] The AER considers that 2011 is the appropriate base year to use in forecasting APA GasNet's opex allowance. The use of 2011 as the base year also complies with the fixed principle. The AER considers that $27.5m ($2012) as proposed by APA GasNet is the appropriate base year opex.

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474 NGL Schedule 1 clause 5(1)(b).

475 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.

Adjustments to base year costs

APA GasNet proposed to adjust base year expenditure for non-recurrent opex items and to escalate from 2011 actual opex to 2012 forecast opex (Table 6.2).[476]

Table 6.6 Proposal and AER draft decision on base year adjustments ($million, 2012)

Opex item	APA GasNet Proposed	Approved
Unadjusted 2011 opex	27.50	27.50
Change in capitalisation policy	–1.16	–
Recalculation of cost allocations between regulated and non-regulated functions	0.30	–
ESV levy increase	0.09	–
Insurance costs	0.53	–
Expected escalation of base year costs in 2012	1.35	–
Movements in provisions	–	–1.03
Change in forecast operating costs between 2011 and 2012	–	0.45
Expected opex in 2012	28.61	26.92

Source: APA GasNet, Access arrangement proposal.[477]

Movements in provisions

APA GasNet's opex includes provisions. A provision is a liability of uncertain timing or amount.[478] Provision accounts are used to set aside amounts for the payments of these liabilities for when they arise for settlement. A movement in provisions occurs when the amount set aside differs to the amount paid out. The AER considers the movement in these provisions does not represents actual costs incurred in a given year and should be removed from base year expenditure. The AER considers this necessary in setting forecast opex for APA GasNet, on the basis that movements in provisions:

- may be used to represent the reported accounts for APA GasNet differently from its underlying economic circumstances
- may prevent and distort the comparison of APA GasNet's expenditure on a consistent basis from year to year
- can be affected by a change in accounting standards despite expenditure remaining unchanged.

[476] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 164.
[477] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 166.
[478] AASB, *137: Provisions, contingent liabilities and contingent assets*, section 10.

Based on the above, the AER considers removing the movement in provisions is a reasonable basis for forecasting opex and will produce the best opex forecast possible in the circumstances.[479]

The AER notes in calculating the carryover of efficiency gains and losses accrued under the opex incentive mechanism it removed the movement in provisions from APA GasNet's actual opex (refer to attachment 7).

Expected Opex in 2012

In rolling forward from this base year APA GasNet has not properly applied fixed principle clause 7.2(h)(ii) in its 2008–12 access arrangement. This clause requires that in calculating the allowable revenues for operations and maintenance expenditure for the Fourth Access Arrangement Period, the Regulator must take into account the actual operating costs in 2011, adjusted for the change in forecast operating costs between 2011 and 2012 and, to avoid doubt, not taking into account the efficiency gain (loss) made in 2012.[480]

The AER considers that the proposed adjustments to APA GasNet's base year costs are not consistent with fixed principle clause 7.2(h)(ii), which requires 2012 opex to be forecast as actual opex for 2011 plus the forecast change in operating expenditure between 2011 and 2012 approved in the 2008–12 Access arrangement. This ensures any efficiency gain made in 2012 is not taken into account as required by fixed principle clause 7.2(h)(ii). However, APA GasNet has rolled forward from 2011 to 2012 using a number of adjustments to its base year opex and has used the forecast escalation that APA GasNet proposed for the 2013–17 access arrangement period. The AER consider this does not comply with the fixed principle clause 7.2(h)(ii) and accordingly the AER does not approve the manner in which APA has applied its roll forward methodology.

The AER has adjusted APA GasNet's base year opex for the change in forecast operating costs between 2011 and 2012. The AER considers that this reflects APA GasNet's fixed principle clause 7.2(h)(iii).

The AER considers some of the proposed adjustments to the base year opex may constitute step changes, which are allowed under fixed principle clause 7.2(h)(iii). The AER considers the following proposed adjustments may constitute step changes to APA GasNet's operating expenditure:

- change in capitalisation policy
- recalculation of cost allocations between regulated and non-regulated functions
- ESV levy increase
- insurance costs

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479 NGR, r. 74(2).

480 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 11.

6.5.3 Step Changes

As discussed in section 6.2.4 APA GasNet has proposed an increase in expenditure it considers is not reflected in the base year. The AER also notes that APA GasNet proposed a number of adjustments to its base year opex. As discussed in section 6.5.2 the AER did not consider these adjustments complied with APA GasNet's fixed principles. However, the AER considered that four of these adjustments could be considered as step changes and has assessed these accordingly.

The AER has reviewed APA GasNet's proposed step changes against r. 91 of the NGR. The AER's review has considered whether the proposed program of expenditure is consistent with r. 91 of the NGR; and whether an incremental increase above APA GasNet's base year opex is consistent with rr. 91 and 74 of the NGR.

Where the AER considers these step changes are consistent with r. 91 of the NGR, an incremental increase in base year opex that the AER considers is consistent with rr. 91 and 74 of the NGR is included in the total forecast opex.

As discussed in Section 6.4, in general the AER considers an increase in opex is not consistent with r. 91 of the NGR where the additional expenditure is intended to address a regulatory requirement or industry standard that has not changed since the 2008–12 access arrangement period. The AER considers that an increase in opex to implement an existing regulatory requirement may provide an incentive for service providers to spend less than required in meeting such requirements or standards. The AER considers this practice is not consistent with a prudent service provider acting efficiently in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

In some cases, the AER considers that expenditure may be a program of expenditure consistent with the requirements governing opex under r. 91 of the NGR but it considers that an incremental increase in the total opex allowance would not be consistent with rr.74 or 91 of the NGR. For instance, if expenditure is intended to improve productivity, the AER would generally consider, unless circumstances indicate otherwise, that there is sufficient expenditure in the base opex in order to fund the program.

The AER's assessment of proposed step changes also recognises that the opex carried out by a service provider will not be exactly the same from year to year. For instance actual opex in the base year reflects both recurrent expenditure and non-recurrent expenditure. However, when forecasting opex for the 2013–17 access arrangement period the AER has not sought to estimate all non-recurrent expenditure incurred in the base year. Therefore to ensure a forecast of total opex that is consistent with r. 74 of the NGR, the AER also does not automatically consider there should be an incremental opex because the expenditure was not incurred in the base year but needs to be incurred in the 2013–17 access arrangement period. Instead the AER considers on a case by case basis whether base year opex would be likely to be sufficient in order to fund the proposed program of opex or whether an incremental increase in opex is required.

A comparison between the step changes proposed by APA GasNet and the AER's draft decision is below in Table 6.7.

Table 6.7 APA GasNet's proposed step changes ($million, 2012)

Step change	2013	2014	2015	2016	2017	Total
APA GasNet proposal*	3.29	3.81	3.91	4.65	4.59	20.26
AER draft decision	–0.85	–0.81	–0.79	–0.13	–0.35	–2.95
Difference	–4.14	–4.62	–4.71	–4.79	–4.95	–23.20

Source: APA GasNet, Access arrangement proposal. [481]
* The AER notes that APA's proposal does not include the base year adjustments whereas the AER's draft decision includes these costs as step changes.

The following sections set out the AER's draft decision in relation to each proposed step change.

Environmental net gain obligations

APA GasNet proposed an increase of opex of $980 000 ($2012) over the 2013–17 access arrangement period in relation to the implementation of expected requirements it must meet in regards to native vegetation impacted by a pipeline operation. APA GasNet is required to offset any native vegetation affected by pipeline operations by sourcing and protecting another piece of land which would deliver a 'net gain' to protected native vegetation. APA GasNet expects to incur ongoing costs to ensure the net gain in native vegetation is achieved. In the 2013–17 access arrangement period APA GasNet expect to incur costs related to:

- current obligations relating to rectification of native vegetation at Wollert
- forecast obligations likely to be triggered by native vegetation affected by the Northern expansion project
- forecast obligations likely to be triggered by native vegetation affected by the Anglesea pipeline extension.[482]

The AER's draft decision is to approve an increase in opex of $812 000 ($2012) over the 2013–17 access arrangement period.

The AER's draft decision is to approve an increase in opex for these projects. It considers that an increase in opex for these activities would lead to opex that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

The AER is satisfied that the forecast increase in opex for the rectification works at Wollert and the new obligations likely to be triggered by the Anglesea pipeline extension have been arrived at on a reasonable basis and are the best estimates possible in the circumstances.

The AER is also satisfied that there will be an increase in opex related to native vegetation works triggered by the Northern Expansion project. However, as the AER has only approved part of the forecast capex for this project, the AER considers the likely impact on native

[481] APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 176–7.
[482] APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 166–7.

vegetation will be correspondingly less and therefore the amount of opex required will be less than the amount originally forecast by APA GasNet. Consistent with r 74(2) of the NGR, the AER estimates that this would reduce APA GasNet's forecast opex by approximately $168 000 ($2012) over the over the 2013–17 access arrangement period.

Safety management studies—monitoring and rectification

APA GasNet is required to undertake safety management studies periodically to identify safety issues at particular sites and to develop a plan for removing and mitigating potential safety risks. As a result of safety management studies carried out in the 2008–12 access arrangement period, APA GasNet has identified the need for increased inspections, vegetation management and an annual roadside photography survey. It has proposed an increase in its opex of $900 000 ($2012) over the 2013–17 access arrangement period for the activities it has identified that must be carried out as a result of the safety management studies it carried out in the 2008–12 access arrangement period.[483]

The AER's draft decision is to not approve an increase in APA GasNet's opex to fund these activities. It is not satisfied that an additional opex allowance for these activities would lead to opex that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

The AER notes that a proposed change to Australian Standard AS 2885.3 would mean pipeline businesses are required to carry out safety management studies whereby pipeline owners would be required to carry out a risk assessment of safety issues affecting the pipeline. The AER agrees this approach is consistent with accepted industry best practice.

However, while the AER agrees that undertaking safety management studies may change the process by which the industry identifies safety issues, the AER is not satisfied that the underlying public safety obligations which a pipeline operator must, or is expected to meet, have materially changed since the 2008–12 access arrangement period. Therefore the AER is not satisfied on the basis of the evidence provided by APA GasNet that an increase in APA GasNet's total opex forecast is required to address pipeline safety. Without evidence to suggest otherwise, the AER considers that APA GasNet would have devoted sufficient resources in the base year to managing pipeline safety and therefore an incremental increase above base opex to address pipeline safety issues is not required.

Maintenance of hazardous area dossiers

APA GasNet has responsibility to ensure all the electrical equipment installed in APA GasNet hazardous areas is in safe working condition and meets legal requirements to comply with all relevant standards. To comply with relevant Australian standards APA GasNet must have in place a Hazardous Area Verification Dossier which details the compliance and safety of the electrical equipment installed within the hazardous area. It proposed two additional personnel be employed to maintain its hazardous area dossiers.[484]

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483 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 168.

484 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 168–69.

The AER's draft decision is to not approve an increase in APA GasNet's opex to fund these positions. It is not satisfied that an incremental increase in opex for these activities would lead to opex that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

The AER is not satisfied from the information provided by APA GasNet that the opex it incurred in 2011 maintaining hazardous area dossiers was not sufficient to ensure APA GasNet met the relevant Australian standards. As such, the AER does not consider that an increase in APA GasNet's opex to fund this program would be consistent with r. 91 of the NGR.

Energy Safe Victoria levies

APA GasNet have proposed a step change in opex linked to an Energy Safe Victoria (ESV) levy rise in the 2012–13 financial year.

The AER agrees that an increase in opex for an ESV levy rise in 2012-13 should be reflected in ESV's forecast opex for the 2013–17 access arrangement period.

As outlined in section 6.2.4 the AER has rejected an adjustment in APA GasNet's base opex for an ESV levy rise for the 2011–12 financial year because it does not consider this would be consistent with clause 7.2(h)(ii) in its 2008–12 access arrangement. As the levy was paid by APA GasNet but has not been fully reflected in APA GasNet's base year costs, the AER has instead treated the incremental increase in the ESV levy in 2011–12 not reflected in the base year as a step change.

The AER proposes that any future changes to the ESV levy will be addressed through the tariff variation mechanism.

Electricity costs

APA GasNet proposed a step change for electricity cost increases due to increasing network charges and the introduction of the carbon price.[485] The AER considers a prudent service provider, acting efficiently, does not require this step change and therefore the step change does not satisfy r. 91 of the NGR.[486]

The AER considers that APA GasNet is already compensated for any increase in electricity costs because its base year costs are escalated by CPI. The impact of electricity prices, including the expected impact of increased network charges and the carbon price is included in the Reserve Bank of Australia's CPI forecasts. The AER uses these CPI forecasts to escalate APA GasNet's base year costs.[487] If the base year costs are escalated by CPI and a separate step change for an increase in electricity costs is provided, then APA GasNet will receive double compensation for the effect of electricity price increases.

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485 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 170.
486 NGR, r. 91(1).
487 RBA, *Statement on Monetary Policy*, May 2012, p. 67.

The AER notes the contribution of electricity costs to APA GasNet's total opex is consistent with electricity costs weighting in the CPI basket.[488] As such the level of compensation provided by applying the CPI to base year costs should be commensurate with APA GasNet's increased electricity costs.

Finally, the AER notes the CPI measures changes in the price of a basket of goods and services and reflects the weighted average price change of these goods and services. Using an average measure of price increases accounts for the fact that some elements may increase in price more than others while some may decrease. The AER considers that applying separate forecasts to specific elements which are increasing more than CPI would systematically overstate the expected increase in total costs.

Direct Carbon Costs

APA GasNet has proposed the recovery of direct costs incurred in relation to the *Clean Energy Act 2011* (Cth) (the Clean Energy Act).[489] APA GasNet advised that it has jointly sought with AEMO a declaration from the Greenhouse Energy Data Officer as to which entity has operational control over the Victorian Transmission System (VTS).[490] This determination will ultimately confirm which party will carry liability for surrendering carbon permits under the Clean Energy Act. The AER understands the application for a determination was lodged by the parties in September 2009 and the Greenhouse Energy Data Officer has yet to make a determination on this matter.[491]

APA GasNet stated that should a determination be made during the review process that AEMO will incur this liability, APA GasNet will withdraw this step change from its proposal.[492]

The AER has three times sought further information from APA GasNet regarding the status of the application by it and AEMO for a declaration from the Greenhouse Energy Data Officer. On 25 July 2012, APA GasNet informed the AER that:

> ... on 16 July 2012 APA GasNet received notification from the Clean Energy Regulator that it is progressing the declaration of which entity will have the liability under the carbon pricing scheme and that a draft declaration for APA GasNet and AEMO to comment on may be expected around the middle of August 2012.[493]

Accordingly, the AER does not approve APA GasNet's proposed opex allowance for the recovery of these direct carbon costs. The AER considers that if APA GasNet receives confirmation that it will incur this liability prior to the AER issuing its final decision, then the AER will assess this impact as part of the access arrangement determination. If APA GasNet does not receive confirmation until the 2013–17 access arrangement period, then the AER considers this would best be treated as a regulatory change pass through event.

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488 Australian Bureau of Statistics, *Consumer price index, 16th series weighting pattern*, catalogue number 6471.0, 2011.

489 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 170.

490 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 170.

491 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 170.

492 APA GasNet, *Access arrangement submission*, 3 1March 2012, p. 285.

493 APA GasNet, *Response to AER information request 25*, 25 July 2012.

The AER notes that it received submissions from EUCV and APG questioning whether APA GasNet would actually bear the liability for some or all of the carbon tax.[494] The AER considers that the declaration from the Clean Energy Regulator should provide clarity regarding whether APA GasNet bears liability for the carbon impacts of fuel gas use and fugitive emissions. In the event that APA GasNet does have liability for these costs, then it is appropriate that it receive an allowance for recovery of these costs.

Expanded apprenticeship program

APA GasNet operates an apprenticeship program to develop skilled personnel. It stated all its current apprentices were approaching the end of their training and effectively integrated in labour staffing levels included in the base year. Consequently it proposed a step change to continue its apprenticeship program and hire new apprentices.[495]

The EUCV submitted that the expanded apprenticeship program did not represent a step change as APA GasNet has already had the cost of apprentices embedded in their opex over the past decade.[496]

The AER considers this step change is not required for a prudent service provider, acting efficiently, to continue its apprenticeship program in the 2013–17 access arrangement period.[497] Expenditure from the apprenticeship program has been included in APA GasNet's base year opex allowance providing it expenditure to continue the program. The labour costs for the current apprentices, that are ending their apprenticeships, will be covered by the base year costs of the staff they are replacing. Thus providing a step change would double count APA GasNet's apprenticeship costs. A prudent service provider, acting efficiently, does not require this step change.

Furthermore, the AER is not satisfied a step change for an expansion of the apprenticeship program would lead to a forecast of total opex that has been arrived at on a reasonable basis, or is the best forecast possible in the circumstances. As such, the AER considers a forecast of opex that includes a step change in opex for the expanded apprenticeship program would be a forecast of opex that would not be incurred by a prudent service provider acting efficiently in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

The AER accepts at a project level, it may be prudent for APA GasNet to incur additional opex for the expanded apprenticeship program. However, the AER considers the purpose of the expanded apprenticeship program is to improve the skills of its staff. The AER considers that improving the skills of APA GasNet's staff would be likely to deliver productivity improvements. A step increase to fund this program is not required to incentivise APA GasNet to continue this program. Therefore the AER considers that an incremental increase in opex to fund technical training is not consistent with rr. 74(2) or 91 of the NGR.

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494 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 26 and Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012. p. 5.

495 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 171.

496 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 27.

497 NGR, r. 91(1).

Western district depot

APA GasNet proposed to establish a depot in Warrnambool to accommodate technicians currently working from home. APA GasNet stated it must conduct periodic audits of its employee's home workstations under occupational work and safety legislation. APA Group did not consider this appropriate and therefore proposes to provide office accommodation for staff that can be readily monitored for safety.[498]

The AER's draft decision is not to increase opex to fund this program. It is not satisfied that an increase in opex to establish a western district depot would be incurred by a prudent service provider acting efficiently in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

APA GasNet is required to ensure work environments in Warnambool are compliant with Victoria's *Occupational Health and Safety Act 2004*. However, APA GasNet did not identify a legislative change that requires it to change its health and safety practices. Nor did APA GasNet identify a regulatory requirement that necessitates it establish a new depot rather than continuing its current practices. That APA GasNet has an incentive to reduce opex, while also meeting its legislative obligations, suggests its current practices are the most efficient.

If, however, it is prudent and efficient for APA GasNet to establish the proposed new depot then there would be benefits from doing this. For example labour productivity could be improved and insurance premiums reduced. The AER asked APA GasNet if it conducted a cost benefit analysis for establishing the proposed new depot and if it quantified the benefits. APA GasNet advised that it did not conduct a cost benefit analysis and it had not quantified the benefits of the proposed new depot.[499] Consequently, although APA GasNet identified a number of benefits of establishing the depot it did not incorporate those benefits in the proposed step change.

The AER considers the benefits of establishing the proposed new depot will outweigh the costs if it is prudent and efficient. For these reasons, the AER is not satisfied a prudent service provider, acting efficiently, would require an opex step change to establish a new depot.[500]

Adjustments to reflect non-recurrent operating and maintenance costs

APA GasNet identified a number of step changes relating to maintenance that only relates to certain years within the 2013–17 access arrangement period. The programs include:

- New gas heating facilities inspections
- Line valve actuator overhauls
- Pressure vessel inspections

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498 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 172.
499 APA GasNet, Response to information request 15, 27 June 2012, pp. 7–8.
500 NGR, r. 91(1).

- Restore hard standing at specific sites.[501]

The proposed expenditure would increase APA GasNet's opex by $1.295m ($2012) in the 2013–17 access arrangement period.

The AER's draft decision is not to approve an increase opex to fund these proposals. The AER is not satisfied that an incremental increase in opex for these proposals would lead to a forecast of total opex that has been arrived at on a reasonable basis or is the best forecast possible in the circumstances. As such, the AER considers a total forecast of opex that includes a step change in opex for these programs would not be a forecast of opex that would be incurred by a prudent service provider acting efficiently in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

The AER agrees that opex activities undertaken by a service provider will not be the same from one year to the next and that non-recurrent costs could include costs related to new gas heating facilities inspections, line valve actuator overhauls, pressure vessel inspections, and the restoration of hard standing. However this is not necessarily agreed to by all parties. For instance, the EUCV, in its submission, argued that the opex for these activities were not step changes as they are works that have always had to be carried out and are embedded in the long-term opex.[502]

However, regardless of what the non-recurrent opex is for, the costs for non-recurrent activities must be treated symmetrically. That is, the type of non-recurring costs incurred in the base year which are taken out of the base year estimate must be similar to the type of costs that are added to the opex forecast. If costs are not treated symmetrically a forecast would not represent the best estimate possible in the circumstances as it would overestimate (or underestimate) the best forecast of opex in the circumstances.

The AER is not satisfied APA GasNet has treated its non-recurrent costs symmetrically. For instance APA GasNet has identified that it did not remove expenditure of $271,000 it incurred in 2011 that it considers non-recurrent.[503] The total cost of leaving this expenditure in the base year over the 2013–17 access arrangement period would be equal to $1.355m - a similar amount to the forecast opex for this step change.

As APA GasNet has left some costs in its base year estimate which were non-recurrent, the AER considers APA GasNet's base year opex is sufficient to fund the non-recurrent opex it identified as a step change. Therefore, the AER's draft decision is not to approve an incremental increase in opex for non-recurring costs APA GasNet has identified in relation to maintenance of new gas heating facilities, line valve actuator overhauls, pressure vessel inspections and restoration of hard standing at specific sites. At the same time the AER also does not propose to remove the non-recurrent costs APA GasNet incurred in 2011 that were not removed from its base year estimate.

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501 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 172–174.

502 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 27.

503 APA GasNet, *Response to information request 6*, June 8, p. 5.

Reset Costs—2013–17 access arrangement period

APA GasNet has proposed $1.1m ($2012) in reset costs as a step change in the 2013–17 access arrangement period.[504] These are costs which will be incurred in preparing APA GasNet's submission for the 2018–22 access arrangement period. APA GasNet's previously established practice would be to recover these costs in the first year of the 2018–22 access arrangement period.[505] However, APA GasNet considers it more appropriate to recover this expenditure in the 2013–17 access arrangement period as this better aligns with the general principle under the NGR that costs recovered in the period relate to those incurred in the period.[506] Accordingly, APA GasNet has proposed an allowance of $1.1m ($2012) to be recovered in 2016 and 2017.

The EUCV expressed concern that APA GasNet wants to recover regulatory costs from both the 2008–12 and 2013–17 access arrangement period in the 2013–17 access arrangement period and this unnecessarily loads opex into the 2018–22 access arrangement period.[507]

The AER approves APA GasNet's recovery of these costs in the 2013–17 access arrangement period. This is consistent with the AER's reasoning in section 6.5.5 that APA GasNet is not permitted to recover its reset costs from the 2008–12 access arrangement period in the 2013–17 access arrangement period.

The AER considered APA GasNet's historical level of expenditure on reset costs and considers that APA GasNet's proposal for $1.1m ($2012) compares well with the $0.99m ($2012) in costs it incurred in the 2003–07 access arrangement period. This level also compares favourably against the Victorian Gas distribution businesses. Finally, the AER examined whether APA GasNet had included any costs related to preparing its 2013–17 access arrangement submission in its 2011 actual opex. APA GasNet did not report any actual regulatory costs in 2011.[508] Accordingly, the AER is satisfied that APA GasNet is not already recovering these costs through the base year roll forward.

Capitalisation policy change

APA GasNet stated in line inspection costs (and associated dig up and repair work) will be capitalised in the 2013–17 access arrangement period. It considered this appropriate because in line inspection and associated integrity works delivers an enduring benefit to the pipeline. Given the change in capitalisation, it considered these costs should be removed from base opex to forecast opex.[509]

The AER considers removing these costs from base opex is not consistent with fixed principle 7.2(h)(ii) (section 6.5.2). However the opex would not be incurred by a prudent service provider acting efficiently would not include these costs.[510] Fixed principle 7.2(h)(iii) does

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504 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 176.
505 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 174.
506 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 174.
507 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 27.
508 APA GasNet, B-1 VTS RIN Templates.xlsx.
509 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 165.
510 NGR, r. 91(1).

allow for step changes, however, and the AER considers the proposed capitalisation policy change is best included in forecast opex through a negative step change.

Recalculation of shared costs between regulated and non-regulated functions

In the 2008–12 access arrangement period, shared costs were allocated to regulated assets based on the share of overall asset value. Consequently 88.18 per cent of shared costs were allocated to regulated assets. APA GasNet considered it appropriate to apply an updated allocation percentage to forecast opex, reflecting forecast asset values for the 2013–17 access arrangement period.[511]

APA GasNet forecast that its regulated assets would account for 94.1 per cent of its overall asset value on average over the 2013–17 access arrangement period. It adjusted its base opex to account for this change in allocation of shared costs.[512]

The AER considers adding these costs to base opex is not consistent with fixed principle 7.2(h)(ii) (section 6.5.2). However fixed principle 7.2(h)(iii) does allow for step changes and the AER considered the proposed allocation of shared costs as such. The AER is not satisfied the capex proposed by APA GasNet would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice (see attachment 3). Consequently, the AER considers APA GasNet's regulated assets will account for 92.66 per cent of its overall asset value on average over the 2013–17 access arrangement period.

Insurance costs

APA GasNet reviewed its base year expenditure and considered its insurance costs would not be representative of costs in the 2013–17 access arrangement period. APA GasNet adjusted its base opex to apply a stand-alone insurance estimate.[513]

The AER considers removing these costs from base opex is not consistent with fixed principle 7.2(h)(ii) (section 6.5.2). Further, the AER is not satisfied the proposed expenditure increase would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice.[514]

Forecast insurance cost increases are not required because APA GasNet will be compensated for the actual insurance cost increases included in CPI. This is because, under the tariff variation mechanism, APA GasNet's Weighted Average Price Cap will increase by CPI minus X each year. Insurance costs are included in the CPI basket and the contribution of insurance costs to APA GasNet's total opex is consistent with the weighting in the CPI basket. Therefore APA GasNet will be compensated for any increase in insurance costs when its base year costs are escalated by CPI. Including a step change for increased insurance costs would double count the effect of price increases. Consequently APA GasNet's forecast insurance costs have not been arrived at on a reasonable basis and do not represent the best estimate possible in the circumstances.[515]

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511 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 165.
512 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 165.
513 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 165.
514 NGR, r. 91(1).
515 NGR, r. 74(2).

6.5.4 Escalation of base year opex

APA GasNet proposed to escalate the base year opex allowance for both scale effects (network growth) and forecast real cost changes in labour and material inputs (real cost escalation).

Network growth (scale escalation)

APA GasNet proposed an increase in opex related to the operation and maintenance of several new compressor stations and pipelines.[516]

The AER considers that the proposed opex for network growth is opex that would not be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services and that APA GasNet's forecast does not represent the best estimate possible in the circumstances. The AER considers a forecast increase in opex of $4.5m ($2012) for the 2013–17 access arrangement period is the best estimate possible in the circumstances. This forecast has been arrived at on a reasonable basis.

The AER's opex forecast reflects several adjustments to APA GasNet's proposed forecast:

- As discussed in attachment 3, the AER's draft decision is not to approve the proposed capex for the WORM project. As such the AER considers an increase in opex related to the WORM project is not required.
- Also discussed in attachment 3, of the 104.1km of proposed pipeline looping, the AER has only approved 27.8km. Therefore the AER has only approved an increase in opex commensurate with 27.8km of pipeline looping operational from 1 July 2015.
- As the AER's draft decision is not to approve the WORM project and to only approve part of the pipeline looping proposed as part of the Gas to Culcairn, the AER considers that APA GasNet would only require one additional FTE as a result of the increased workload. The AER's forecast allows for an increase in operational staff in 2015 which reflects the AER's views of when the increase in capacity at Iona and Culcairn are required.
- As discussed in attachment 3, the AER's draft decision is not to approve the proposed capex for the Kalkallo lateral project. As such the AER considers an increase in maintenance expenditure related to the Kalkallo lateral project is not required.

Table 6.8 Impact of scope changes ($million, 2012)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	0.64	0.98	1.77	1.81	1.81	7.02
AER draft decision	0.39	0.41	0.98	1.02	1.02	3.83
Difference	–0.25	–0.57	–0.79	–0.79	–0.79	–3.19

Source: AER analysis.

[516] APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 174–6.

Real cost escalation

APA GasNet's proposed total opex included $15.8 million ($2012) for forecast real cost increases in labour. The AER's consideration of the real cost escalators proposed by APA GasNet is in appendix C. The impact of the application of the AER's real cost escalators on forecast opex is outlined in Table 6.9.

Table 6.9 Impact of real cost escalation ($million, 2012)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	0.89	2.55	3.84	4.22	4.28	15.77
AER determination	0.56	0.78	1.03	1.25	1.48	5.11
Difference	–0.32	–1.77	–2.80	–2.96	–2.80	–10.66

Source: AER analysis.

6.5.5 Allowances

APA GasNet submitted that its forecast opex is supplemented by a number of other allowances to make up the total forecast opex allowance.[517] Table 6.10 provides a summary of the allowances proposed by APA GasNet.

Table 6.10 APA GasNet's proposed allowances ($million, 2012)

Allowances	2013	2014	2015	2016	2017	Total
APA GasNet proposal	3.76	1.01	–1.45	–2.54	0.74	1.52
AER determination	1.50	–1.09	–1.46	–1.15	0.56	–1.64
Difference	–2.26	–2.10	–0.01	1.39	–0.18	–3.16

Source: AER analysis.

Efficiency carryover mechanism

The application of the efficiency benefit sharing scheme to APA GasNet is discussed in attachment 7.

Reset costs (from 2008–12 regulatory period)

APA GasNet submitted that established regulatory practice has been to 'carry forward' costs associated with the preparation of each access arrangement revision proposal as an adjustment to forecast opex.[518] Accordingly, APA GasNet considers that it should be able to recover $1.1m ($2012) in reset costs incurred in 2008–12 in the first year of the 2013–17 access arrangement period.

[517] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 185.
[518] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 181.

APA GasNet submitted these costs were not included in 2011 or 2012 forecast opex on the basis that they would be recovered in the first year of the next access arrangement.[519] APA GasNet considers that the transitional provisions in the NGR enable it to recover these costs in the 2013–17 access arrangement period.[520] APA GasNet cited NGL schedule 3, clause 43(1)(b) of the NGR as allowing it to recover these costs in the 2013–17 access arrangement period.

APA GasNet appears to be referring to clause 43(1)(b) of Schedule 2 which provides that the repeal, amendment or expiry of a provision of the NGL, the Regulations or the NGR does not "affect the previous operation of the provision or anything suffered, done or begun under the provision".[521] However, this clause is not relevant to any practice that may have been undertaken under the previous Gas Code. It applies only where there has been a change in the operation of the NGL, Regulations and NGR. As such, this is not a "transitional" provision.

It may be that APA GasNet intended to refer to clause 3(1)(b) which is included in the transitional provisions of Schedule 3 of the NGL. This clause provides:

> 3(1) Subject to this Schedule, the Regulations and the Rules, the repeal of the old access law or Gas Code does not-
>
> .....
>
> (b) affect the previous operation of the old access law or Gas Code or anything suffered, done or begun under or in accordance with the old access law or Gas Code

However, a decision made by the AER on these reset costs will not "affect the previous operation" of the Gas Code. In addition, there is not anything that has been suffered, done or begun or in accordance with the old access law or Gas Code with respect to the reset costs now being proposed by APA GasNet.

An access arrangement revision proposal must be submitted in accordance with s. 132 of the NGL (Victoria) and the NGR.[522] Relevantly, r. 76 of the NGR expressly requires that total revenue for the year be determined using the building blocks approach, which includes a forecast of opex for the each regulatory year of the access arrangement period.

Rule 79 does not permit the recovery of expenditure from the previous access arrangement period and accordingly, APA GasNet cannot recover costs incurred in the 2008–12 access arrangement period as part of the 2013–17 Access arrangement. The AER notes that this conclusion is consistent with APA GasNet's own conclusion that 'under the NGR the costs recovered in the period relate to those incurred in the period'.[523]

Debt Raising Costs

These costs may include underwriting fees, legal fees, company credit rating fees and other transaction costs. Debt raising costs are an unavoidable aspect of raising debt that would be

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519 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 181.
520 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 181.
521 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 181.
522 Section 26 of the *National Gas (Victoria) Act 2008.*
523 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 174.

incurred by a prudent service provider acting efficiently. Accordingly, the AER provides an allowance to recover an efficient amount of debt raising costs.

The AER's approach to debt raising costs is based on a report from the Allen Consulting Group (ACG) commissioned by the ACCC in 2004.[524] The AER has updated the ACG approach with more recent market data. The AER most recently updated this market data in August 2011. The approach uses a five year window of up to date bond data to reflect current market conditions.

This method provides estimates of debt raising costs that would be incurred by a prudent service provider, acting efficiently. This is because the ACG approach:

- First, identifies the types of transaction costs that a prudent service provider acting efficiently would incur in raising debt.
- Second, quantifies the level of these costs, taking into account the specific circumstances of the service provider, with reference to market rates for the relevant services.

It follows that, this should, in turn, estimate a debt raising cost forecast that provides APA GasNet with a reasonable opportunity to recover at least its efficient transaction costs in raising finance.[525]

The ACG method involves calculating the benchmark bond size, and the number of bond issues required to rollover the benchmark debt share (60 per cent) of the RAB. The AER's standard approach is to amortise the upfront costs that are incurred using the relevant nominal vanilla WACC over a ten year amortisation period. This is then expressed in basis points per annum (bppa) as an input into the post tax revenue model (PTRM). The AER's approach recognises that credit rating costs can be spread across multiple bond issues, which lowers the benchmark allowance (as expressed in bppa) as the number of bond issues increases.

APA GasNet submitted debt raising costs of 9.9 bppa or $2.56m nominal ($2.36m real 2012) over the 2013–17 access arrangement period. The proposed bppa amount was based on the method from the AER's NT Amadeus pipeline 2011–16 decision, assuming two bond issues are required.[526]

The AER accepts APA GasNet's method for determining debt raising costs. The method is the established AER method that is based on a 2004 ACG report, which provides network service providers with a reasonable opportunity to recover at least the efficient costs in providing reference services.[527] Also, the method provides for the expenditure incurred by a

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524 Simply because the report was written in 2004 does not make it obsolete, Australian Competition Tribunal, Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14 (26 July 2012), paragraphs 314–330.

525 NEL, s. 24.

526 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 184.
The AER considers that the figures in the PTRM do not exactly match the proposal. However, the AER understands that APA GasNet is proposing to use the AER's established method for determining DRC because it states 'In calculating debt raising costs, APA GasNet has applied the same method and estimates as used by the AER, in its recently published decision for NT Gas'. That decision applied the AER's standard DRC method.

527 NEL, s. 24.

prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.[528]

Benchmark debt raising costs

Although the AER has accepted APA GasNet's method for determining debt raising costs, the AER has made changes to APA GasNet's RAB value. As a result, this has changed the debt component of APA GasNet's RAB and consequentially the estimated amount of debt raising costs. The AER's benchmark allowance, however, still provides for two standard sized bond issues. The unit costs and the benchmark debt raising cost are shown in Table 6.11. As this draft decision is based on indicative rates, the AER will update this analysis for the final decision based on the debt component of the RAB and WACC to be determined at the time.

Table 6.11 AER's draft decision on debt raising costs for APA GasNet based on a nominal WACC of 7.16 per cent

Value	Explanation	1 issue	2 issues	3 issues
Total amount raised	Multiples of median MTN ($250m)	$250m	$500m	$750m
Gross underwriting fee	Median gross underwriting spread, upfront per issue, amortised	6.45	6.45	6.45
Legal and roadshow	$195 000 upfront per issue, amortised	1.12	1.12	1.12
Company credit rating	$55 000 per annum	2.20	1.10	0.73
Issue credit rating	4.5 basis points upfront per issue, amortised	0.65	0.65	0.65
Registry fees (startup)	$4 000 upfront per issue, amortised	0.02	0.02	0.02
Registry fees (ongoing)	$9 000 per issue per annum	0.36	0.36	0.36
Total	Basis points per annum	10.8	9.7	9.3

Source: AER analysis.

This has resulted in the debt raising costs for APA GasNet outlined below in Table 6.12.

Table 6.12 Debt raising costs for APA GasNet ($million, 2012)

Year	2013	2014	2015	2016	2017
Debt raising costs	0.35	0.35	0.38	0.38	0.37

Source: AER analysis.

Other Allowances

APA GasNet submitted that it maintains two types of inventories related to the VTS. These are passive linepack and spare pipes, valves and fittings required for maintenance and emergency use.[529] APA GasNet considers both of these inventories represent an investment in the pipeline system and so a return on these assets is included in the allowed revenue. The

[528] NGR, r. 91.

[529] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 182.

AER approves APA GasNet's approach to the calculating a return on passive linepack and spare parts. However, as noted in appendix B, the AER does not approve APA GasNet's proposed WACC. As such, the AER has adjusted APA GasNet's proposed allowances to account for the AER's approved WACC.

6.6 Revisions

The AER requires APA GasNet make the following revisions to its Access arrangement proposal consistent with the NGR and NGL:

Revision 6.1: Make all necessary amendments to reflect the AER's draft decision on the proposed opex allowances for the 2013–17 access arrangement period, as set out in Table 6.1 and Table 6.10.

7 Incentive mechanisms

Incentive mechanisms are an important tool to provide service providers continuous incentives to reduce costs and increase efficiency in the provision of pipeline services. Incentive mechanisms provide a financial reward (or penalty) for efficiency gains (or losses) achieved compared to expenditure benchmarks for the access arrangement period. Any rewards (or penalties) for efficiency gains (or losses) are added to the service provider's total revenue and carried forward for five years after the year in which the efficiency gain (or loss) is made. Five years corresponds to the length of the access arrangement period.

This attachment presents the AER's assessment of APA GasNet's proposed:

- carryovers from the operation of the incentive mechanism in the 2008–12 access arrangement period, namely the benefit sharing allowance
- incentive mechanism for the 2013–17 access arrangement period.

7.1 Draft decision

The AER does not approve APA GasNet's proposed carryover of –$2.6 million ($2006) from the 2008–12 access arrangement period. This proposed carryover has not been correctly calculated in accordance with the benefit sharing allowance set out in APA GasNet's 2008–12 Access arrangement. The AER has calculated that APA GasNet has instead accrued a carryover of –$3.7 million ($2006) to be carried over from the 2008–12 access arrangement period (Table 7.1).

Table 7.1 AER draft decision carryover from the 2008–12 access arrangement period ($'000, 2006)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	1724	328	–1888	–2798	–	–2634
AER draft decision	823	–1374	–1715	–1457		–3723

Source: APA GasNet, *Access arrangement information*, 31 March 2012, table 9.2, p. 24; AER analysis.

The AER does not accept the incentive mechanism proposed by APA GasNet for inclusion in the 2013–17 Access arrangement. The AER considers amendments are necessary to ensure the incentive mechanism will encourage efficiency in the provision of services by APA GasNet and be consistent with the RPP.

7.2 APA GasNet proposal

7.2.1 Carryover from the 2008–12 access arrangement period

APA GasNet proposed a carryover of –$2.6 million ($2006) into the 2013–17 access arrangement period from applying the benefit sharing mechanism in the 2008–12 access arrangement period (Table 7.2).

Table 7.2 Proposed carryover from the 2008–12 access arrangement period ($'000, 2006)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	1724	328	–1888	–2798	–	–2634

Source: APA GasNet, *Access arrangement information*, 31 March 2012, table 9.2, p. 24.

7.2.2 Proposed incentive mechanism for the 2013–17 access arrangement period

APA GasNet proposed to include a rolling carryover incentive mechanism for opex in its Access arrangement for 2013–17 as a fixed principle. It proposed to apply the incentive mechanism only to the first four years of the access arrangement as the final year will not be completed when the carryover is calculated.[530] This approach assumes no additional efficiency gain in the last year of the access arrangement period.

APA GasNet proposed efficiency gains (or losses) be calculated on an incremental basis. It proposed efficiency gain (or loss) for the first year of the access arrangement be calculated as follows:[531]

$$E_{2013} = F_{2013} - A_{2013}$$

where:

F_{2013} = APA GasNet's forecast operating costs for 2013

A_{2013} = APA GasNet's actual operating costs for 2013.

APA GasNet proposed efficiency gains for 2014, 2015 and 2016 be calculated as follows:[532]

$$E_t = (A_{t-1} - A_t) - (F_{t-1} - F_t)$$

where:

A_{t-1} = APA GasNet's actual operating costs for the year prior to year (t)

A_t = APA GasNet's actual operating costs for year (t)

F_{t-1} = APA GasNet's forecast operating costs for the year prior to year (t)

F_t = APA GasNet's forecast operating costs for year (t)

The proposed fixed principle specifies how the forecast and actual opex must be determined for the purpose of the incentive mechanism.[533] It also specifies the approach the AER must use to forecast opex for the access arrangement period commencing 1 January 2018.

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530 APA GasNet, *Access arrangement information*, 31 March 2012, p. 31.
531 APA GasNet, *Access arrangement proposal*, 31 March 2012, p. 22.
532 APA GasNet, *Access arrangement proposal*, 31 March 2012, p. 23.

7.3 AER assessment approach

Under the NGR, the AER must:

- take into account the operation of the benefit sharing mechanism approved in the 2008–12 Access arrangement and ensure the revenue calculations made for the 2013–17 access arrangement period properly reflect increments or decrements resulting from the operation of the benefit sharing mechanism[534]
- decide whether the 2013–17 Access arrangement includes one or more incentive mechanisms to encourage efficiency in the provision of services by APA GasNet.[535]

In ensuring the 2013–17 access arrangement period properly reflect increments or decrements resulting from the operation of the benefit sharing mechanism, the AER has calculated the carryover resulting from the application of the benefit sharing mechanism as set out in the 2008–12 Access arrangement.

In determining whether the AER should require an incentive mechanism to be included in the 2013–17 Access arrangement, the AER considered:

- the rationale for applying an incentive mechanism and whether it would encourage efficiency in the provision of services by APA GasNet
- the appropriate parameters of an incentive mechanism and the specific circumstances of APA GasNet[536]
- the RPP.

7.4 Reasons for decision

7.4.1 Carryover from the 2008–12 access arrangement period

The mechanism for the carrying over of efficiency gains (or losses) is set out in clause 7.2 of APA GasNet's 2008–12 Access arrangement. The AER considers APA GasNet did not correctly calculate the carryover in accordance with clause 7.2.[537] Specifically, APA GasNet adjusted the forecast opex benchmarks in the 2008–12 access arrangement period by:

- subtracting the efficiency carryover amounts from the 2003–07 access arrangement period
- adding the approved forecasts for asymmetric risk, equity raising costs and returns on inventories and linepack.

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533 APA GasNet, *Access arrangement proposal*, 31 March 2012, p. 23.

534 Transitional arrangements in the NGR require the AER to ensure revenue calculations made for the access arrangement period properly reflect the operation of any incentive mechanism approved under section 8.44 of the Gas Code in an earlier access arrangement period (NGR, Schedule 1, clause 5(1)(a)).

535 NGR, r. 98.

536 This is to ensure that the incentive mechanism provides effective incentives to encourage efficiency in the provision of reference services consistent with r. 98 of the NGR and the RPP (NGL, s. 24).

537 APA GasNet, *Access arrangement 2008–12*, pp. 10–11.

This calculation does not meet the requirements set out in clause 7.2(f) of APA GasNet's 2008–12 Access arrangement.[538]

Clause 7.2(f)(i)(B) requires forecast opex for any year to be equal to the total forecast opex in table 3.6 of APA GasNet's 2008–12 Access arrangement information less any efficiency carryover from previous access arrangement periods.[539] The forecast opex benchmarks for the 2008–12 access arrangement period in table 3.6 do not include any efficiency carryover from previous access arrangement periods. Therefore the AER considers the forecast opex benchmarks already exclude any efficiency carryover and no subtraction from the total forecast opex is required. This reduces the negative carryover accrued by APA GasNet in the 2008–12 access arrangement period.

Further, clause 7.2(f) only allows for the addition of specific costs to the forecasts. These costs do not include asymmetric risks, equity raising costs or returns on inventories and linepack. The AER therefore considers APA GasNet's additions to the forecast opex in table 3.6 of APA GasNet's 2008–12 Access arrangement information do not accord with the requirements set out in clause 7.2.

The actual opex used by APA GasNet to calculate the carryover included provisions. A provision is a liability of uncertain timing or amount. Provision accounts are used to set aside amounts for the payments of these liabilities for when they arise for settlement. A movement in provisions occurs when the amount set aside differs to the amount paid out. The AER considers the movement in these provisions does not represents actual costs incurred in a given year and should be removed from the carryover calculation. The removal of movements in provisions from actual opex reduces the negative carryover accrued by APA GasNet in the 2008–12 access arrangement period.

For these reasons, the AER has recalculated the benefit sharing allowance to ensure the revenue calculations made for the 2013–17 access arrangement period properly reflect increments or decrements resulting from the operation of the benefit sharing mechanism, in accordance with the requirements set out in clause 7.2 (Table 7.3).

Table 7.3 AER draft decision carryover from the 2008–12 access arrangement period ($'000, 2006)

	2013	2014	2015	2016	2017	Total
APA GasNet proposal	1724	328	–1888	–2798	–	–2634
AER draft decision	823	–1374	–1715	–1457	–	–3723

Source: AER analysis.

7.4.2 Incentive mechanism for the 2013–17 access arrangement period

The AER does not accept the incentive mechanism proposed by APA GasNet for inclusion in the 2013–17 Access arrangement. The AER considers amendments are necessary to ensure

538 APA GasNet, *Access Arrangement 2008–2012*, p. 11.

539 Table 3.6 of APA GasNet's *Access arrangement information 2008–12* sets out the total forecast opex that fixed principle 7.2(f)(i)(B) requires the AER to use to calculate APA GasNet's efficiency carryover from the 2008–12 access arrangement period, subject to the amendments required by fixed principle 7.2(f).

the incentive mechanism encourages efficiency in the provision of services by APA GasNet and is consistent with the RPP.

Operating expenditure incentive mechanism

The AER agrees with APA GasNet's proposal to apply an incentive mechanism to opex. The nature of the building block approach to regulation means a service provider is able to retain benefits from reducing expenditure longer if it does so closer to the start of the access arrangement period. Opex is generally recurrent in nature, so the AER has adopted a revealed cost approach as the basis of forecasting opex. A result of adopting this forecasting approach is that service providers have an incentive to shift expenditure into the base year used to set opex forecasts for the next access arrangement period. Applying an incentive mechanism to opex counteracts these incentives. In particular, an incentive mechanism that allows the service providers to retain the benefits of any efficiencies gained for a period of five years after the year in which the efficiency was made provides service providers a continuous incentive to increase efficiency. This removes the incentive to defer efficiency gains or shift expenditure into the base year.[540]

Efficiency carryover incentive mechanisms provide service providers a continuous incentive to reduce expenditure throughout the access arrangement period. If a service provider shifts costs into the base year to increase future allowances, it will face negative carryovers from the 'loss of efficiency' of shifting the costs into the base year. Therefore, the service provider will be no better off and has no incentive to shift costs into the base year.[541] Providing the service provider a continuous incentive to reveal its efficient costs allows those revealed efficient costs to be used to forecast efficient levels of opex for subsequent access arrangement period, which is in the long term interest of consumers and consistent with the national gas objective.[542]

The AER is also satisfied the inclusion of an opex incentive mechanism in APA GasNet's access arrangement will provide APA GasNet a reasonable opportunity to recover at least its efficient costs and be consistent with the RPP.[543] This is because the mechanism rewards efficiency gains and penalises efficiency losses. In this regard it is important to recognise the reward or penalty is set through a combination of using revealed costs to forecast subsequent opex allowances and carryover increments or decrements. For example, if APA GasNet's opex increases in the base year its opex allowance for the following access arrangement period will be higher but it will incur a negative carryover ensuring it retains the efficiency loss for five years after the loss being made.

Consequently, how actual opex is used to inform the opex allowance for the following access arrangement period is a key factor in whether the mechanism will allow APA GasNet to retain the reward associated with efficiency gains for five years. For this to be achieved opex must be forecast based on actual expenditure in the penultimate year of the preceding access

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[540] The AER discussed the need to provide service providers with continuous incentives to reduce costs and gain efficiencies and the reasons for considering 5 years as the appropriate carryover period in AER, *Final decision: Electricity distribution network service providers Efficiency benefit sharing scheme*, June 2008.

[541] The effects of shifting costs into the base year are modelled in AER, *Final decision: Electricity distribution network service providers Efficiency benefit sharing scheme*, June 2008, appendix B.

[542] NGL, s. 23.

[543] NGL, s. 24.

arrangement period. If external benchmarks, or a bottom up forecast, is used to set opex allowances APA GasNet would retain the reward (penalty) of efficiency improving (decreasing) initiatives for longer than five years and would in fact be rewarded (penalised) twice, once in the ex ante opex allowance, which would not reflect the efficiency saving (loss), and a second time in the carryover increments or decrements. Consequently it is important actual expenditure in the base year is used as the basis for setting opex forecasts in the following access arrangement period.

Further, to ensure APA GasNet retains the reward associated with efficiency improving initiatives for five years it is important opex forecasts reflect the same level of efficiency as that demonstrated in the opex base year. In this regard it is reasonable to apply real cost escalation and network growth (or scale) escalation. This is because more opex will be required to produce more outputs, or pay higher inputs prices at the same level of efficiency. To ensure step changes also reflect the same level of efficiency, the AER considers step changes should only be provided for new regulatory obligations or changes in the external operating environment beyond APA GasNet's control.

As the proposed incentive mechanism only applies to opex, there may be an incentive for APA GasNet to change its capitalisation policy. However, this concern can be mitigated by ensuring any reclassification of opex or capex is reasonable and does not adversely affect the calculation of the carryover. APA GasNet's proposed incentive mechanism requires actual opex to be calculated using the same cost categories and methodology used to calculate forecast opex.[544] This requirement removes the ability for the capitalisation of opex to exploit efficiency calculations.

Calculating efficiency gains or losses

The AER considers APA GasNet's proposed approach to calculating the opex efficiency gain (or loss) for 2013 does not properly account for the efficiency gain (or loss) in that year. APA GasNet's proposed calculation of efficiency gains (or losses) for 2014, 2015 and 2016[545] is consistent with r. 98 of the NGR.

The AER proposes to amend APA GasNet's incentive mechanism to replace the equation used to calculate efficiency carryover for the first year of the 2013–17 access arrangement period (2013). This approach is consistent with r. 98(3) of the NGR because it ensures APA GasNet is consistently rewarded for achieving efficiency gains (losses) regardless of the year those gains (losses) are achieved.

Calculation of efficiency gains made in 2013

The AER considers efficiency gains made in 2013 should be calculated using the following equation:

$$E_{2013} = (F_{2013} - A_{2013}) - (F_{2012} - A_{2012}) + (F_{2011} - A_{2011})$$

where:

[544] Fixed principle 8.2(e)(i), APA GasNet, *Access arrangement proposal*, 31 March 2012, p. 29.
[545] Fixed principle 8.2(d), *APA GasNet Access arrangement proposal*, 31 March 2012, pp. 28–29.

E_{2013} is the efficiency gain in 2013

F_{2013} is the forecast opex for 2013 as specified in clause 8.2(f)

A_{2013} is the actual opex for 2013 as specified in clause 8.2(e)

F_{2012} is the forecast opex for 2012 as specified in clause 8.2(f)

A_{2012} is the actual opex for 2012 as specified in clause 8.2(e)

F_{2011} is the forecast opex for 2011 as specified in clause 8.2(f)

A_{2011} is the actual opex for 2011 as specified in clause 8.2(e)

The AER considers this amendment to the fixed principle is required because APA GasNet's proposed approach results in the efficiency gains made in 2012 being carried over for six years. Because opex forecasts are set based on actual expenditure in 2011, the forecasts implicitly carry over the benefits of any efficiencies made in 2012 for five years (that is, the 2013–17 access arrangement period). For this reason calculating the efficiency gain for 2013 as proposed by APA GasNet would result in the efficiency gains made in both 2012 and 2013 being included. Carrying the benefits of this efficiency gain (loss) over for five years would then effectively carryover over the benefits of efficiency gains (losses) made in 2012 for six years—five years implicitly through the opex forecasts and for a sixth year through the efficiency carryover payment in 2018.[546] This is inconsistent with the intent of the incentive mechanism to provide APA GasNet with continuous incentives to achieve efficiencies. The above equation removes the incremental efficiency gain (loss) made in 2012 from the calculation of the efficiency gain (loss) for 2013, thus ensuring any efficiency gain (loss) made in 2012 is carried over for only five years.

Clarification of the proposed fixed principle

The AER considers a number of clauses in the proposed fixed principle for the incentive mechanism require clarification. This is because the fixed principle, as it is currently drafted is ambiguous about the:

- adjustments to forecast operating costs for the purposes of calculating efficiency carryover from the fourth access arrangement period (2013–17)
- calculation of the approved opex for the fifth access arrangement period (2018–22).

Fixed principle 8.2(f)(i) should be amended to clarify whether carryovers from any previous access arrangement period should be subtracted from the total opex in table 11.1 of APA GasNet's Access arrangement information for 2013–17. The opex in table 11.1 of the Access arrangement information is exclusive of any efficiency carryover from previous access arrangement periods. Therefore, the fixed principle does not require the removal of any efficiency carryover from forecast opex. The AER considers the fixed principle should be amended to state:

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[546] This is discussed in further detail in AER, *Final decision Electricity transmission network service providers Efficiency benefit sharing scheme*, September 2007, pp. 18–19.

(i) the forecast operating costs for that year as shown in Table 11.1 of the Service Provider's Access Arrangement Information; plus

Fixed principle 8.2(h) should also be amended to clarify the approach to forecasting opex for the fifth access arrangement period. The proposed amendments take into account the intention of the proposed fixed principle and incentive mechanism. The fixed principle should be amended to state:

(h) In calculating the allowable revenue for operations and maintenance expenditure for the Fifth Access Arrangement Period, the Regulator must:

(i) determine the base operations and maintenance expenditure for 2017 to be equal to the actual operating costs in 2016 plus the difference between forecast operating expenditure in 2016 and 2017 as specified in clause 8.2(f) and, to avoid doubt, not take into account the efficiency gain (loss) made in 2017; and

(ii) take into account forecast changes from the 2017 base opex in:

(A) maintenance costs due to network expansion (scale changes);

(B) real labour and material costs (real cost escalation)

(C) other efficient costs not reflected in the 2017 base opex (step changes); and

(D) capitalisation policy changes.

It is not necessary to include a clause requiring the AER to comply with the NGR. Therefore, the AER has removed fixed principle 8.2(h)(i).

7.5 Revisions

The AER requires the following revisions to make the Access arrangement proposal acceptable:

Revision 7.1: delete and replace s8.2(c) of the access arrangement proposal to state: The efficiency gain for 2013 is to be calculated in accordance with the following formula:

$$E_{2013} = (F_{2013} – A_{2013}) – (F_{2012} – A_{2012}) + (F_{2011} – A_{2011})$$

where:

E_{2013} is the efficiency gain in 2013

F_{2013} is the forecast operating costs for 2013 as specified in clause 8.2(f)

A_{2013} is the actual operating costs for 2013 as specified in clause 8.2(e)

F_{2012} is the forecast operating costs for 2012 as specified in clause 8.2(f)

A_{2012} is the actual operating costs for 2012 as specified in clause 8.2(e)

F_{2011} is the forecast operating costs for 2011 as specified in clause 8.2(f)

A_{2011} is the actual operating costs for 2011 as specified in clause 8.2(e).

Revision 7.2: amend s8.2(e) to state: in each case, A_t, A_{t-1}, A_{2011}, A_{2012} and A_{2013} must be determined:

Revision 7.3: delete and replace s8.2(f)(i) of the access arrangement proposal to state: the forecast operating costs for that year as shown in table 11.1 of the Service Provider's Access Arrangement Information; plus

Revision 7.4: delete and replace s8.2(h) of the access arrangement proposal to state: In calculating the allowable revenue for operations and maintenance expenditure for the Fifth Access Arrangement Period, the Regulator must:

(i) determine the base operations and maintenance expenditure for 2017 to be equal to the actual operating costs in 2016 plus the difference between forecast operating costs in 2016 and 2017 as specified in clause 8.2(f) and, to avoid doubt, not take into account the efficiency gain (loss) made in 2017; and

(ii) take into account forecast changes from the 2017 base opex in:

(A) maintenance costs due to network expansion (scale changes)

(B) real labour and materials costs (real cost escalation)

(C) other efficient costs not reflected in the 2017 base opex (step changes); and

(D) capitalisation policy changes.

Revision 7.5: delete and replace table 11.1 in the proposed Access arrangement information with Table 7.4.

Table 7.4 Forecast operating expenditure for incentive mechanism purposes ($'million, 2012)

	2011	2012	2013	2014	2015	2016
Controllable opex	26.47	26.92	27.03	27.30	28.15	29.06

Source: AER analysis.

8 Corporate income tax

When determining the total revenue for APA GasNet, the AER must estimate APA GasNet's cost of corporate income tax.[547] APA GasNet has adopted the post-tax framework to derive its revenue requirement for the 2013–17 access arrangement period.[548] Under the post-tax framework, a separate corporate income tax allowance is calculated as part of the building blocks assessment.

8.1 Draft decision

The AER approves APA GasNet's proposed approach to calculating its forecast corporate income tax allowance. APA GasNet's proposed approach is consistent with the AER's standard post tax revenue model (PTRM). However, the AER does not approve APA GasNet's proposed forecast corporate income tax allowance of $51.5 million ($nominal)[549] for the 2013–17 access arrangement period. This is mainly because of the AER's adjustments to APA GasNet's opening tax asset base as at 1 January 2013 (section 8.4.1), return on capital (attachment 5) and forecast opex (attachment 6).

The AER approves APA GasNet's proposed method to roll forward the tax asset base. However, due to input changes made to APA GasNet's proposed roll forward model (RFM), the AER does not approve the value of the opening tax asset base at 1 January 2013.

The AER approves APA GasNet's proposed standard tax asset lives for the 2013–17 access arrangement period. This is because they are consistent with the provisions of the *Income Tax Assessment Act (ITAA)* 1997 and the standard tax asset lives prescribed in the Tax Ruling 2012/2. These proposed standard tax asset lives are also largely consistent with the ACCC's approved standard tax asset lives in the 2008–12 access arrangement period.[550]

The AER also accepts APA GasNet's proposed weighted average method to calculate the remaining tax asset lives as at 1 January 2013. However, the AER does not accept APA GasNet's proposed remaining tax asset lives as at 1 January 2013. This is mainly because of the AER's adjustment to take into account 2007 actual capex in APA GasNet's tax asset base roll forward for the 2008–12 access arrangement period.

In assessing APA GasNet's proposal, the AER has had regard to the requirement of the NGO and the revenue and pricing priciples.[551] The AER's draft decision on APA GasNet's corporate income tax allowance over the 2013–17 access arrangement period is $15.7 million ($nominal), as set out in Table 8.1. This represents a reduction of $35.8 million ($nominal) or

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547 NGR, r. 76(c).

548 APA GasNet, *Post tax revenue model*, March 2012.

549 All dollar amounts are in nominal dollar terms in this attachment because corporate income tax is an output of the post-tax revenue model (PTRM). The output of the PTRM such as the tax allowance and regulatory depreciation are expressed in nominal dollar terms, whereas the inputs of the PTRM such as forecast opex and capex are expressed in real dollar terms.

550 ACCC, *2006 Regulated asset base model v2*, 2006.

551 NGL, s 28; NGR r. 100(1). The NGO is set out in NGL, s. 23. The revenue and pricing principles are set out in NGL, s. 24.

69.5 per cent of APA GasNet's proposed forecast corporate income tax allowance. Based on the approach to modelling the cash flows in the PTRM, the AER has derived an effective tax rate of 29.2 per cent for this draft decision.Table 5.1

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

	2013	2014	2015	2016	2017	Total
Tax payable	4.2	4.6	4.3	4.4	3.5	20.9
Less: value of imputation credits	1.0	1.1	1.1	1.1	0.9	5.2
Net corporate income tax allowance	3.1	3.4	3.2	3.3	2.7	15.7

Source: AER analysis.

8.2 APA GasNet's proposal

APA GasNet proposed a corporate income tax allowance of $51.5 million ($nominal) for the 2013–17 access arrangement period, as set out in Table 8.2. APA GasNet used the AER's PTRM to calculate the corporate income tax allowance for each year of the 2013–17 access arrangement period. In estimating its corporate income tax allowance, APA GasNet used:

- an opening tax asset base of $262.9 million ($nominal) as at 1 January 2013
- an expected statutory income rate of 30 per cent per year
- a value for the assumed utilisation of imputation credits (gamma) of 0.25
- the standard tax asset lives and remaining tax asset lives contained in its proposed PTRM.

Table 8.2 APA GasNet's proposed corporate income tax allowance ($million, nominal)

	2013	2014	2015	2016	2017	Total
Tax payable	13.1	13.6	14.7	14.3	13.0	68.6
Less: value of imputation credits	3.3	3.4	3.7	3.6	3.2	17.2
Net corporate income tax allowance	9.8	10.2	11.0	10.8	9.7	51.5

Source: APA GasNet, *Post tax revenue model*, March 2012.

8.3 Assessment approach

The AER's approach to calculating APA GasNet's cost of corporate income tax is set out in the PTRM and begins with an estimate of taxable income that would be earned by an efficient benchmark company operating APA GasNet's business. The AER has modelled APA GasNet's tax expenses over the 2013–17 access arrangement period. Interest tax expense is estimated using a benchmark 60 per cent gearing, rather than APA GasNet's actual gearing. Tax depreciation is calculated using a separate tax asset base. All tax expenses (including

other expenses such as operating expenditure) are offset against the service provider's forecast revenue to estimate the taxable income. The statutory income tax rate of 30 per cent is then applied to the estimated taxable income to arrive at a notional amount of tax payable. The AER then applies a discount to that notional amount of tax payable to account for the assumed utilisation of imputation credits (gamma), which has a value of 0.25. This amount is then included as a separate building block in determining APA GasNet's total revenue.[552]

The corporate income tax allowance is an output of the AER's PTRM. The AER therefore has assessed APA GasNet's proposed corporate income tax allowance by analysing APA GasNet's proposed inputs to the PTRM for calculating the tax allowance. These inputs include:

- the opening tax asset base as at 1 January 2013
- the standard tax asset life for each asset class
- the remaining tax asset life for each asset class as at 1 January 2013
- the income tax rate
- the value of gamma.

In assessing APA GasNet's proposal, the AER has had regard to the NGO and the revenue and pricing principles.[553]

The AER considers that the roll forward of the opening tax asset base to 1 January 2013 should be based on the ACCC's approved opening tax asset base as at 1 January 2007 and APA GasNet's actual capex in earlier access arrangement periods. The value of the actual capex used for rolling forward the tax asset base is subject to the AER's assessment of these values as discussed in attachments 2 and 3.[554]

The AER assesses APA GasNet's proposed standard tax asset lives, where necessary, against those prescribed by the Commissioner for taxation in Tax Ruling 2012/2 and the ACCC's approved standard tax asset lives in the 2008–12 access arrangement period.

The AER's standard method for determining the remaining tax asset lives is the weighted average method. The weighted average method rolls forward the remaining tax asset life for a tax asset class from the beginning of the earlier access arrangement period. This approach reflects the mix of assets within that tax asset class, when they were acquired over that period (or if they were existing assets at the beginning), and the remaining value of those assets (used as a weight) at the end of the period. The AER will assess the outcomes of other approaches against the outcomes of this standard approach.

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552 NGR, r. 76(c).

553 NGL, s 28; NGR r. 100(1). The NGO is set out in NGL, s. 23. The revenue and pricing principles are set out in NGL, s. 24.

554 The asset classes differ between the capital base roll forward and the tax asset base roll forward. However, the total values of annual capex in the 2008–12 access arrangement period will be consistent.

8.4 Reasons for decision

The AER's draft decision on APA GasNet's corporate income tax allowance is $15.7 million ($nominal), which is a reduction of $35.8 million ($nominal) or 69.5 per cent to APA GasNet's proposal. The AER accepts most of APA GasNet's proposed methods for calculating the corporate income tax allowance. However, the AER adjusted several of APA GasNet's proposed inputs to the PTRM for calculating the corporate income tax allowance, which include:

- the opening tax asset base as at 1 January 2013
- remaining tax asset lives as at 1 January 2013.
- In addition, there are various other changes to the building block components in this draft decision that impact forecast revenues. These will consequently affect the forecast income tax allowance.

8.4.1 Opening tax asset base as at 1 January 2013

The AER accepts APA GasNet's proposed method for calculating the opening tax asset base as at 1 January 2013. This is because APA GasNet has used the ACCC approved opening tax base as at 1 January 2007 and the actual capex in the 2008–12 access arrangement period for calculating the roll forward of the tax asset base.

However, the AER does not approve APA GasNet's proposed total opening tax asset base of $262.9 million ($nominal) as at 1 January 2013. This is primarily because APA GasNet's proposal included forecast 2007 capex instead of actual 2007 capex. The AER identified this issue in an information request to APA GasNet, who proposed to resubmit a revised tax value roll forward.[555] However, this issue was addressed in correcting the 2007 capex inputs in the RFM for actuals as part of the roll forward of the capital base as at 1 January 2013 (see attachment 2). This correction also automatically carried through to the roll forward of the opening tax asset base as at 1 January 2013. The AER has also amended APA GasNet's net capex in 2010 to account for actual disposals in that year. This is discussed in greater detail in the AER's assessment of capex in the 2008–12 access arrangement period, in attachments 2 and 3.[556]

Based on these changes, the AER's draft decision on APA GasNet's proposed capex in the 2008–12 access arrangement period reduces APA GasNet's proposed total opening tax asset base as at 1 January 2013 by about $27 million ($nominal) or 10 per cent.

The AER's draft decision on APA GasNet's tax asset base roll forward for the 2008–12 access arrangement period is set out in Table 8.3 .

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555 APA GasNet, *Response to AER information request No. 7*, 6 June 2012, p. 3.

556 At the time of this draft decision the roll forward of APA GasNet's tax asset base includes capex estimates for 2011 and 2012. The AER requires APA GasNet's revised proposal to submit actual capex for 2011. APA GasNet may also include an updated capex estimate for 2012 in its revised proposal. These capex amounts would then be used to update the opening tax asset base and the weighted average remaining tax asset lives as at 1 January 2013.

Table 8.3 AER's draft decision on APA GasNet's roll forward of tax asset base for the 2008–12 access arrangement period ($million, nominal)

Tax asset class	2008	2009	2010	2011	2012
Opening tax asset base	165.7	186.1	177.0	167.7	201.4
Net capital expenditure	37.8	10.2	10.6	53.6	52.5
Tax depreciation	17.4	19.3	19.9	19.9	22.4
Closing tax asset base	186.1	177.0	167.7	201.4	231.5

Source: AER analysis.

8.4.2 Standard tax asset life and remaining tax asset lives

The AER approves APA GasNet's proposed standard tax asset lives assigned to each of its asset classes for the 2013–17 access arrangement period. This is because they are consistent with the statutory cap on the effective life of gas transmission assets under the *Income Tax Assessment Act (ITAA)* 1997,[557] and with the standard tax asset lives prescribed in the Tax Ruling 2012/2. These proposed standard tax asset lives are also largely consistent with the ACCC's approved standard tax asset lives in the 2008–12 access arrangement period.[558]

The AER accepts APA GasNet's proposed weighted average method to calculate the remaining tax asset lives as at 1 January 2013. In accepting the weighted average method, the AER has updated APA GasNet's remaining tax asset lives[559] as at 1 January 2013 to reflect APA GasNet's revised tax asset base roll forward in the RFM.[560]

The AER's draft decision on APA GasNet's standard tax asset lives and remaining tax asset lives for each of its asset classes for the 2013–17 access arrangement period is set out in Table 8.4.

Table 8.4 AER's draft decision on APA GasNet's standard tax asset lives and remaining tax asset lives for the 2013–17 access arrangement period

Tax asset class	Standard tax asset life (year)	Remaining tax asset life (year)
Pipelines	**20**	10.6

557 ITAA 1997, s. 40.102(5).

558 ACCC, *2006 Regulated asset base model v2*, 2006.

559 At the time of this draft decision the roll forward of APA GasNet's capital base includes forecast capex for 2012. The AER may update this capex figure for its final decision. These capex figures are used to calculate the weighted average remaining tax asset lives of the assets. Therefore, the AER may recalculate APA GasNet's remaining tax asset lives using the method approved in this draft decision to reflect the updated 2012 capex for the final decision.

560 APA GasNet submitted a revised tax asset base roll forward with 2007 actual capex and revised remaining tax asset lives as at 1 January 2008 which took into account the 2007 actual capex. See APA GasNet, *Response to AER information request No. 7*, 6 June 2012, p. 3; APA GasNet, *Revised RFM*, 10 July 2012. The AER notes that there is an error in APA GasNet's formula used to calculate the revised remaining tax asset lives as at 1 January 2008. The AER has corrected the error to account for one year of roll forward of the remaining tax asset lives from 1 January 2007 to 1 January 2008. This results in slightly shorter remaining tax asset lives as at 1 January 2008 compared to APA GasNet's revised figures.

Compressors	**20**	16.4
City gates and field regulators	**20**	14.2
Odourant plants	**20**	18.2
Gas quality	**20**	4.3
Other	**7.5**	6.5
General buildings	**60**	49.5
General land	**n/a**	n/a

Source: AER analysis.
n/a Not applicable.

8.4.3 Utilisation of imputation credits (gamma)

Under the Australian imputation tax system, domestic investors receive a credit for tax paid at the company level (an 'imputation credit' or gamma) that offsets part or all of their personal income tax liabilities. For eligible shareholders, imputation credits represent a benefit from the investment in addition to any cash dividend or capital gains received. As part of the post-tax nominal framework, the value of gamma must be applied to calculate the net income tax allowance for the 2013–17 access arrangement period.

The AER accepts APA GasNet's proposal to adopt the value of 0.25 for gamma. The proposed gamma value is consistent with the findings by the Australian Competition Tribunal (Tribunal) in its review of the AER's 2010 distribution determinations for Energex, Ergon Energy and ETSA Utilities.[561] The AER also adopted the value of 0.25 for gamma in its recent final decision for the Roma to Brisbane gas pipeline access arrangement.[562] There is no new evidence before the AER to cause it to vary from the findings of the Tribunal.

8.5 Proposed amendments

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 8.1: Make all necessary amendments to reflect the AER's draft decision on the proposed corporate income tax allowance for the 2013–17 access arrangement period, as set out in Table 8.1.

Revision 8.2: Make all necessary amendments to reflect the AER's draft decision on the opening tax asset base as at 1 January 2013, as set out in Table 8.3.

Revision 8.3: Make all necessary amendments to reflect the AER's draft decision on the remaining tax asset lives for the 2013–17 access arrangement period, as set out in Table 8.4.

[561] Australian Competition Tribunal, *Application by Energex Limited (Gamma) (No. 5)[2011] ACompT 9*, 12 May 2011, paragraph 42.
[562] AER, *Roma to Brisbane Pipeline final decision*, August 2012, p. 20.

9 Capacity utilisation forecasts

This attachment sets out the AER's consideration of APA GasNet's capacity utilisation forecasts over the 2013–17 access arrangement period. The NGR requires, to the extent it is practicable, that an access arrangement must include a forecast of pipeline capacity and utilisation of pipeline capacity over the access arrangement period. It must also include the basis on which such forecasts have been derived.[563]

9.1 Draft decision

The AER considers that APA GasNet's forecasts of capacity utilisation are not arrived at on a reasonable basis and do not represent best possible forecasts in the circumstances. The AER considers that the level of demand from shippers to transport gas to Culcairn is not as high as proposed by APA GasNet. As a result, the AER has provided its own forecasts of VTS capacity and utilisation rates in section 9.5, and considers these forecasts to be made on a reasonable basis, and the best possible in the circumstances.

The AER considers that the levels of demand proposed by APA GasNet are, for some sections of the pipeline, in general made on a reasonable basis, and the best possible in the circumstances.

9.2 APA GasNet's proposal

9.2.1 APA GasNet's forecast methodology

APA GasNet has primarily utilised the demand forecasts of the system planner, AEMO, in providing its estimates of capacity utilisation. The bulk of gas delivered through the VTS is 'used' by AEMO, in the sense that shippers contract with AEMO to access the reference service under the Market Carriage Model. APA GasNet has diverged from AEMO's forecasts when forecasting the demand for gas exports, underground storage refill volumes, and gas-powered generation (GPG).[564]

APA GasNet has based its forecast of exports on demand by shippers for increased capacity on some sections of the pipeline. The demand by shippers, and the resulting plan to increase capacity, is the reason for the break in trend from historical export levels.[565]

Flows into and out of underground storage at Port Campbell, and to the LNG plant at Dandenong have fluctuated significantly over the 2008–12 access arrangement period.[566] APA GasNet's forecast is based on assumptions regarding the availability of gas from local fields being utilised to refill underground storage and increasing utilisation of LNG as transport fuel.

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563 NGR, r. 72(1)(d).
564 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 60–61.
565 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 61–62.
566 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 62.

APA GasNet submitted that the forecasts regarding GPG in AEMO's system planning process were outdated.[567] APA GasNet has provided its own assessment of the likely growth path of gas demand from GPG. APA GasNet submitted that this forecast takes into account:

- the most up-to-date information on a carbon price
- an assessment of the uncertainty surrounding the continuity of a carbon price, given the possibility of a change in government, and the effect this has on GPG investment
- any approaches (or lack thereof) from market participants to APA GasNet for supply of gas to new GPG plant.[568]

9.2.2 APA GasNet's forecast of VTS capacity

Table 9.1 shows APA GasNet's forecast of capacity on the VTS over the 2013–17 access arrangement period. Since the VTS comprises a number of networked pipelines, this capacity is estimated for various segments of the VTS. This estimated capacity represents the aggregated contracted maximum daily quantities (MDQ).

Table 9.1 APA GasNet's forecast of capacity

Forecast Capacity (TJ/day)	2013	2014	2015	2016	2017
Longford to Melbourne	1030	1030	1030	1030	1030
South West pipeline (from Iona)	353	412	412	412	412
South West Pipeline (to Iona)	129	190	190	190	190
Western Transmission System	28	28	28	28	28
New South Wales Interconnect (to Victoria)	92	92	117	117	117
New South Wales Interconnect (from Victoria (Summer))	83	83	126	126	126
New South Wales Interconnect (from Vic (Winter))	38	38	81	81	81

Source: APA GasNet, *Access arrangement information*, 31 March 2012, p. 14.

APA GasNet's forecast of capacity shows a static level of capacity on the Longford to Melbourne and Western Transmission System sections of the VTS. There is no augmentation planned for these sections of the network.

[567] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 63.
[568] APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 63–64.

APA GasNet has proposed augmentation for the South West Pipeline and the New South Wales Interconnect. This augmentation consists of work being finalised over the 2008–12 access arrangement period and work planned for the 2013–17 access arrangement period. As a result, the VTS's capacity to deliver gas through the South West Pipeline (from Iona) is proposed to increase by 59 TJ/day in 2014, and exports through the New South Wales Interconnect by 43 TJ/day in 2015. [569]

9.2.3 APA GasNet's forecast of VTS utilisation

Table 9.2 shows APA GasNet's forecast of utilisation on the VTS over the 2013–17 access arrangement period. This capacity is estimated as a percentage of utilised capacity.

Table 9.2 APA GasNet's forecast of utilisation

Forecast Utilisation (%)	2013	2014	2015	2016	2017
Longford to Melbourne	43.3%	43.3%	43.2%	43.2%	43.4%
South West pipeline (from Iona)	34.4%	29.5%	40.6%	43.3%	50.6%
South West Pipeline (to Iona)	11.6%	7.9%	7.9%	7.9%	7.9%
Western Transmission System	46.9%	48.2%	49.0%	52.0%	52.5%
New South Wales Interconnect (to Victoria)	2.9%	2.9%	2.3%	2.3%	2.3%
New South Wales Interconnect (from Victoria (Summer))	24.5%	24.5%	38.6%	38.4%	38.6%
New South Wales Interconnect (to Vic (Winter))	40.3%	40.3%	45.2%	45.2%	45.2%

Source: APA GasNet, *Access arrangement information*, 31 March 2012, p. 15.

APA GasNet's utilisation forecasts show a flat usage of the VTS from Longford to Melbourne. This is consistent with AEMO's forecasts of system demand being fairly constant over the 2013–17 access arrangement period. The main changes in utilisation rates are due to demand for increased export capacity from shippers and the resulting planned augmentations of the network.

9.2.4 APA GasNet's forecast of maximum and average demand

APA GasNet also provided a forecast of system-wide maximum and average demand, as shown in Table 9.3.

[569] APA GasNet, *Access arrangement information*, 31 March 2012, p. 14.

Table 9.3 APA GasNet's forecast of maximum and average demand

Forecast Demand (TJ/day)	2013	2014	2015	2016	2017
Maximum demand	1306.8	1313.0	1358.9	1361.9	1369.4
Average demand	615.0	614.0	645.0	657.0	664.0

Source: APA GasNet, *Access arrangement information*, 31 March 2012, p. 15.

9.2.5 Further details of APA GasNet's demand forecasts

The forecast level of demand affects the way the reference service tariff is calculated for the VTS. In its submission, APA GasNet provided further disaggregated details on the level of demand on the VTS. These are required inputs to the tariff calculation for the 2013–17 access arrangement period. Forecast annual and peak levels of both withdrawals from the VTS and injections to the VTS are shown in Table 9.4 and Table 9.5 below.

Table 9.4 APA GasNet's forecast of withdrawals

Annual withdrawals (PJ)	2013	2014	2015	2016	2017
AEMO (excluding Fuel gas & GPG)	199.5	198.6	199.2	200.6	201.5
GPG	6.5	6.5	6.9	7.5	7.9
Culcairn	8.0	8.0	17.0	17.0	17.0
VicHub	2.0	2.0	2.0	2.0	2.0
UGS/LNG refill	8.0	8.0	8.0	8.0	8.0
Total	224.0	223.1	233.2	235.0	236.4
Peak withdrawals (TJ/day)					
AEMO (excluding Fuel gas & GPG)	1155	1152	1155	1162	1169
GPG	50	50	50	50	50
Culcairn	17	17	62	62	62
VicHub	6	6	6	6	6
UGS/LNG refill	–	–	–	–	–
Total	1228	1225	1273	1280	1287

Source: APA GasNet, *VTS Tariff Model - revised*, 8 July 2012.

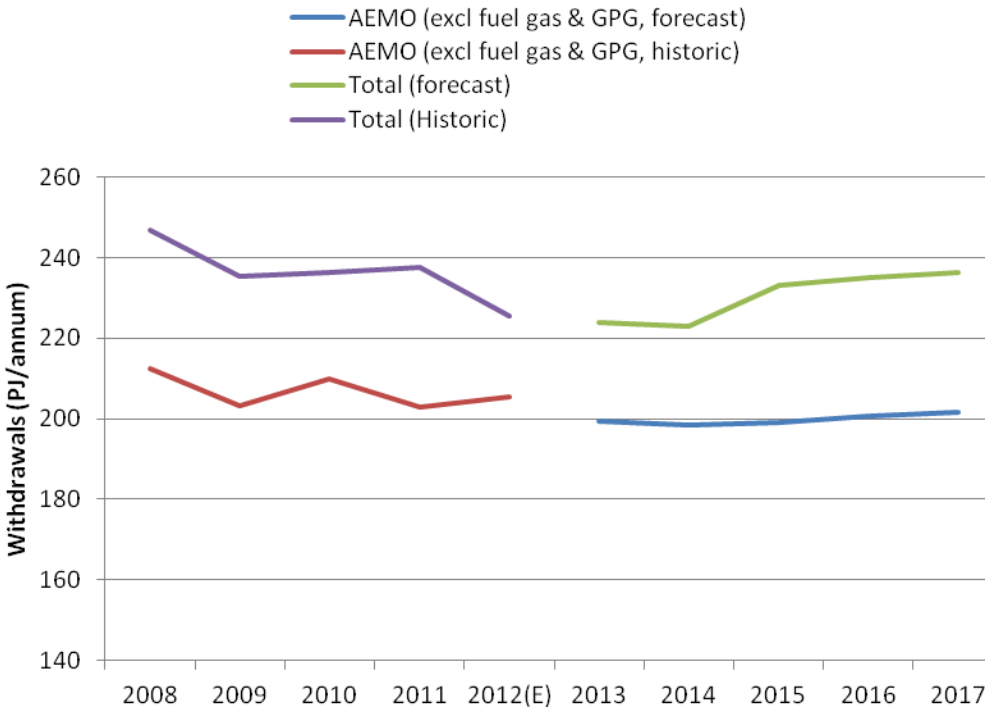
Table 9.5 APA GasNet's forecast of injections

Annual injections (PJ)	2013	2014	2015	2016	2017
Longford	162.8	162.8	162.4	162.5	163
Port Campbell	37.8	37	47.6	49.2	50.1
Culcairn	1.0	1.0	1.0	1.0	1.0
Pakenham	14.0	14.0	14.0	14.0	14.0
Dandenong	0.3	0.3	0.3	0.3	0.3
Total	216.0	215.1	225.2	227.1	228.5
Peak injections (TJ/day)					
Longford	730	727	730	737	744
Port Campbell	353	353	398	398	398
Culcairn	60	60	60	60	60
Pakenham	55	55	55	55	55
Dandenong	30	30	30	30	30
Total	1228	1225	1273	1280	1287

Source: APA GasNet, *VTS Tariff Model - revised*, 8 July 2012.

Figure 9.1 illustrates APA GasNet's forecast of VTS system demand, showing total demand on the VTS and the portion attributable to AEMO's usage (that is, excluding GPG, exports, and refill of underground storage).

Figure 9.1 APA GasNet's forecast of VTS system demand



Source: APA GasNet, *VTS Tariff Model - revised*, 8 July 2012, AER analysis

9.3 Assessment approach

For the purpose of price and revenue regulation, the NGR provides that the access arrangement information for a full access arrangement must include:

> to the extent it is practicable to forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period, a forecast of pipeline capacity and utilisation of pipeline capacity over that period and the basis on which the forecast has been derived.[570]

The NGR provides that any information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate. It also provides that a forecast or estimate must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.[571] Therefore, the AER must assess the service provider's forecasts of the pipeline capacity and utilisation of pipeline capacity over the access arrangement period for the covered pipeline.

The level of forecast demand is an input into the AER's determination of APA GasNet's tariffs for the reference service. Tariff levels, as well as the expectation of available capacity and utilisation of the pipeline are all relevant factors to users of the VTS.

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570 NGR, r. 72(1)(d).
571 NGR, r. 74.

The AER has undertaken an assessment of APA GasNet's forecasting methodology and the source of its data. The AER reviewed the assumptions underlying the forecasts to ensure that they are reasonable in the circumstances and unbiased. Underlying the AER's investigations were considerations of factors such as the existing trend in gas consumption in Victoria and the likelihood of increases or decreases in consumption triggered by gas powered generation or major industrial users starting up or shutting down.

In coming to its view on APA GasNet's demand forecasts, the AER had regard to the following sources of information:

- APA GasNet's access arrangement proposal
- AEMO's 2011 Victorian Annual Planning Report
- AEMO's 2011 Gas Statement of Opportunities
- Information from third parties that use the VTS.

The AER commissioned a report on the level of gas demand in Victoria from ACIL Tasman.[572] The AER considered ACIL Tasman's analysis in this decision.

9.4 Reasons for decision

The AER does not approve APA GasNet's capacity utilisation forecasts for the 2013–17 access arrangement period. The AER considers that the forecasts provided for the NSW Interconnect section of the VTS are not arrived at on a reasonable basis, and are not the best possible in the circumstances. Information provided by users of the pipeline does not support the total of the proposed increase in utilisation on the NSW Interconnect section of the VTS. The AER considers that the throughput of gas on this section of the VTS will be lower than that forecast by APA GasNet. Due to the influence of augmentation projects proposed by APA GasNet on the capacity of the pipeline, which the AER has not approved, the AER also considers that the capacity and utilisation rates of some sections of the VTS will be different to those forecast by APA GasNet.

The AER considers that APA GasNet's forecasts of usage on other sections of the pipeline are arrived at on a reasonable basis and are the best possible in the circumstances. The AER considers that in the circumstances, it is appropriate to use the forecasts provided by AEMO and that these forecasts are provided based on reasonable assumptions and methodologies. These forecasts will, however, require updating for the final decision using the most recent information to remain the best forecasts in the circumstances.

9.4.1 APA GasNet's capacity utilisation forecasts for the NSW Interconnect

APA GasNet has proposed the Gas to Culcairn augmentation project to increase the capacity of the VTS to deliver gas to NSW.[573] For a full discussion of the AER's consideration of this project, see the capex attachment 3.

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572 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012.

In support of its proposal to augment the VTS to carry more gas through Culcairn and the NSW Interconnect, APA GasNet has proposed that the extra capacity demanded by shippers will allow the project to return a net economic benefit.

The AER received submissions from Origin, AGL, and TRUenergy on the subject of APA GasNet's capacity utilisation forecasts for the NSW Interconnect. Origin submitted that actual withdrawals at Culcairn had exceeded forecast withdrawals over the 2008–12 access arrangement period.[574] TRUenergy submitted that it supported the proposed expansion of withdrawal capacity at Culcairn due to the many requests for the increased capacity that APA GasNet had received.[575] AGL submitted that the volumes attributed by APA GasNet to AGL's use of the VTS to ship gas to Culcairn were inaccurate.[576]

Further discussion of these submissions, and the issues raised by them, is provided in confidential appendix D.

The AER considers that the information it has received directly from shippers on their plans to utilise the VTS does not support the level of utilisation APA GasNet has forecast for the NSW Interconnect.[577] The AER considers that the best possible forecast in the circumstances is that provided in section 9.5 below.

The AER has considered APA GasNet's proposed augmentation plan for the NSW Interconnect, and does not approve it. This has changed the likely available capacity on the NSW Interconnect.[578] As such, the AER has made the requisite changes to the forecast of available capacity in Table 9.6, in section 9.5 below.

9.4.2 APA GasNet's use of AEMO's forecasts

With the exception of certain demand forecasts (see 9.4.1 above, and 9.4.3 and 9.4.4 below) APA GasNet's capacity utilisation forecasts rely on the forecasts provided by AEMO in its 2011 Gas Statement of Opportunities publication (GSOO). AEMO has responsibilities in the Victorian Declared Wholesale Gas Market as the Market Operator, and is also the VTS operator. Furthermore, AEMO reports on the interconnected Australian gas transmission systems in its GSOO. AEMO is in a unique position that gives it expertise in forecasting gas flows through the VTS.

The substantive inputs to the econometric models that underlie AEMO's gas usage forecasts are:

- Victorian gross state product
- State industry output projections, and

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573 APA GasNet, *Access arrangement submission*, 31 March 2012, pp. 95–96.
574 Origin, Submission to the AER: APA GasNet access arrangement proposal, 21 June 2012, p. 3.
575 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 5.
576 AGL, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, pp. 2–3.
577 AGL, Submission to the AER: APA GasNet access arrangement proposal (confidential), 18 June 2012.
578 See the attachment 3 - capital expenditure, of this decision.

- Projections of state population, dwelling stocks, real household disposable income, gas and electricity prices and the CPI.[579]

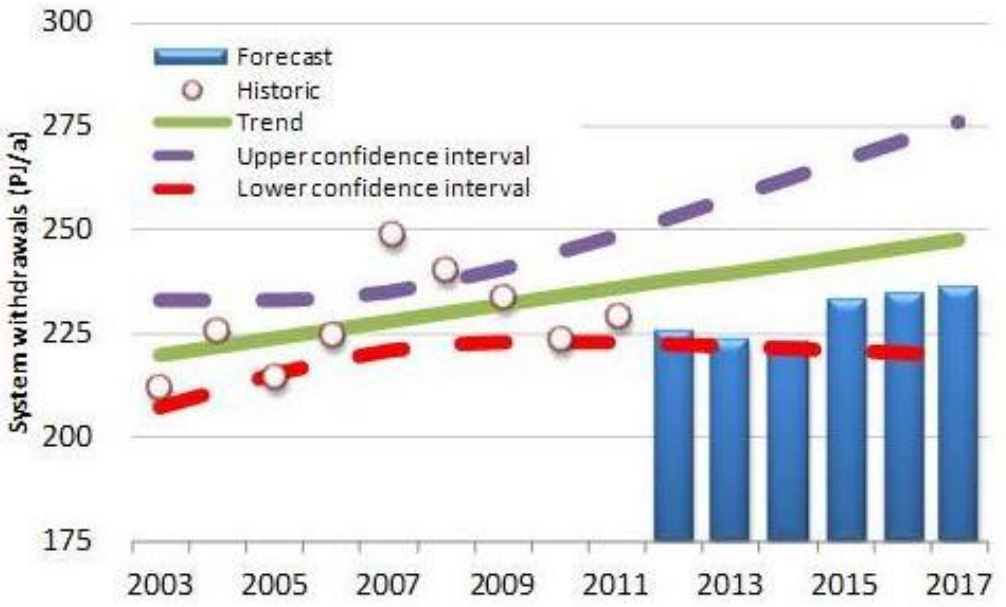
Additional input factors taken into account in the forecasts include:

- a survey of major industrial gas users
- market information obtained from media reports
- Federal and State government energy policies, and
- standard weather conditions.[580]

The AER considers that these factors are representative of the likely determinants of future gas demand. The AER considers that the methods by which these factors are taken into account, and the forecasts arrived at, are made on a reasonable basis and the best possible in the circumstances.

The AER has considered a report on the demand forecasts for APA GasNet by its consultants ACIL Tasman. Figure 9.2 compares a trend analysis of weather adjusted historical system withdrawals on the VTS with forecast withdrawals.

Figure 9.2 Weather adjusted historical and forecast system withdrawals from the VTS



Source: ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, p. 31.

579 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 11-12.
580 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 11-12.

An analysis of historical withdrawals (adjusted for weather) with the forecast system withdrawals shows that the forecast volumes are not dissimilar to the existing demand trend. In addition, the slope of the trend line in Figure 9.2 would be lower were it not for anomalously high demand in 2007 due to drought conditions resulting in high dispatch of Victorian GPG.[581]

The forecast of slow growth in system demand is supported by the survey of major industrial gas users, and publically available information on recent plant closures. [582] [583]

The Energy Users Coalition of Victoria submitted that APA GasNet has an incentive to underestimate gas demand when forecasting. It further submitted that APA GasNet has forecast a drop in gas demand with little evidence to support this.[584]

In response, the AER considers that information from the National Institute of Economic and Industry Research's (NIEIR) survey of major industrial gas users, as well as public information available on plant closures, supports the forecast reduction in demand from 2011. Reports from ACIL Tasman and AEMO further support this conclusion[585] [586].

Furthermore, the forecasts for peak demand on the VTS are also broadly in line with the trend underlying historical data.[587] The forecasts of peak demand levels were arrived at on the basis of applying load factors to the forecasts of average daily demand.[588] The AER recognises that there are inherent difficulties in forecasting peak demand levels due to the highly specific conditions that contribute to such demand, such as weather and electricity market conditions. The AER considers, however, that the basis of the approach is reasonable and represents the best possible estimates in the circumstances.

AEMO will produce a GSOO for 2012 later this year, and this publication will update the forecasts for Victorian gas demand. The NGR require that the forecasts provided in a gas access arrangement must be arrived at on a reasonable basis, and must represent the best forecast or estimate possible in the circumstances.[589] As such, the AER intends to update APA GasNet's forecasts of system demand with the most recently available forecasts prior to its final decision.

9.4.3 APA GasNet's forecast of GPG-related demand

APA GasNet has not used AEMO's 2011 GSOO to provide its forecast of demand on the VTS from GPG. Figure 9.3 shows APA GasNet's forecast of GPG demand and historic GPG

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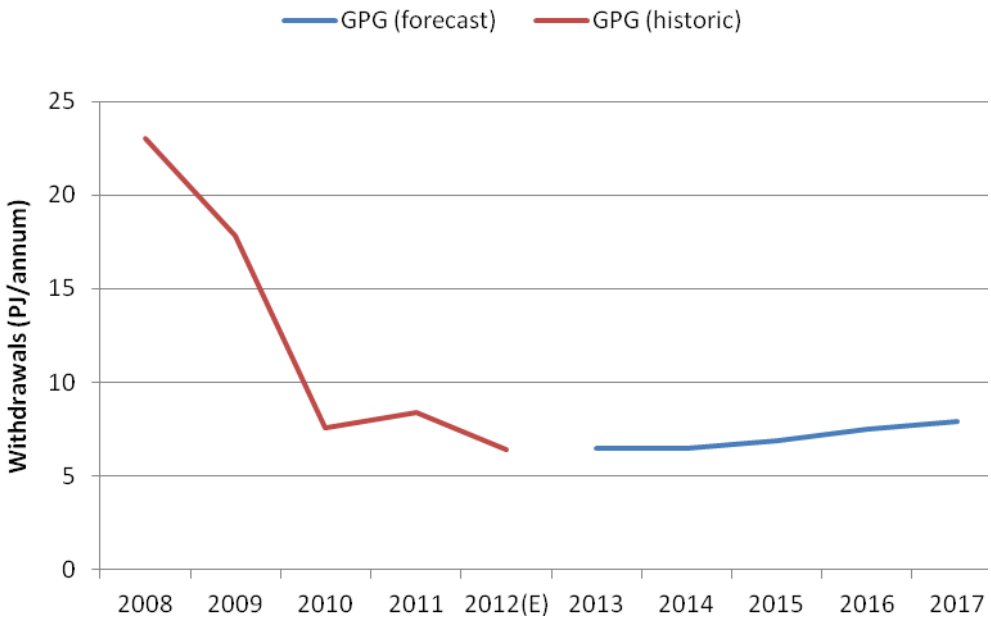
581 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, p. 31.
582 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 12–13.
583 NIEIR, *Natural gas forecasts and customer number forecasts for the Multinet distribution region to 2021*, December 2011, p. 35.
584 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 34.
585 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, p. 31.
586 AEMO, *Gas Statement of Opportunities 2011*, December 2011, p. A1-2.
587 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, p. 34.
588 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, p. 12.
589 NGR, r. 74(2).

demand. The year 2008 was a particularly high GPG-demand year due to drought conditions impacting the availability of a number of power stations.[590]

Figure 9.3 Forecast and historic GPG demand



Source: APA GasNet, *VTS Tariff Model - revised*, July 2012, AER analysis

The AER considers it appropriate that APA GasNet utilise AEMO's mid-range forecasts for 2012 as a starting point to forecast its GPG-related demand. The AER also considers that APA GasNet's assumption that demand from GPG is likely to increase over the access arrangement period reasonable, given the passage of the Federal Government's *Clean Energy Future* legislation. Although APA GasNet's forecast rise of 0.5 PJ/year in demand from GPG is a conservative estimate, the AER considers that it is not an unreasonable estimate in the prevailing circumstances. A report prepared for the AER by ACIL Tasman also states that APA GasNet's estimate of the year-to-year increase in demand from GPG is consistent with the underlying conditions in the market for Victorian electricity generation.[591] APA GasNet also submits that no existing brown coal generators have approached it to procure gas transportation services as replacement for generators shut down under the Clean Energy Future's Contract for Closure program.[592] The AER considers that APA GasNet's forecasts of demand from GPG is made on a reasonable basis, and is the best possible in the circumstances. The AER further considers, however, that the forecast may require updating for its final decision to take into account the most recent available information in order for it to remain the best possible in the circumstances.

590 AEMO, *Electricity Statement of Opportunities 2010*, August 2010, pp. 158 and 164.
591 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 26–27.
592 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 64.

The Energy Users Coalition of Victoria submitted that APA GasNet's forecasts of GPG gas demand do not align with those of AEMO.[593]

The AER considers that the forecast of GPG demand contained in AEMO's 2011 GSOO is not a reasonable estimate, nor the best in the circumstances. The AEMO forecast shows a substantial spike in VTS-connected GPG demand in the final year of the 2013–17 access arrangement period (from 9.9 PJ of demand in 2016 to 19.3 PJ in 2017). Federal Treasury modelling on the effects of the *Clean Energy Future* legislation package shows no significant spike in GPG generation over the 2013–17 access arrangement period.[594] The AER considers that the predicted path of power generation over the 2013–17 access arrangement period will be affected by the assumptions of whether the price of carbon will continue to rise after the fixed-price period, or will fall for a period of time. The price of carbon will have an effect on the relative cost-competitiveness of GPG compared to coal-fired electricity generation. The Victorian Gas Declared Transmission System Medium Term Outlook appendix to AEMO's 2011 GSOO assumes that the carbon price after the initial fixed-price period will continue to rise in line with Treasury's core policy scenario.[595] This is in contrast to the proposition in the main body of the document, which assumes a higher carbon price.[596] APA GasNet's rejection of AEMO's GPG demand forecasts are, however, based on the appendix to the 2011 GSOO.[597]

The AER's demand consultants, ACIL Tasman, have advised that following the fixed-price period, the price of carbon is not likely to rise to the degree forecast in Treasury's core policy scenario. Furthermore, ACIL Tasman's analysis shows that AEMO's forecast of electricity demand in the Victorian market has fallen substantially between the release of the 2011 Electricity Statement of Opportunities (August 2011) and the 2012 National Electricity Forecasting Report (June 2012).[598] The assumption of a lower relative carbon price, and lower overall demand for electricity, has a dampening effect on the forecast of gas demand for GPG in the Victorian market. ACIL Tasman's modelling of the Victorian electricity market shows that significant transition to GPG from coal is not likely to occur within the 2013–17 access arrangement period.[599]

The AER has considered the information provided by APA GasNet, AEMO and ACIL Tasman, and considers that more weight should be given to the most recent and ongoing analysis of demand provided by ACIL Tasman. The AER considers that the forecast of a relatively slow increase in demand from GPG towards the end of the 2013–17 access arrangement period represents the best possible estimate in the circumstances, rather than the forecast provided in AEMO's 2011 GSOO.

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593 Energy Users Coalition of Victoria, Submission to the AER: APA GasNet access arrangement proposal, 18 June 2012, p. 35.

594 Treasury, *Strong Growth, Low Pollution: Modelling a Carbon Price*, July 2011, p. 119.

595 AEMO, *GSOO 2011*, December 2011, p. A1-11.

596 AEMO, *GSOO 2011*, December 2011, p. 1–13.

597 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 63.

598 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 26–27.

599 ACIL Tasman, *Review of Demand Forecasts for APA GasNet*, July 2012, pp. 26–27.

9.4.4 Other forecast components

APA GasNet has further supplemented AEMO's forecasts with its own forecasts of gas flows to and from the Western Underground Storage (WUGS), the SEAGas pipeline, VicHub, and the LNG facility at Dandenong.[600] Usage of gas for these purposes is small relative to overall system demand on the VTS.

Some of the factors affecting gas usage at these points on the VTS include:

- weather
- production of both Victorian and interstate gas fields
- relative prices of gas in different geographic regions.

Historically, the magnitudes of these flows has fluctuated widely.[601] The AER has analysed the flows through these connection points identified by APA GasNet over the previous ten years, and accepts that the variation in demand at these connection points makes forecasting difficult. Furthermore, the AER considers that commercial decisions by shippers based on prevailing gas prices in Victoria and geographically removed markets also play a role in gas throughput at these connection points, as stated by APA GasNet.[602]

The AER considers that given the likely unpredictable variation in the demand at these connection points of the VTS over time, the approach proposed by APA GasNet of forecasting a stable level of withdrawals is a reasonable basis on which to forecast demand. On the basis of the information provided in APA GasNet's proposal, together with ACIL Tasman's advice, the AER considers that the demand forecasts for these connection points on the VTS represent the best possible in the circumstances.

9.5 Revisions

The AER considers that the capacity utilisation forecasts provided by APA GasNet are not arrived at on a reasonable basis, and are not the best possible in the circumstances. The AER has provided substitute forecasts of capacity, utilisation, average and maximum demand on the VTS. The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 9.1

Make all necessary amendments to reflect the AER's draft decision on the proposed capacity utilisation forecasts for the 2013–17 access arrangement period, as set out in Table 9.6, Table 9.7 and Table 9.8.

600 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 61.
601 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 62.
602 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 61.

Table 9.6 Forecast of VTS capacity[603]

Forecast Capacity (TJ/day)	2013	2014	2015	2016	2017
Longford to Melbourne	1030	1030	1030	1030	1030
South West pipeline (from Iona)	353	353	422	422	422
South West Pipeline (to Iona)	129	129	190	190	190
Western Transmission System	28	28	28	28	28
New South Wales Interconnect (to Vic)	92	92	110	110	110
New South Wales Interconnect (from Vic (Summer))	83	83	101	101	101
New South Wales Interconnect (from Vic (Winter))	38	38	56	56	56

Table 9.7 Forecast of VTS utilisation

Forecast Utilisation (%)	2013	2014	2015	2016	2017
Longford to Melbourne	43.3%	43.3%	43.2%	43.2%	43.4%
South West pipeline (from Iona)	29.3%	28.7%	29.0%	30.0%	30.6%
South West Pipeline (to Iona)	11.6%	11.6%	7.9%	7.9%	7.9%
Western Transmission System	46.0%	46.0%	46.0%	46.0%	46.0%
New South Wales Interconnect (to Victoria)	3.0%	3.0%	2.5%	2.5%	2.5%
New South Wales Interconnect (from Victoria (Summer))	26.4%	26.4%	38.0%	38.0%	38.0%
New South Wales Interconnect (from Victoria (Winter))	57.7%	57.7%	68.5%	68.5%	68.5%

[603] These capacity figures are indicative and based on AER analysis.

Table 9.8 Forecast of VTS maximum and average demand

Forecast Demand (TJ/day)	2013	2014	2015	2016	2017
Maximum demand	1228	1225	1258	1265	1272
Average demand	591.8	589.3	608.8	613.7	617.5

10 Tariff setting

An access arrangement must set out how a service provider intends to charge for reference services. The service provider's access arrangement information must include an explanation of the basis for setting reference tariffs, including the method used to allocate costs and a demonstration of the relationship between costs and tariffs.[604] The AER will assess APA GasNet's proposed reference tariffs against the provisions of the NGR and the NGL, in particular r. 93, r. 95 and r. 96 of the NGR, and the revenue and pricing principles and the NGO from the NGL.

This attachment describes the AER's assessment of the reference tariffs proposed by APA GasNet and sets out the revisions required by this decision. The AER's assessment focuses on the design and structure of tariffs and the allocation of costs to services.

10.1 Draft decision

The AER accepts the fundamental features of the proposed reference tariff, including the tariff design, the zonal structure, the basis for charging users, and the general approach to allocating costs.

However, the AER does not approve a number of specific elements of the proposal, principally in relation to cost allocation. This necessarily affects the calculation of the reference tariff. APA GasNet is required to recalculate the reference tariff incorporating the revisions described below and the various other revisions in this draft decision that affect the inputs to the tariff calculation such as the approved capex forecast, opex forecast and WACC.

Specifically, the AER:

- requires that the proposed Anglesea, Kalkallo and Warragul laterals be allocated to the correct tariff zones
- does not accept the application of the ORC cost allocation procedure for the existing Murray Valley pipeline and the South West pipeline, and requires the allocation to these pipelines be determined on a stand-alone basis
- does not accept the ORC allocation procedure for the proposed Gas to Culcairn project, and requires the allocation to this project be determined on a stand-alone basis
- requires that the forecast export volumes through Culcairn pay at least the incremental cost of the proposed Wollert to Wodonga expansion
- requires that users in the northern tariff zones receive an allocation of indirect costs which minimises the movement in tariffs from the 2008–12 access arrangement.

[604] NGR, r. 48(1)(d)(i); r. 72(1)(j).

10.2 APA GasNet's Proposal

APA GasNet proposed a highly detailed and complex tariff setting methodology. The main elements of the proposal are described under the following headings.

Tariff design

APA GasNet proposed a tariff design which is substantially the same as that applied in the 2008–12 access arrangement.

The key features of the design are:

- tariffs are levied on actual flows by users rather than on capacity reservations
- users are charged for injections into the system at multiple injection zones, and for withdrawals from the system at multiple withdrawal zones
- the injection tariffs recover the direct costs associated with use of the injection pipelines, and the withdrawal tariffs recover the direct costs attributable to the physical path taken by the gas flows through the system
- indirect costs and costs related to assets with system-wide benefits are, with exceptions, allocated at a fixed commodity rate on a postage stamp basis
- the physical path is based on a forecast of the predominant flow, but certain exceptions are made to this methodology, specifically:
    - certain withdrawal tariffs can be matched to an injection zone
    - a cross-system tariff applies where withdrawals from an injection pipeline are matched to injections in a different injection zone
    - special tariffs apply to refill of storage facilities in off-peak periods
- in general there are no backhaul charges for flows on injection pipelines against the predominant flow.

Tariff Classes and Charging Parameters

APA GasNet proposed no change in the definition of the tariff classes:

- a differential withdrawal tariff is charged in relation to tariff-V and tariff-D customers in each withdrawal zone
- distinct withdrawal tariffs are charged to users at system export and storage refill locations
- injection tariffs are charged to registered Market Participants authorised by AEMO to inject gas into the system.

APA GasNet proposed no changes to the charging parameters applied to users:

- injections are charged on the user's actual injections on the 10 peak injection days at each injection zone

- withdrawals are charged on the user's actual annual withdrawals (applicable to both tariff-D and tariff-V, system export, cross-system and refill tariffs).

Tariff Zones

APA GasNet proposed to retain the existing tariff zones.

This includes 5 injection zones (with matched withdrawals within 2 of these zones), 25 withdrawal zones, 2 system export zones, 2 storage refill zones and a cross-system tariff.

APA GasNet did not propose new zones for any of its proposed extensions capital expenditure projects. The WORM is allocated to the Metro zone, the Kalkallo lateral is allocated to South Hume, and the Anglesea lateral is allocated to the Port Campbell injection tariff.

Cost allocation to the reference services

APA GasNet submitted that the costs set out in its access arrangement information relate only to reference services. The costs incurred in providing non–reference services are not included in the access arrangement information because they are directly recovered from customers requesting the service. APA GasNet stated that it has a robust process in place for allocating its costs and revenue between regulated and non-regulated activities to ensure that there is no cross subsidisation between regulated and non-regulated activities. This procedure is discussed below.[605]

Capital Expenditure

All capital expenditure activities are directly coded to job names. Job names are created for regulated and non-regulated activities. Therefore any expenditure incurred for non-regulated activities are not included in capital and operating expenditure allocated to the VTS or reported in the access arrangement revision proposal.

Operating Expenditure

Operating activities are either directly coded to job names or if the activity relates to both regulated and non-regulated activities, then a weighting is applied to that activity. The weighting is based on relative asset base values of regulated and unregulated assets.

Employee times

The majority of APA GasNet employees also complete a timesheet for approval on a weekly basis. These timesheets accurately record time spent on either regulated or non-regulated activities and all the times related to the non-regulated activity is not included in recorded expenditure on regulated assets.

Corporate Overheads

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[605] APA GasNet, *Access arrangement submission*, March 2012, p. 15.

After direct costs have been allocated to the assets that drive those costs, general APA Group Corporate Overheads are allocated to each asset based on the revenues received for each asset.

Cost allocation to users of the reference service

APA GasNet proposed a highly detailed cost allocation procedure which is substantially the same as applied in the 2008–12 access arrangement, but with a number of modifications in key areas.

The main features of the proposed cost allocation are:

Direct costs

- direct costs are the capital and opex costs associated with each of the 29 asset groups in the system (return of and on capital, locational opex and capital raising costs)
- the allocation of direct capital costs to each asset group is determined on the basis of the ORC of the assets in each group (this method is applied to all assets, including all expansions and extensions proposed in the access arrangement)
- direct costs are allocated to each off-take on the basis of the forecast physical flow of gas through each asset group
- direct costs associated with assets which have previously been included in the RAB under the system-wide benefits test are allocated on a postage stamp basis with exceptions
- direct costs within withdrawal zones are allocated 52.5% to forecast peak day flows and 47.5% to forecast annual flows; direct costs of injection pipeline assets are allocated 100% to forecast peak flows.

For pricing purposes, the off-take points are amalgamated into tariff zones.

Indirect costs

- indirect costs include corporate overheads, non-system asset-related costs (buildings and land), efficiency benefit sharing allowance carryovers, and corporate tax liabilities
- indirect costs are assigned to total forecast annual flows in all withdrawal zones on a postage stamp basis with certain exceptions.

No costs are allocated to cross-system flows, or exports at SEAGas and VicHub.

Proposed changes to the cost allocation methodology

APA GasNet implemented a number of changes to the cost allocation methodology from previous practice:

- the proposal allocates all direct capital costs to assets by the ORC allocation method (including the South West pipeline and the Murray Valley pipeline), whereas in earlier access arrangements the costs associated with these pipelines had been determined incrementally and charged on a user pays basis

- the basis on which indirect costs are allocated to withdrawal zones has been changed with the aim of minimising excessive changes to zonal tariffs from the 2008–12 access arrangement period

- the allocation of the direct costs of the South West pipeline to the Port Campbell injection tariff has been increased from 50% to 80% on the basis of parity with the Longford tariff

- the allocation of the direct costs of the Interconnect assets to the Culcairn injection tariff has been increased from 7% to 25% to match increased injection volumes at Culcairn

- APA GasNet proposed a significant increase in the matched system export tariffs at the SEAGas and VicHub export points. In response to a question from the AER, APA GasNet indicated that the system export tariffs would not differ from the values in the 2008–12 access arrangement.[606]

- the allocation of direct costs to forecast peak flows is reduced from 55.6% to 52.5%.

Prudent Discounts

APA GasNet proposed prudent discounts in the Maryvale zone, Metro South-East zone (matched to Pakenham injections) and the Warrnambool and Koroit zones.

The proposed discounted tariffs are not significantly different from previously approved tariffs.

10.3 Assessment approach

The AER must assess the proposed reference tariffs against the provisions of the NGR and the NGL. Where the AER does not approve the proposed reference tariffs, the AER must determine the reference tariff to apply over the next access arrangement period.

Identifying the reference service

A reference tariff must be set for each reference service.[607] The AER assesses the reference services proposed by APA GasNet against r. 101 of the NGR. The AER's draft decision on what constitutes the reference service(s) is set out in attachment 1 - Pipeline Services.

Assessing the tariff setting methodology for the reference service

Once the reference service(s) is identified, the AER assesses the cost allocation and tariff setting methodologies proposed by APA GasNet against the requirements of the NGR and the NGL. The reference tariffs for a transmission pipeline must satisfy r. 93, r. 95 and r. 96 of the NGR. The AER's discretion under r. 95 is limited.[608] This means that any elements of APA GasNet's proposed reference tariff that comply with applicable requirements of the NGR and NGL and are consistent with the applicable criteria must be approved even if the AER considers an alternative proposal is more desirable.

606 APA GasNet, *Response to information request No.16*, dated 4 July 2012, p 5.
607 NGR, r. 41(1)(d).
608 NGR, r. 95(4).

A service provider must set out how it intends to charge for reference services and explain the basis for setting the reference tariff(s) in its access arrangement proposal.[609]

The NGR requires that the total revenue must be allocated between reference and other services in the same ratio that costs are allocated between those services.[610] The service provider must also explain the basis for setting reference tariffs by defining the tariff classes and allocating the revenue to be raised from each tariff class with the cost of providing service to each class.[611]

The costs allocated to users must comply with r. 95(3) of the NGR, which states:

> The portion of total revenue referable to providing a reference service to a particular user or class of users is determined as follows:
>
> (a) costs directly attributable to supplying the user or class of users are to be allocated to the relevant user or class; and
>
> (b) other costs are to be allocated between the user or class of users and other user or class of users on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.

The AER considers that costs which are directly associated with assets that provide haulage services for the benefit of users fall under paragraph (a) of r. 95(3). These are referred to as 'direct costs' and include the direct asset costs (return on capital, depreciation, capital raising costs) and the direct locational costs of operating and maintaining these assets.

Other costs referred to in paragraph (b) of r. 95(3) includes the capital costs associated with non-system assets (such as office buildings) and general corporate overheads. These are classified as 'indirect costs'.

The AER assesses APA GasNet's proposals against these requirements taking into account the revenue and pricing principles in s. 24 of the NGL in a manner that will or is likely to contribute to the achievement of the NGO.[612]

In making its decision on APA GasNet's proposed reference tariff, the AER relies on:

- APA GasNet's access arrangement information and access arrangement proposal – these documents set out APA GasNet's reference tariffs and reference tariff policy
- the APA GasNet tariff model – this model performs the cost allocation procedures and calculates the predominant flow paths and associated zonal injection and withdrawal tariffs.
- the detailed RAB allocation model – this model allocates assets to the asset groups used by the cost allocation procedures in the tariff model
- additional information provided by APA GasNet in response to the AER's information requests

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609 NGR, r. 72(1)(j).
610 NGR, r. 93(1); rule 95(2).
611 NGR, r. 95(1)(3).
612 NGL, s. 28

- submissions received in the course of consulting on the access arrangement proposal.

10.4 Reasons for decision

The AER accepts that the fundamental aspects of the proposed tariff methodology which are carried over from the 2008–12 access arrangement are consistent with the NGR and the NGL. This includes the tariff design, the definition of tariff zones and tariff classes, and the charging parameters.

The AER has reviewed the proposed prudent discounts and accepts the discounted tariffs proposed by APA GasNet. The AER reasons are discussed below.

The AER also accepts key aspects of the cost allocation procedures which are carried over from the 2008–12 access arrangement. However, in a number of specific areas the AER does not accept the proposal from APA GasNet.

As a consequence, the AER does not approve the reference tariff as proposed by APA GasNet. The aspects of the proposal not approved by the AER and the reasons for the AER decision are described below.

10.4.1 Tariff design

The AER has assessed the broad features of the proposed tariff design[613] and accepts that the tariff design is consistent with the relevant provisions of the NGR and the NGL.

APA GasNet states that the proposed tariff structure and design is a balance between cost reflectivity and efficiency, and administrative simplicity and price stability. The AER considers that the level of complexity in the design and structure of the proposed tariff is an appropriate balance of cost reflectivity and complexity.

APA GasNet's proposed design is adapted to the Market Carriage model operating in Victoria. The tariff design encompasses gas injections into 3 injection pipelines, and withdrawals from 25 withdrawal zones over an extended geographical area, including exports to interconnecting pipelines at 3 locations, and refill of storage facilities at 2 locations.

The specific elements of the design that the AER has considered and approves are:

- levy charges on actual flows rather than capacity
- define separate tariffs for injections into and withdrawals from the system
- define multiple injection and withdrawal zones to reflect costs in delivering gas along the physical path
- apply matched injection and withdrawal rebates where this is cost reflective and a material issue.

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[613] Section 11.1.4 of the APA GasNet *Access arrangement submission*, 31 March 2012.

The AER accepts that the proposed design and structure is appropriate and consistent with r. 95 of the NGR and section 24 of the NGL.

The AER has classified AMDQ CC service as a pipeline service[614] and requires section 4.2 of the proposed access arrangement, which sets out the components of the reference tariff, to be amended in accordance with revision 10.13.

The AER has not received submissions related to APA GasNet's proposed tariff design and structure.

10.4.2 Tariff classes and charging parameters

APA GasNet has retained the classification of users into tariff-V (volume-metered) and tariff-D (daily-metered) customers. This classification allows different levels of peak-related and commodity-related costs to be allocated to tariff-V and tariff-D customers, who generally have significantly different peak load factors. The separation of users into two tariff classes permits a more cost reflective allocation of direct costs to users.

APA GasNet has also retained the charging parameters from the 2008–12 access arrangement. All injection charges are levied on the 10 peak days applicable to each injection zone. Withdrawals, including exports, are charged a set amount per GJ withdrawn at any time of the year.

The AER accepts that APA GasNet's proposed tariff classes and charging parameters are consistent with r. 95(3) of the NGR.

10.4.3 Storage refill and cross-system tariffs

Storage refill tariffs

APA GasNet proposed to continue the practice employed in the 2008–12 access arrangement and charge for transportation to the storage refill sites at marginal cost. However, APA GasNet is no longer required to purchase compressor fuel, and as this was the major component of the WUGS transmission refill tariff, APA GasNet proposed to reduce the tariff to a nominal value of $0.05/GJ.

APA GasNet also proposed to exclude the refill tariff volumes and revenues from the price control formula. The AER accepts that this is appropriate given the high level of uncertainty about refill volumes in any given year.

The AER accepts that the revenue generated by the proposed tariff is reasonably reflective of the marginal costs incurred, consistent with r. 95(3) of the NGR. It is also appropriate that indirect costs are not allocated to these zones, since the beneficiaries of the service will pay this cost when the storage volumes are injected back into the system and withdrawn from the withdrawal zones. For these reasons the AER accepts APA GasNet's proposal.

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[614] See attachment 1 of this draft decision.

Cross-system tariffs

APA GasNet proposed to retain the cross-system tariffs approved in the 2008–12 access arrangement. This tariff is levied for carriage across the Metro zone where an injection is made into the South West pipeline and a withdrawal is taken from the Longford pipeline, and vice versa. These flow paths are against the predominant physical flow path and are allocated no costs for carriage across the Metro zone under the APA GasNet physical path methodology.

The AER accepts that this tariff sends an appropriate price signal for use of the system, consistent with the revenue and pricing principles in the NGL.[615] The AER approves APA GasNet's proposal to levy a cross-system tariff.

10.4.4 Tariff zones

APA GasNet proposed to retain the existing tariff zones from the 2008–12 access arrangement. The AER accepts that there are no new injection points or significant geographical extensions of the system which might warrant a new zone.

The ACCC has previously assessed the need for a large number of withdrawal zones as proposed by APA GasNet, and decided that the increased complexity was justified because of the greater cost reflectivity.[616] The AER accepts that the zone definitions proposed by APA GasNet are consistent with r. 95(1) of the NGR.

Allocation of new assets to zones

APA GasNet proposed a number of new expansions and extensions of the VTS in the access arrangement, and allocated the direct costs associated with these new assets to specific asset groups and the associated tariff zones.

In respect of expansions, APA GasNet allocated the asset-related costs of new facilities to the asset groups which will be augmented by the new capex. The Stonehaven compressor is allocated to the South West injection pipeline, and the Wollert to Wodonga expansion is allocated to the relevant asset groups in the North and South Hume zones[617]. The AER accepts that these allocations are appropriate and consistent with r. 95(3)(a) of the NGR.

APA GasNet did not indicate to which zone the Warragul expansion should be allocated. The AER requires that to be consistent with r. 95(3)(a) of the NGR, the direct costs of the Warragul expansion should be allocated to the Lurgi tariff zone. This is because the Warragul expansion is connected to the Lurgi pipeline and geographically located within the Lurgi tariff zone.

In respect of extensions, APA GasNet allocated the WORM to the Metro zone, the Anglesea lateral to the Port Campbell injection zone, and the Kalkallo lateral to the Metro zone.

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615 NGL, s. 24(7).

616 ACCC, *Final decision, GasNet Australia access arrangement*, April 2008, p. 148.

617 The Stonehaven compressor and the Wollert to Wodonga expansion are components of APA GasNet's proposed Gas to Culcairn project, discussed in attachment 3 of this draft decision.

The allocation of the WORM to the Metro zone is appropriate, because this asset supports the delivery of gas within and across the Metro zone area, and is therefore attributable to this zone.

However, the AER does not accept the allocation of the direct costs associated with the Anglesea lateral to the Port Campbell injection zone. The Anglesea lateral is required to provide greater security of supply to users in and near the Geelong zone, and is therefore directly attributable to the users in this zone. Most of the gas injected into the South West pipeline is not intended for delivery at Geelong, and hence it is not appropriate to allocate the Anglesea lateral costs to these injections. The allocation proposed by APA GasNet is not consistent with r. 95(3)(a) of the NGR, which requires that costs directly attributable to a class of user should be allocated to that class of users.

The AER requires APA GasNet to allocate the direct costs associated with the Anglesea lateral to the Geelong withdrawal zone, and not to the Port Campbell injection zone.

The AER has also considered the proposed allocation of the direct costs of the Kalkallo lateral. APA GasNet proposed to connect this lateral to the WORM, or alternatively to connect to the Wollert to Euroa pipeline just north of Wollert in the event the WORM project does not proceed[618].

The Kalkallo township is part of the larger Metro zone, and the lateral supplying the town is part of the system of pipelines required to distribute gas to users in this zone. It is therefore appropriate to allocate the lateral costs to the Metro zone. In response to a query from the AER, APA GasNet confirmed that the Kalkallo lateral is allocated to the Metro zone.[619] However, in the event that APA GasNet does not construct the WORM and connects the lateral to the Wollert to Wandong pipeline, the AER considers that it is still appropriate to allocate the costs to the Metro zone. It is not appropriate to allocate the Kalkallo lateral costs to the South Hume zone because the South Hume asset costs are recovered from all users downstream of this zone, and the Kalkallo lateral costs are not directly attributable to these downstream users. Consistent with r. 95 of the NGR, the AER requires APA GasNet to allocate the costs of the Kalkallo extension to the Metro zone irrespective of the lateral connection point.

10.4.5 Cost allocation to the reference and non reference services

The AER is satisfied that the proposed procedure for the allocation of total revenue and costs between reference services and other services is reasonable and would comply with r. 93(1) and r. 93(2) of the NGR. However, the AER is not satisfied that sufficient evidence has been provided to demonstrate that these procedures have been adhered to and correctly applied in the 2008–12 access arrangement period. This is important to the establishment of the RAB and the review of expenditures associated with regulated activities in the 2013–17 access arrangement period.

The AER considers that APA GasNet should include supporting information such as timesheets, job classification codes in its revised proposal to demonstrate the proposed

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618 Kalkallo Business Case, dated 3 March 2012, p. 3.

619 APA GasNet, *Response to information request No.23*, dated 31 July 2012, p. 4.

allocation procedure for total revenue and costs between reference services and other services has been correctly applied in the 2008–12 access arrangement period. Alternatively, APA GasNet may provide a report by an independent auditor to confirm the correct application of the proposed cost allocation procedure, and the verification of the allocated revenue and costs between regulated and unregulated activities.

10.4.6 Cost allocation

APA GasNet proposed to vary the cost allocation procedures approved in the 2008–12 access arrangement in a number of specific areas. The AER's assessment of these proposals is discussed in the following sections.

Direct costs

APA GasNet proposed to allocate all direct capital costs to each of the 29 system asset groups[620] on the basis of the ORC of the compressor, regulator and pipeline assets in each group. The direct opex costs are allocated to each asset group on the basis of the pipeline length within that asset group. These asset group costs are then allocated to users according to the utilisation of each asset group by each user.

This asset-related cost allocation procedure is the same as approved in the 2008–12 access arrangement in respect of assets which comprised the original opening RAB, and of assets subsequently included in the RAB under the capital integrity test in the Code.[621] However, APA GasNet proposes to apply this procedure to all assets including certain assets treated on a stand-alone basis in the past, and to all forecast capex in the access arrangement proposal.

The AER accepts APA GasNet's allocation methodology for pre-existing assets and assets rolled-in under the capital integrity test (principally upgrades and refurbishments). The AER also accepts APA GasNet's procedure for augmentations and extensions which do not have a significant impact on the allocation of costs to users, and for assets which provide wide-spread benefits to users where it is difficult to identify specific beneficiaries and the risk of cross-subsidy is small.

However, the AER considers that in respect of significant expansions and extensions of the system, costs should be allocated to the users who cause the cost to be incurred, to the extent that this is feasible within the constraints of the tariff design.[622] That is, the users who cause a cost to be incurred should pay at least that cost through the tariffs applicable to that user.

In a number of instances the cost allocation proposed by APA GasNet for certain augmentations and extensions is not consistent with this principle, and therefore not consistent with r. 95(3)(a) of the NGR. The AER's assessment of these cases is discussed below.

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620 These are assets involved in the haulage of gas, as distinct from assets providing general business services such as administration buildings and land.

621 8.16(a)(ii)(C) of the Code is analogous to r. 79(2)(c) in the NGR.

622 NGR, r. 95(3)(a).

Establishing the direct costs and tariffs of the South West pipeline and Murray Valley pipeline

In earlier approved access arrangements, assets which were rolled-in to the RAB under the economic feasibility test in the Code[623] were effectively treated as stand-alone costs for the purposes of cost allocation and tariff setting. This applied in particular to the South West pipeline and the Murray Valley pipeline. This was done so that the actual incremental costs incurred as a result of each investment would be borne only by the users of the new assets:

> After careful consideration, the Commission has accepted arguments that it should isolate costs associated with inclusions to the capital base (under the economic feasibility test) so that they are not borne by parties who do not use the facility. Thus the Murray Valley pipeline and the portion of the Southwest Pipeline which passed the economic feasibility test will be isolated from the standard cost allocation model and the tariffs will be constructed on a cost recovery basis for each of those assets.[624]

This cost allocation procedure was maintained and incorporated in the tariff model for the 2008–12 access arrangement.

The procedure is intended to ensure that only the beneficiaries of the new assets pay the incremental costs associated with the asset. It gives substance to the test under which the assets were included in the RAB, which required that incremental costs should be recovered from incremental users over the life of the asset.

The NGR require that costs directly attributable to a user should be allocated to the relevant user.[625] In the case of the Murray Valley pipeline and the South West pipeline, it is straightforward to identify the relevant costs and the relevant users who benefit from the asset as these are both simple pipeline extensions.

The AER considers that the ORC allocation method proposed by APA GasNet does not allocate the actual costs incurred in constructing expansions or extensions to the users of the investments over the life of the assets. This conflicts with r. 95(3) of the NGR. It also raises the possibility that other unrelated users will pay higher costs, and may lead to under-or over-utilisation of services contrary to the revenue and pricing principles.[626]

The AER sought clarification on this issue from APA GasNet. In response, APA GasNet stated that its intent is to treat all assets consistently and to calculate tariffs on the same basis, particularly in light of the significant changes in demand on the pipelines. APA GasNet stated that the exceptions to the ORC allocation procedure such as the Murray Valley pipeline and the South West pipeline allocation procedures were determined under the Code.[627]

The AER accepts that the proposal from APA GasNet leads to greater simplicity in the cost allocation procedure. However, the AER must give due consideration to the incremental pricing principle as applied to the two assets in question, which was applied under the Code, and remains relevant under the NGR.

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623 Clause 8.16(a)(ii)(A) of the Code.

624 ACCC*, Final Decision, GasNet Australia access arrangement 2003-07*, November 2002.

625 NGR, r. 79(3).

626 NGL, s. 24(7).

627 APA GasNet, *Response to AER information request 16*, 4 July 2012, p 1.

The AER does not approve the cost allocation procedure proposed by APA GasNet, and requires that APA GasNet allocate costs on an incremental basis in line with the earlier access arrangements.

Allocation of physical path costs to the Murray Valley pipeline

In the 2008–12 access arrangement the ACCC approved a discount to the Murray Valley tariff.[628] The tariff for users on the Murray Valley pipeline recovers only the costs of the pipeline plus a contribution to indirect costs. There is no allocation of costs to transport gas from the injection pipelines to Chiltern Valley at the entrance to the Murray Valley pipeline. The ACCC accepted that the discount was appropriate to enable APA GasNet to develop and keep the market on the pipeline. The ACCC indicated that this decision would be re-considered in future access arrangements.

The AER has reviewed the discount and the state of the market on the pipeline. Based on the annual sales volumes reported each year by APA GasNet there appears to have been reasonable growth in both tariff-D and tariff-V markets which has exceeded the previous forecast.

The AER considers that the continued application of the discount is appropriate.

Establishing the direct costs of the Gas to Culcairn project - Wollert to Wodonga expansion

APA GasNet proposed to allocate the direct capital costs of the Wollert to Wodonga expansion amongst all asset groups using the ORC allocation procedure.

However, as discussed above with respect to existing assets, the AER considers that the ORC allocation method proposed by APA GasNet may not allocate the actual costs incurred in constructing this expansion to the users of the Wollert to Wodonga pipeline over the life of the assets. Specifically, the ORC allocation method might not allocate the actual costs of the expansion solely to the users of the asset groups which comprise the Wollert to Wodonga pipeline. This is not consistent with r. 95(3)(a) of the NGR.

Therefore the AER requires that the direct costs of the project should be allocated to the relevant asset groups comprising the Wollert to Wodonga pipeline on a stand-alone basis in the same way as was done in the previous access arrangements with respect to the Murray Valley pipeline and the South West pipeline.

Allocating the incremental costs of the Gas to Culcairn project - Wollert to Wodonga

APA GasNet proposed to allocate the costs of each asset group comprising the Wollert to Wodonga pipeline to users according to each user's utilisation of these assets. This is the standard allocation method employed by APA GasNet for assets which are shared by multiple users. This cost allocation procedure affects the tariffs in the South Hume, North Hume, Echuca, Calder, Wodonga and Culcairn export zones.

However, the AER considers that in certain circumstances, this cost allocation methodology may not allocate the costs of the expansion solely to the users who cause these costs to be incurred. In this case the costs of the Wollert to Wodonga pipeline expansion are directly

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[628] ACCC, *Final decision, GasNet Australia access arrangement 2008-12*, April 2008, p. 138.

attributable to the need to increase pipeline capacity for additional exports through the Culcairn export point. To be consistent with r. 95(3)(a) these additional exports should pay at least the incremental costs incurred in providing the required increase in capacity.

Therefore the AER considers that APA GasNet should allocate the direct costs on the Wollert to Wodonga pipeline using the standard physical path cost allocation procedure, but only provided that the costs allocated to the Culcairn export tariff exceed the incremental (conforming) direct costs of the Wollert to Wodonga expansion. To the extent that this is not achieved, the additional incremental costs should be allocated to the Culcairn export tariff.

Based on the amended costs and volumes for the Gas to Culcairn project discussed in this draft decision, the AER estimates that the cost sharing procedure in the APA GasNet tariff model is likely to recover at least the incremental costs. In the event that this is not the case the AER requires that the sharing formula be amended so that the incremental export volumes recover at least the incremental costs.

AGL submitted that the users in the metro area will not benefit from the Northern expansion, and only partially from the Stonehaven compressor, and that the costs should be charged on a 'user pays' basis[629]. The AER agrees with AGL and the revisions described above should address this issue.

Establishing the direct costs and tariffs of the Gas to Culcairn project - South West pipeline expansion

APA GasNet proposed the construction of the Stonehaven compressor in order to support increased injections into the South West pipeline, principally for carriage through the system to the Culcairn export zone.

As with the Wollert to Wodonga pipeline, APA GasNet proposed to allocate the direct capital costs of the Stonehaven compressor to all asset groups on the basis of the ORC allocation procedure.

For the same reasons given in the previous sections, the AER requires that the direct capital costs of the project (depreciation, rate of return, capital raising costs and tax liabilities) must be calculated on a stand-alone basis, and allocated solely to the South West pipeline asset group.

The AER considers that it would be consistent with r. 95(3)(a) to allocate the incremental costs of the Stonehaven compressor to the incremental injections. However, there is no practical way to distinguish existing injections and incremental injections at Port Campbell for charging purposes. Therefore it is necessary to calculate an average injection tariff on the basis proposed by APA GasNet. The AER accepts the charging methodology proposed by APA GasNet at the Port Campbell injection zone.

Allocation of direct costs to peak and annual flows

APA GasNet proposed that the allocation of direct costs to peak day flows on the withdrawal pipelines (as opposed to annual flows) should be reduced from 55.6% to 52.5%. APA GasNet argued that withdrawal pipelines are in general unconstrained and that this supports a

[629] AGL, *Submission to the AER: APA GasNet access arrangement*, 18 June 2012.

reduction in the peak pricing signal. APA GasNet proposed to retain the allocation of 100% of the injection pipeline costs to the peak flows on the injection pipelines.

There are a number of withdrawal pipelines which have recently required augmentation or where supply on the peak day is a concern, including the Wollert-Wodonga pipeline, the Geelong zone, the Lurgi zone, the Sunbury lateral and the Ballarat pipeline. However, the AER understands that the majority of the demand which is in the Metro zone is not likely to be constrained provided there are adequate injections. On this basis the AER accepts APA GasNet's proposed allocation of 52.5% of direct costs to peak flows on withdrawal pipelines.

Allocation of costs - miscellaneous issues

The AER has identified the following miscellaneous errors in the cost allocation procedures:

- an error in the allocation of path-based costs to the customers in the Western zone which biases the allocation of costs to the zone
- errors in the volume forecasts for the Interconnect zone and the Western zone which affect the calculation of zonal tariffs
- an error in the re-allocation of Murray Valley pipeline costs arising from the discount on path-based costs from Pakenham to Chiltern Valley
- the direct cost allocations to pipeline, compressor and other assets are not consistent with the AER's approved total opex.

APA GasNet must correct the errors and re-calculate the tariffs consistent with the approved tariff methodology.

In addition:

- APA GasNet forecast a load factor of 95% for the existing Culcairn exports, and a peak flow which is inconsistent with the installed capacity of the pipeline. APA GasNet must review the load factor assumption applied to the Culcairn export volumes and recalculate the cost allocations to this zone.
- APA GasNet also forecast that all exports through VicHub are sourced from Longford. However historically most VicHub exports are sourced from other injection points, and will bear a higher tariff. APA GasNet must calculate the appropriate costs to be recovered from these exports and include these in the total revenue recovery.

Indirect costs

For the purposes of r. 95(3)(b), other costs are all costs of a general business nature which cannot be directly attributed to users. In this attachment these costs are referred to as 'indirect costs'. They include general administrative overheads and capital costs associated with non-system assets. For the purposes of APA GasNet's cost allocation procedure, they also include efficiency benefit carry-overs, reset costs and return on inventories. APA GasNet has also included tax liabilities in this category, which is discussed below.

APA GasNet also defined a category of 'rolled-out' costs[630] associated with the South West pipeline, the Interconnect assets and the Brooklyn Lara pipeline, and treats these costs in the same way as indirect costs. The AER considers that these costs are direct costs referable to paragraph (a) of r. 95(3), but as discussed later may be allocated to users as other (indirect) costs are allocated.

These costs are a significant proportion of total costs. Based on APA GasNet's proposal, indirect costs amount to 38% of total costs. Excluding tax liabilities, indirect costs are 29% of total revenue.

In line with previous practice APA GasNet proposed to allocate these costs to annual flows through all withdrawal zones on a postage-stamp basis. Rule 95(3)(b) of the NGR requires that this class of costs must be allocated to users on a basis determined or approved by the AER, subject to the revenue and pricing principles.[631] The AER has previously approved this procedure as a general principle, and sees no reason to change this approach. However, APA GasNet has proposed a number of exceptions to this procedure, which are considered below.

Allocation of tax liabilities

APA GasNet proposed to include tax liabilities within the indirect cost category, and allocate this cost to users on a postage stamp basis. The AER sought clarification on this issue. In response, APA GasNet stated that tax liabilities are corporate costs of a general nature with no specific driver.[632]

Tax liabilities are calculated within the PTRM for the business as a whole. However, the tax liability is directly related to the asset value. Expansions or extensions to the system which cause an increase in the RAB will cause an associated increase in tax liabilities. Therefore to the extent that direct capital investments are attributable to users, the associated tax liabilities are also attributable to the same users. On this basis, the AER considers that tax liabilities are not business costs of a general nature and should be classified as direct costs within the APA GasNet allocation model and allocated to users in the same way as other direct costs.

The AER requires that tax liabilities must be classified as direct costs and allocated by the physical path method in the same way that the return on and of capital is allocated. This is consistent with r. 95(3)(a) of the NGR, which requires that costs directly attributable to users should be allocated to those users.

Allocation of indirect costs to zones

'Rolled-out' costs

APA GasNet proposed to allocate 'rolled-out' costs to all users on a postage stamp basis. These are the direct capital costs associated with assets which provide wide-spread benefits to users, and consist of the Interconnect assets, up to 50% of the South West pipeline and the

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630 These are direct capital costs associated with assets previously rolled-in to the RAB under the system-wide benefits test in the Code 8.16(a)(ii)(B).

631 NGL, s. 24.

632 APA GasNet, *Response to AER information request 16*, 4 July 2012, p. 1.

Brooklyn Lara pipeline. The AER accepts that these costs are attributable to all users, and can be charged on a postage-stamp basis consistent with r. 95(3)(a) of the NGR.

APA GasNet proposed that the Western zone should not receive an allocation of rolled-out costs, in line with earlier access arrangements which accepted that this zone does not benefit from these assets. However, APA GasNet applied the discount to tariff-V users but not to tariff-D users. The AER accepts that the cost of these assets is not attributable to the users in the Western zone, including both tariff-V and tariff-D users, and therefore consistent with r. 95(3)(a) of the NGR, the AER requires that the discount be applied equally to both tariff classes.

The AER sought clarification on this issue from APA GasNet.[633] In response, APA GasNet stated that it was their intention to apply the discount equally to both tariff-V and tariff-D users in the Western zone.

Prudent discounts

APA GasNet also proposed that zones for which a prudent discount is approved will receive a reduced share of indirect costs consistent with the calculated prudent discount. The AER has reviewed these discounts (see section 10.4.6 below) and approves the proposal from APA GasNet. This is consistent with r. 96 of the NGR.

Northern zones and exports

APA GasNet proposed a number of other exceptions where withdrawal zone tariffs are determined with a reduced allocation of indirect costs. APA GasNet made these adjustments where changed system gas flows would otherwise lead to excessive tariff changes from the 2008–12 access arrangement period. The adjustments to indirect costs are designed to dampen these effects. APA GasNet provided no principles or guidelines to explain the procedure or the meaning of 'excessive tariff changes'.

The AER sought clarification on this issue. In response APA GasNet stated that the variable allocation of indirect costs to different zones was approved in previous access arrangements as a means to limit 'tariff shock'.[634] In a further response, APA GasNet stated that it is necessary to tailor the indirect allocations to avoid tariff shock to achieve a level of tariff change which APA GasNet deems acceptable.[635]

In the 2008–12 access arrangement the Northern zones were not allocated any indirect costs (for supply from the south). The ACCC approved this approach because the Northern zonal tariffs were otherwise forecast to increase significantly as a result of the approved Northern augmentation project.[636] Under the current proposal there is further potential for tariffs to increase arising from the proposed cost allocation of the Gas to Culcairn project.

The AER accepts that the discount applied to the Northern zones should be carried over to the 2013–17 access arrangement. The AER also accepts that the indirect allocations can be adjusted to minimise tariff shock to the extent this is feasible. However, the AER considers

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633 APA GasNet, *Response to AER information request 23*, 31 July 2012, p. 3.
634 APA GasNet, *Response to AER information request 16*, 4 July 2012, p. 2.
635 APA GasNet, *Response to AER information request 23*, 31 July 2012, p. 2.
636 ACCC, *Final decision, GasNet Australia access arrangement 2008-12*, p. 134.

that the mechanism by which tariff shock is minimised should be explained and quantified so that users can understand how the discount is determined for each tariff zone.

The AER considers that the level of the discount should be limited to minimise the higher burden of indirect costs which must consequentially be applied to other zones. APA GasNet is required to impose an appropriate level of indirect costs in each of the Northern zones (only for supply from the south) so that the proportionate increase in approved tariffs from the 2008–12 access arrangement period is, to the extent possible, commensurate with the forecast change in average revenue across the system.

APA GasNet has also proposed to remove indirect costs from the Culcairn export tariff and allocate them to other zones. In response to an information request from the AER, APA GasNet stated that this approach was approved for the 2008–12 access arrangement, and is required to limit 'tariff shock'[637].

The AER considers that the level of the discount should be limited to minimise the higher burden of indirect costs which must consequentially be applied to other zones. Based on the available information, the AER can see no reason to treat the Culcairn export zone any differently from the other Northern withdrawal zones in respect of the indirect cost discount. APA GasNet is required to apply an appropriate level of indirect costs so that the proportionate increase in approved tariffs from the 2008–12 access arrangement period is, to the extent possible, commensurate with the forecast change in average revenue across the system.

Allocation of costs to users - the South West pipeline and the Interconnect assets

In earlier access arrangements the ACCC determined that some or all of the costs of the South West pipeline and the Interconnect assets could be attributed to all users on the system rather than solely to the specific users that utilise the pipelines.[638] The outcome was that 7% of the costs of the Interconnect assets and 50% of the costs of the South West pipeline were allocated to the relevant injection zones, and the remainder of the costs were recovered from all users on a postage stamp basis.

The South West pipeline capital cost was originally approved and rolled-into the RAB on the basis of 50% under the economic feasibility test[639] and 50% under the system-wide benefits test[640] in the Code. The ACCC found that the system-wide benefits were sufficiently widespread to allow all users to receive an allocation of 50% of the incremental costs. [641]

The capital cost of the Interconnect assets was originally approved entirely under the system-wide benefits test in the Code. The ACCC accepted GasNet's proposal to allocate a share of costs to the injection tariff on the basis that this gave a tariff commensurate with the tariff on a

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637 APA GasNet, *Response to AER information request 16*, 4 July, p. 2.

638 ACCC, *Final decision, Application for Revision, GasNet*, 28 April 2000, p. (viii).

639 Section 8.16(a)(ii)(A) of the Code.

640 Section 8.16(a)(ii)(B) of the Code.

641 The system-wide benefits test justified a higher tariff to all users. See ACCC, *Final decision, GasNet Access Arrangement 2003-07*, p. 65.

similar length of the MSP.[642] The remaining costs were allocated to all users on a postage stamp basis.

In both cases the new assets were initiated in response to the Longford outage, and the ACCC determined that they both supplied security and competition benefits to all users of the system.[643]

With respect to the South West pipeline, APA GasNet has now proposed to increase the allocation of costs to the injection charge from 50% to 80%, on the basis that higher flows on the pipeline can support a greater proportion of the cost recovery from the injection tariff, and in order to maintain the relativity between the Longford and Port Campbell injection tariffs. APA GasNet stated that in the original roll-in decision in 2002 the ACCC required tariff parity in order to promote basin-on-basin competition.[644]

However, a reading of the decision made in 2002 does not support this interpretation. Rather, the ACCC considered the tariff proposed on the South West pipeline and the volumes forecast to flow on the pipeline and decided, based on the limited information available, that the forecast flows would not occur unless the tariff was no more than 10% higher than the Longford tariff. This was based on a view of the limited ability of the South West pipeline to compete against the Longford pipeline, not a view about what was the right or preferred tariff or what tariff promoted inter-basin competition. Based on these volumes and tariff, the ACCC calculated that only 50% of the asset value passed the economic feasibility test.

The AER does not accept that a goal of setting tariffs is to promote gas-on-gas competition. The NGR and the NGL require that tariffs should be cost-reflective and economically efficient.

With respect to the Interconnect assets APA GasNet has now proposed to allocate 25% of costs to the injection tariff. APA GasNet cites a higher volume forecast which can support a higher cost allocation.[645]

Under the proposed price control model APA GasNet does not benefit from higher or lower flows through any injection point.

The AER must determine whether the proposals made by APA GasNet are consistent with the NGR. The AER considers that 50% of the South West pipeline costs and 100% of the Interconnect assets costs can be attributed directly to all users of the system, consistent with previous decisions, since the construction of these assets was caused by and is attributable to the need for system security for all users. This means that even if no gas flowed on these pipelines, these costs would still be recoverable from all users because these costs were incurred in the interests of all users.

However, both pipelines also support significant gas flows, and APA GasNet submitted that these volumes are increasing. The full cost of the pipelines can therefore be attributed to

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642 The Moomba-Sydney pipeline (MSP) joins the Interconnect at Culcairn. The allocated share varied from 12.5% to 7% depending on injection volume forecasts. See ACCC, *Final decision, Application for revision (Interconnect),* 28 April 2000, p. 9.

643 With the exception of the Western zone. See ACCC, *Final Decision, GasNet Australia access arrangement 2008-12*, p. 134 and ACCC, *Final decision, Application for revision (Interconnect)*, p (ix).

644 APA GasNet *Access arrangement submission*, March 2012, p. 197.

645 APA GasNet *Access arrangement submission*, March 2012, p. 199.

these flows just as applies on all other pipelines. This means that the principle of direct cost attribution in r. 95(3)(a) has a range of possible outcomes.

APA GasNet proposed to alter the cost allocations with a goal of maintaining the same injection tariffs as applied in the past at Port Campbell and Culcairn, which were commensurate with the Longford tariff.

The AER does not accept that the reasoning put forward by APA GasNet is consistent with the arguments used in earlier decisions. However, the AER must consider the proposal on its own merits in the light of the requirements of the NGR and NGL.

The AER considers that it is necessary to send the appropriate price signal on a pipeline to ensure that there is no uneconomic under- or over-utilisation of the pipelines, consistent with the revenue and pricing principles.[646] The proposal from APA GasNet would ensure that prices remain stable and that arrangements entered into by market participants in the past are not unduly disrupted. On this basis, the AER accepts the proposal from APA GasNet that the:

- injection tariffs applicable to the South West pipeline should be set at the level of the Longford tariff, provided the 'rolled-out' cost does not exceed 50% of the total cost
- Culcairn injection tariff should be set consistent with previous prevailing tariffs (but not to exceed the Longford tariff)
- the cost allocations between the injection charge and all users should be calculated to obtain these outcomes.

The AER notes that the South West pipeline injection tariff will include a recovery of the direct costs from APA GasNet's proposed Stonehaven compressor. The AER has approved an alternative compressor site to Stonehaven but accepts that additional compression on the South West pipeline provides both specific benefits to certain users and more wide-spread benefits to all users from enhanced system security (attachment 3 - capital expenditure). On this basis, the AER accepts that the direct costs of the asset can be rolled-up into the South West pipeline asset base and the combined tariff set as described above.

10.4.7 Prudent discounts

The AER may approve a discount to a reference tariff if the discount is necessary to respond to competition or to maintain efficient use of the pipeline, but only if the provision of the discount is likely to lead to reference tariffs for other users which are lower than they would otherwise have been.[647]

In the 2008–12 access arrangement the ACCC approved prudent discounts in the Maryvale, Warrnambool and Koroit withdrawal zones and the Pakenham injection zone (matched to withdrawals in the Metro south east withdrawal zone). APA GasNet has proposed to maintain prudent discounts in these zones.

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646 NGL, s. 24(7).
647 NGR, r. 96.

For the reasons discussed below, the AER accepts APA GasNet's proposed prudent discounts under r. 96 of the NGR. These discounts will expire at the end of the 2013-17 access arrangement period.

Maryvale zone

The prudent discount approved for the Maryvale zone in the 2008–12 access arrangement was not based on the risk of pipeline bypass, as stated by APA GasNet, but on the risk of a change in production processes at the Maryvale plant, leading to a reduction in gas demand.

The AER is not aware of any evidence that the circumstances have changed at the Maryvale plant to alter the ACCC's previous decision. The proposed Maryvale tariff recovers more than the direct allocated costs and therefore a reduction in demand will lead to higher tariffs for other users. The AER approves the proposal under r. 96 of the NGR.

Warrnambool and Koroit zones

The prudent discounts to these zones were approved in the 2008–12 access arrangement on the basis of the risk of bypass from the SEAGas pipeline. APA GasNet proposed to maintain these discounts given that the possibility of bypass is a continuing risk. APA GasNet supported their proposal with a detailed model.[648]

The AER accepts that there is an on-going risk of bypass. The AER has reviewed the detailed calculations provided by APA GasNet and accepts that the proposal is consistent with r. 96 of the NGR.

Dandenong bypass tariff (Pakenham to Dandenong)

In the 2008–12 access arrangement the ACCC approved a prudent discount associated with injections at the BassGas injection point at Pakenham. The bypass tariff is implemented as an injection tariff at Pakenham and a discounted matched withdrawal tariff in the Metro south east zone. APA GasNet proposed to maintain this discount and provided a detailed model to support the proposal.[649]

The AER accepts that there is an on-going risk of bypass. The AER has reviewed the detailed calculations provided by APA GasNet and approves the proposal under r. 96 of the NGR.

10.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 10.1

Allocate the direct (conforming) costs of the Warragul lateral to the Lurgi asset group and the Lurgi tariff zone.

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[648] *B8 Prudent Discount Bypass Tariffs 2013 AER*, 1 April 2012 (Confidential)

[649] *B8 Prudent Discount Bypass Tariffs 2013 AER* , 1 April 2012 (Confidential)

Revision 10.2

Allocate the direct (conforming) costs of the Anglesea pipeline extension to the Geelong tariff zone.

Revision 10.3

Allocate the direct (conforming) costs of the Kalkallo lateral to the Metro tariff zone irrespective of the connection point of the lateral.

Revision 10.4

Provide the direct costs of the existing South West pipeline and Murray Valley assets on a stand-alone basis consistent with the treatment in the 2008–2012 access arrangement.

Revision 10.5

Provide the (conforming) costs of the Wollert to Wodonga expansion and the Stonehaven compressor on a stand-alone basis consistent with the treatment of the South West pipeline and the Murray Valley pipeline in the 2008–2012 access arrangement.

Revision 10.6

Allocate the direct costs on the Wollert to Wodonga pipeline using the standard physical path cost allocation procedure provided that the costs allocated to the Culcairn export tariff exceed the incremental (conforming) direct costs of the Wollert to Wodonga expansion. To the extent this is not achieved, allocate the additional incremental costs to the Culcairn export tariff.

Revision 10.7

Allocate the approved tax liabilities to asset group costs in the same way that the return on assets is allocated to asset group costs.

Revision 10.8

Remove the 'rolled-out' costs associated with the Interconnect assets, the South West pipeline and the Brooklyn Lara pipeline from the indirect costs allocated to tariff-V and tariff-D users in the Western zone.

Revision 10.9

Allocate indirect costs (including 'rolled-out' costs) to each of the Northern zones and the Culcairn export point on a variable basis between 0% and 100% to make the real tariff deviations from the 2008–12 access arrangement period, to the extent possible, commensurate with the forecast change in average revenue across the system.

Revision 10.10

Calculate the shares of the direct costs of the South West pipeline (including the Stonehaven compressor) which are allocated as 'rolled-out' costs in such a way that the Port Campbell tariff is equal to the Longford injection tariff. However, the 'rolled-out' costs of the South West pipeline cannot be allowed to exceed 50% of the total direct costs of the pipeline.

Revision 10.11

Calculate the shares of the direct costs of the Interconnect assets which are allocated as 'rolled-out' costs in such a way that the initial 2013 Culcairn injection tariff is equal to the real approved 2012 tariff from the 2008–12 access arrangement, adjusted for the average revenue change from 2012 to 2013, but no greater than the Longford injection tariff.

Revision 10.12

Amend the tariff model to correct miscellaneous numerical, forecasting and coding errors which are noted in this draft decision.

Revision 10.13

Insert the following paragraph to section 4.2 of the proposed access arrangement:

(c) the AMDQ CC Tariff, being the tariffs for AMDQ CC services

11 Tariff variation mechanism

This attachment sets out the AER's consideration of APA GasNet's proposed reference tariff variation mechanism. The tariff variation adjustment mechanism:

- permits building block revenues to be recovered smoothly over the access arrangement period
- allows adjustments for the differences between forecast and actual inflation, and the differences between actual and allowed revenues for reference services
- adjusts for volume risk due to uncontrollable weather factors
- accommodates other tariff adjustments that may be required, such as for an approved cost pass through event; and
- sets administrative procedures for the approval of any proposed changes to tariffs.

11.1 Draft decision

The AER does not accept that the reference tariff variation mechanism proposed by APA GasNet meets the requirements of r. 97 of the NGR. The AER requires the following revisions to APA GasNet's access arrangement proposal:

- price control formula – correction of minor typographical errors in relation to the definition of the Actual EDD factor where the reference to VENCorp should be to AEMO and the definition of the VW factor where the reference to PTS should instead be VTS
- annual tariff variation process – in the event that the AER does not approve an annual tariff variation before the variation comes into effect, the existing reference tariff should apply until such time that the AER makes a decision to either approve the proposed tariff variation, or specify a tariff variation that is consistent with the access arrangement
- schedule of initial tariffs – the inclusion of a new schedule of tariffs as a result of the AER's draft decision on such matters as WACC, capex, opex and capacity utilisation forecasts.

The AER accepts each of APA GasNet's proposed cost pass through events, subject to amendments to the definition of an insurance cap event and carbon cost event, and the addition of an extra factor for the AER to consider when assessing a cost pass through application.

11.2 APA GasNet's proposal

Price control formula and the annual tariff variation process

APA GasNet proposed to apply a combination of a price control formula and trigger event approach to vary its reference tariffs.[650] Under this approach, APA GasNet's initial set of

[650] APA GasNet, *Access arrangement submission*, 31 March 2012, p. 213.

reference tariffs will be determined in the AER's final decision and will vary on an annual basis over the access arrangement period in accordance with the reference tariff adjustment mechanism. The adjustment mechanism is set out in section D of the access arrangement. The main elements of the mechanism are summarised below.

The adjustment process includes two parts[651]:

- the price control formula, which applies in respect of each year during the access arrangement period; and
- a cost pass-through reference tariff adjustment mechanism under which APA GasNet may seek to vary one or more of the reference tariffs as a result of a cost pass-through event.
- The price control formula includes the following equations[652]:

> ATR = VATR + PTA + CFA
>
> Where:
>
> VATR is volume adjusted target revenue calculated in accordance with clause D.4 of the proposed access arrangement;
>
> PTA is the Pass Through Adjustment; and
>
> CFA is, for the Regulatory Year 2014 only, the amount target revenue NPV shortfall or over recovery calculated for 2012 in accordance with schedule 4 of the Third Access Arrangement.
>
> VATR = TV/TR x WAAV
>
> Where:
>
> TR is the target revenue as set out in 12.1 of the Access Arrangement Information, excluding NRRV;
>
> TV is the total volume withdrawn from the VTS as set out in section 4 of the Access Arrangement Information, excluding NRRV;
>
> WAAV is the weather adjusted actual volume, calculated in accordance with clause D.5; and
>
> NRRV is, for the purposes of TR, the target revenue and for the purposes of TV, the volume, associated with:
>
> (i) any transmission refills at WUGS or the LNG Storage Facility; and
>
> (ii) the incremental Murray Valley tariff.
>
> WAAV = (VW + TS × (Target EDD − Actual EDD))
>
> Where:
>
> VW is the actual volume withdrawn from the PTS excluding;
>
> (i) any transmission refills at WUGS or the LNG Storage Facility; and
>
> (ii) forecast volumes for the incremental Murray Valley tariff;

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651 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 213.

652 APA GasNet, *Access arrangement*, 31 March 2012, pp. 49–51.

> TS is the target temperature sensitivity, being the increase in annual gas volumes for an increase of one in the annual EDD, as set out in Table 4.4 of the Access Arrangement Information;
>
> Target EDD is the measure of annual EDD as expected in a standard year as set out in Table 4.4 of the proposed Access Arrangement Information; and
>
> Actual EDD is the actual measured EDDs for a Regulatory Year, as reported in the VENCorp APR or otherwise made available by VENCorp.

APA GasNet proposed to calculate the CFA factor based on two carry forward amounts consistent with the 2008–12 access arrangement.[653]

The first carry forward amount (FCA) will be calculated in the last year of the 2008–12 access arrangement period. It will be included as a building block component in the first year of the 2013–17 access arrangement period. The FCA will be determined according to the following formula:[654]

> FCA = ATR - AR
>
> Where AR and ATR are to be calculated using the best estimates and available data at the time of the determination of FCA
>
> For inclusion in the building block calculation for 2018, the FCA will be escalated for inflation from December 2012 to December 2018.

The second carry forward amount (SCA) will be calculated in the first year of the 2013–17 access arrangement period as a correction to the determination of the FCA, using the correct actual values of all factors required in the determination of FCA. It will be included as a CFA factor in the determination of tariffs for 2019. The SCA will be determined according to the following formula:[655]

> SCA = Recalculated FCA - FCA
>
> Where Recalculated FCA is the same calculation as for FCA, except that it is to use the actual values for AR, ATR, AV, EDD, CPI and PTA
>
> For inclusion in the building block calculation for 2019, the SCA will be escalated for inflation from December 2012 to December 2019.

APA GasNet proposed to retain all elements of the price control formula except for the removal of the limit on revenue variations. The limit is defined as the VRF factor in the 2008–12 access arrangement.[656] This factor limits APA GasNet's exposure to the volume risks arising from economic and other uncontrollable factors to 5.5 per cent of the allowed revenue.[657]

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653 APA GasNet, *Access arrangement*, 31 March 2012, p. 65.
654 APA GasNet, *Access arrangement*, 31 March 2012, p. 65.
655 APA GasNet, *Access arrangement*, 31 March 2012, p. 65.
656 See GasNet Australia Access Arrangement, 2008–2012, Schedule 4, section 4.5 (k).
657 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 211.

APA GasNet proposed to notify the AER at least 30 business days before the date of implementation of any variation to the reference tariffs.[658] It is proposed that the notice will include:

- the proposed adjustments to the reference tariffs; and
- an explanation and details of how the proposed adjustments have been calculated.

Any proposed adjustments to the reference tariffs (other than as a result of a cost pass-through event) which have not been approved by the AER by the start of an access arrangement period (1 January of each year), will take effect in the following access arrangement year, until such time as adjustments to reference tariffs are approved by the AER.[659]

APA GasNet submitted that if a past annual tariff adjustment contains a material error or deficiency because of a clerical mistake, accidental slip or omission, miscalculation or mis-description; it should be allowed to make a submission on the matter to the AER for review. Subject to the AER's approval, changes may be made to subsequent tariffs to account for errors.[660]

APA GasNet proposed that the AER should inform APA GasNet in writing of whether or not it has verified the proposed reference tariffs within 20 business days of receiving the tariff adjustment notice. The 20 business day period may be extended for time taken by the AER to obtain information from APA GasNet, obtain expert advice or consult about the notification. However, the AER must assess a cost pass-through application within 90 business days, including any extension of the decision making time.[661]

Cost pass through

APA GasNet proposed the following cost pass through events:

- a carbon cost event
- an insurance cap event
- an insurer credit risk event
- a natural disaster event
- a regulatory change event
- a service standard event
- a tax change event

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658 APA GasNet, *Access arrangement*, 31 March 2012, p. 16.
659 APA GasNet, *Access arrangement*, 31 March 2012, p. 16.
660 APA GasNet, *Access arrangement*, 31 March 2012, p. 16.
661 APA GasNet, *Access arrangement*, 31 March 2012, p. 16.

- a terrorism event.[662]

APA GasNet submitted that it revised and updated its cost pass through event definitions to align them more closely with recent regulatory decisions.[663]

11.3 Assessment approach

The AER assessed APA GasNet's reference tariff adjustment mechanism proposal against the requirements of r. 92 and r. 97 of the NGR. The AER has full discretion under r. 92 and r. 97. This means that the AER can amend the tariff variation mechanism proposed by APA GasNet if it deems that an alternative approach is more desirable and better meets the requirements of the NGR and NGL.

11.4 Reasons for decision

The AER does not accept the proposed reference tariff adjustment mechanism. The AER's reasons for accepting or rejecting each element of the adjustment mechanism are set out below.

11.4.1 Annual tariff variation process

The AER considers APA GasNet's reference tariff adjustment process is consistent with r. 97(1)(b) of the NGR which allows the reference tariffs to vary in accordance with a price control formula set out in the access arrangement.

The AER considers that the proposed timeframe of 30 business days before the implementation date for submitting a reference tariff adjustment notification is reasonable and consistent with the 2008–12 access arrangement.[664]

The AER accepts the proposed timeframe for reviewing an annual reference tariff variation is reasonable. This is because the proposed process provides flexibility for the AER to extend the standard 20 business days review period. Such extensions may be necessary to obtain information from APA GasNet, acquire expert advice or consult about the notification.

The AER does not accept APA GasNet's proposal on how tariff variations may come into effect. It proposed that a tariff variation would take effect automatically; if the AER does not approve an annual tariff variation before the variation is due to come into effect (by 1 January of the next year). The AER considers that the proposal is inconsistent with r. 97(3) of the NGR. Specifically, a tariff variation taking effect automatically raises concerns about efficient tariff structures and administrative costs. Under the proposal, the AER may ultimately reject the proposed annual reference tariff variation and approve different tariffs even though 'automatic' tariffs have already taken effect. However, for the period that these "automatic" tariffs are in effect, the AER will not have oversighted them and the relevant structures may be inefficient. Also, in those circumstances, an additional round of tariffs changes would be

662 APA GasNet, *Access arrangement*, 31 March 2012, p. 16.
663 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 215.
664 See GasNet Australia Access Arrangement 2008-2012, Schedule 4, section 4.5(k).

required and may lead to additional administrative costs for users. This view is shared by Australian Power and Gas.[665] All of these points are relevant to the AER's consideration under r. 97(3).

For these reasons, the AER does not approve APA GasNet's proposed procedures for the approval of annual tariff variations. The AER considers that in the event that the AER does not approve an annual tariff variation before the variation comes into effect, the existing reference tariff should apply until such time that the AER makes a decision to either approve the proposed tariff variation, or specify a tariff variation that is consistent with the access arrangement. This approach is consistent with the 2008–12 access arrangement.[666]

In the event that the AER does not approve a tariff variation consistent with the normal timing, this should not create a commercial risk to APA GasNet. In this circumstance, the AER would approve a tariff variation consistent with the reference tariff adjustment mechanism set out in the access arrangement. Under that mechanism, APA GasNet would recover the time value of money caused by the delay in the implementation of the tariff variation.[667]

The AER accepts that any material error or deficiency in a past annual tariff adjustment should be corrected, potentially by changes to subsequent tariffs in the next annual tariff variation, provided that the proposed changes are consistent with relevant requirements in the access arrangement. This will ensure the error does not result in any under or over recovery of the allowed revenue.

The AER has classified AMDQ CC as a pipeline service.[668] The initial reference tariff for AMDQ CC is subject to a separate tariff variation mechanism to the haulage service under the price control model, and is varied annually based on the CPI. APA GasNet must report contracted volumes under the price control model for the AMDQ CC service.

11.4.2 Application of the initial reference tariff in 2013

The AER's final decision on the 2013–17 access arrangements for the Victorian gas service providers is due to be made in March 2013. This is after the 1 January 2013 revision commencement date specified in the 2008–12 access arrangements for these service providers.

Rule 92(3) of the NGR prescribes that in the event of an interval between a revision commencement date stated in a full access arrangement and the date on which revisions to the access arrangement actually commence:

- the reference tariff in force at the end of the previous access arrangement period, continue without variation for the interval of delay; but

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665 Australian Power and Gas, *Submission to the AER: APA GasNet access arrangement proposal*, 15 June 2012

666 See GasNet Australia Access Arrangement, 2008–2012, Schedule 3.

667 The operation of the price control formula as set out in the section D of the proposed access arrangement will ensure APA GasNet is allowed to recover the target revenue in net present value terms over the access arrangement period in the event there is an under recovery in a particular access arrangement year. This will compensate APA GasNet for the time value of money because the real WACC is used as the discount rate for the net present value calculation.
See APA GasNet, *Access arrangement proposal*, 31 March 2012, pp. 49–52.

668 See attachment 1 of this draft decision.

- the operation of this subrule may be taken into account in fixing reference tariffs for the new access arrangement period.

There will be a delay in the making of the final decision. The AER has therefore taken into account the operation of r. 92(3) in fixing reference tariffs for the 2013–17 access arrangement period. The AER considers that the 2013 reference tariffs under the 2013–17 access arrangements should take effect from 1 July 2013 until 31 December 2013.

The AER considers that the interval of delay should not result in service providers incurring a windfall gain or loss, compared with what would have occurred if the 2013–17 access arrangements had taken effect from 1 January 2013. This approach is consistent with the efficiency objectives under the NGO and long term interest of gas consumers. This approach will also provide service providers with a reasonable opportunity to recover at least the efficient costs of providing reference services as approved in the access arrangements, consistent with the RPP.

APA GasNet is revenue neutral despite the delay in the application of the 2013 reference tariff. This is because the operation of the price control formula will ensure APA GasNet is allowed to recover the target revenue in net present value terms over the access arrangement period. This will compensate APA GasNet for any time value of money resulted from the delay because the real WACC is used as the discount rate for the net present value calculation.

11.4.3 The price control formula

Form of control

The proposed price control formula for the variation of reference tariffs is an average revenue yield. The AER considers this is consistent with r. 97(2) of the NGR.

Limit on revenue variation

The limit on revenue variation was introduced in the 2008–12 access arrangement period and has been triggered twice in this period. The combined revenue impact is less than 0.5 per cent of APA GasNet's total allowed revenue.

The AER received no submissions regarding the proposed removal of the limit on revenue from the control formula.

Based on information currently available, the AER found no reason to reject APA GasNet's proposal to remove the 5.5 per cent limit on revenue variation due to volume changes. The AER considers that a service provider should be allowed to bear the risk for an uncontrollable event if it chooses to do so. This will encourage the service provider to better manage or mitigate the costs associated with such events.

Side constraints

The AER accepts that the side constraints applied in the 2008–12 access arrangement should be retained. The AER considers that the proposed side constraint, which limits the increase for an individual tariff to no more than 2 per cent above the overall rate of increase for all tariffs, is appropriate. The constraint provides a reasonable balance between the need for APA GasNet to rebalance tariffs over the access arrangement period to enable increased

efficiency and pipeline utilisation, and the user's need to have a reasonable degree of certainty to facilitate their investments.

The side constraint does not apply for the first year of the access arrangement period. The AER encourages APA GasNet to consult with users on tariff rebalancing in the first year of the access arrangement following the release of the AER's draft decision. This would ensure that any one-off tariff changes in 2013 would not surprise customers. Changes in tariffs in the following years of the access arrangement period are limited by side constraints.

First and second carryover factors for the calculation of CFA factor

The AER accepts the definition of the first and second carryover factors. It considers that definition necessary to derive the CFA factor and consistent with the 2008–12 access arrangement.

Weather correction and the CFA factor

The retention of the weather correction factor within the current price control formula is consistent with r. 97(3)(a) of the NGR which requires an efficient tariff structure. The tariff structure in theory should not impose penalties or rewards on the service provider for uncontrollable events, in this case the volume risk due to weather conditions, which are outside of the service provider's control. The weather factor will decrease (increase) the actual achieved volumes that determine the maximum allowed revenue under the average revenue yield, when the actual weather outcome is cooler (warmer) than expected.

Similarly, the retention of the CFA factor in the price control formula is consistent with r. 97(3)(a) of the NGR. These adjustment factors will ensure that any over and under recovery against the efficient level of revenue in the 2008–12 access arrangement period is correctly accounted for in the determination of the reference tariff in the 2013–17 access arrangement period.

Terms used in the price control formula

The operation of the formula is largely the same as the 2008–12 access arrangement. There are minor typographical errors in relation to the definition of the Actual EDD factor where the references to VENCorp should be corrected to AEMO, and the definition of the VW factor where the reference to PTS should instead be VTS, as set out in revision 11.1. Otherwise, the AER accepts the definition of all other terms used in the price control formula as set out in section D3 to D7 of the proposed access arrangement and reproduced in section 11.2 above. The definitions are consistent with the 2008–12 access arrangement and the AER sees no reason to amend them. Having regard to r. 97(3)(c) of the NGR, the AER considers it appropriate to accept these terms.

Revenue equalisation

The AER considers that the reference tariff variation mechanism proposed by APA GasNet in principle complies with r. 92(2) of the NGR. That is, after reviewing the relevant models, the operation of the reference tariff variation mechanism over the 2013–17 access arrangement period equalises in present value terms:

- the building block costs associated with reference services; and

- the portion of total revenue allocated to reference services.

However, the AER considers that the initial reference tariffs must be amended as set out in revision 11.9.[669] This is to reflect the changes to forecast total revenue and forecast demand. The changes in total revenue are outlined in the total revenue section 2 of the overview and changes to forecast demand are outlined in attachment 9 of this draft decision.

11.4.4 Cost pass through

Rule 97(1)(c) of the NGR provides that a reference tariff variation mechanism may provide for variation of a reference tariff as a result of a cost pass through for a defined event. The AER has full discretion to withhold its approval to an element of a reference tariff variation mechanism if it believes that a preferable alternative exists.[670]

The AER needs to assess a service provider's proposal to make a decision on a proposed reference tariff variation mechanism. When deciding whether a reference tariff variation mechanism is appropriate to an access arrangement the AER must have regard to the factors in r. 97(3) of the NGR. The cost pass through provisions of an access arrangement must be consistent with these rules and the NGO.[671]

The AER considers the requirements of a cost pass through mechanism should be designed to achieve the NGO through the support of an appropriate level of administrative costs. The AER considers a cost pass through mechanism should appropriately balance the risk of material, unexpected and uncontrollable events that impact on a service provider with the long-term interests of consumers.

In particular, the AER considers there should be incentives for a service provider to bear some risk of unexpected events, as this will encourage the service providers to manage or mitigate the costs associated with such events. The AER also considers that any pass through mechanism should be symmetric, such that users will benefit from unexpected or uncontrollable events that materially reduce the costs faced by a service provider. The AER considers that a pass through mechanism should seek to minimise any administrative costs.

Cost pass through events should provide service providers and other stakeholders with sufficient protection against unexpected and uncontrollable risks. However, the AER considers that cost pass through events should not remove incentives from service providers to engage in efficient business practices.

All businesses are subject to the risk of unexpected and uncontrollable events and like unregulated businesses, regulated businesses should be required to bear some of these costs as part of the normal course of doing business. The AER considers that cost pass through events should be designed to encourage service providers to engage in prudent and efficient business practices.

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669 The initial tariffs set out in revision 11.7 are indicative. The figures are calculated based on the tariff model submitted by APA GasNet which contains a number of errors as listed in attachment 10 of this draft decision. The initial tariffs will be updated in the final decision using the corrected tariff model and final total revenue figures.

670 NGR, r. 40(3)

671 NGR, r. 100

Assessment criteria

In deciding on the appropriateness of a proposed cost pass through event the AER must consider the factors in r. 97(3) and assess its consistency with the NGO. The AER, in its Victorian Electricity Distribution Network Service Provider's Draft Decision, set out a detailed consideration of its conceptual approach to assessing cost pass through events.[672] The AER developed a number of criteria to assist it in assessing proposed cost pass through events against the National Electricity Objective (NEO). The AER considers that the NEO is sufficiently similar to the NGO for the same criteria to be applicable. However, the National Electricity Rules do not contain a rule analogous to r. 97(3). Nonetheless, the AER considers that these criteria can act as general principles to assist it in assessing whether a proposed cost pass through event for a gas network is consistent with the NGO:

- the event is not already provided for:
  - through the opex allowance (e.g. the insurance or self insurance components)
  - through the WACC (events which affect the market generally and not just the provider are systematic risk and already compensated through the WACC), or
  - through any other mechanism or allowance
- the event is foreseeable—in that the nature or type of event can be clearly identified
- the event is uncontrollable—in that a prudent service provider through its actions could not have reasonably prevented the event from occurring or substantially mitigated the cost impact of the event
- the event cannot be self-insured because a self insurance premium cannot be calculated or the potential loss to the business is catastrophic
- the party who is in the best position to manage the risk is bearing the risk
- the passing through of the costs associated with the event would not undermine the incentive arrangements within the regulatory regime.[673]

The AER has had regard to these criteria in assessing APA GasNet's proposed cost pass through events against the NGO. However, the AER has not applied the criteria strictly and has departed from them where it considers it necessary to better promote the NGO.

APA GasNet has included a number of new cost pass through events in its access arrangement proposal. These events are largely consistent with recent AER decisions.[674]

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672 Victorian Electricity Distribution Network Service Provider's Draft Decision, p 716.

673 Victorian Electricity Distribution Network Service Provider's Draft Decision, p 716

674 AER Draft decision: APT Pipeline PTY LTD, Roma to Brisbane Pipeline, April 2012, pp. 70-72: AER, Draft decision: N.T. Gas access arrangement, April 2011, pp. 166–167;.AER, Draft decision: Envestra Ltd: Access arrangement proposal for the Qld gas network 2011–2016, February 2011, p. 191 (AER, Draft decision: Envestra access arrangement Qld, February 2011); AER, Draft decision: Envestra Ltd: Access arrangement proposal for the SA gas network 2011–2016, February 2011, p. 209 (AER, Draft decision: Envestra access arrangement SA, February 2011); AER, Draft decision: APT Allgas: Access arrangement proposal for the Qld gas network 2011–2016, February 2011, pp. 138–140.

The AER considers that most of APA GasNet's proposed cost pass through events meet the criteria outlined above and are needed to provide APA GasNet with sufficient cover when acting prudently and efficiently. The AER requires the definition of three of APA GasNet's proposed cost pass through events to be amended.

Except for the event discussed below, the AER accepts APA GasNet's proposed cost pass through events and definitions. The following discussion only covers the proposed cost pass through event definition that the AER does not accept on the basis that it does not comply with the requirements of the NGL or the NGR or that a preferable alternative exists that better satisfies the requirements under the NGL and the NGR, as well as the NGO and revenue and pricing principles.[675]

Where the AER requires the definition of a cost pass through event to be revised, the revised definition is set out in section 11.5 below.

Carbon Cost Event

APA GasNet proposed the following definition for this event:

> An event that occurs if, at the end of a Regulatory Year of the Access Arrangement Period, the total carbon cost incurred (part of which may be an estimate) by Service Provider in complying with the carbon pricing mechanism established under the Clean Energy Act 2011 (Cth) and associated legislation relating to the management of greenhouse gas for that Regulatory Year is higher or lower than the forecast amount for that Regulatory Year set out in Table 10.3 of Service Provider's Access Arrangement Information.
>
> A portion of the "total carbon cost" incurred by Service Provider in a Regulatory Year may be an estimate, and the difference between the actual amount and the estimate for that portion of the total carbon cost that has been estimated will be the subject of an adjustment pursuant to clause.

The AER does not accept APA GasNet's proposed definition of a Carbon Cost Event in its access arrangement proposal. The AER requires APA GasNet to amend clause 4.7.2 in accordance with Revision 11.4.

This is a new pass through event. APA GasNet has submitted that a carbon cost event is required in respect of the carbon costs that may be incurred in connection with the consumption of fuel gas and fugitive emissions.[676] APA GasNet also stated that the costs for fuel gas will be incurred by AEMO, as the operator of the pipeline. However, there is a significant degree of uncertainty as to whether APA GasNet will incur a carbon liability associated with fuel gas consumption. APA GasNet states that it has, in conjunction with AEMO, sought a declaration from the Greenhouse Energy Data Officer as to which entity has operational control over APA GasNet's Victorian transmission network and therefore liability under the carbon pricing scheme.[677]

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675 NGL, s. 23 and s. 24 respectively.

676 APA GasNet, *Access arrangement submission* - 31 March 2012, p. 223.

677 APA GasNet, *Access arrangement submission* - 31 March 2012, p.170.

In its access arrangement proposal APA GasNet included an opex allowance for carbon costs.[678] Linked to its proposed opex allowance was a 'true–up' mechanism to adjust reference tariffs for actual costs compared to forecast costs. As part of its true–up mechanism, APA GasNet included a 'Carbon cost event' as one of its cost pass through events.[679] This pass-through event would allow APA GasNet to pass through higher or lower carbon costs for each year of the access arrangement.

If the Greenhouse Energy Data Officer finds APA GasNet to be liable for carbon costs, the AER considers that APA GasNet's proposed carbon pass through event true-up would work as follows:

- Under APA GasNet's proposed carbon cost pass through event, any over or under recovery of carbon costs would be adjusted for in terms of changes to reference tariffs. In the event that APA GasNet's annual actual carbon costs are higher than the forecast carbon costs for a particular year, APA GasNet would be able to pass through the additional cost.

- In the event that APA GasNet's actual carbon costs were lower than the forecast carbon costs, the AER considers it appropriate to make it mandatory for APA GasNet to submit a cost pass through event application. The AER requires the access arrangement to be revised to indicate that the Service Provider must seek a negative cost pass through should actual carbon costs be lower than the forecast carbon costs for a given year.

- APA GasNet submits that as some component of the difference between the forecast carbon costs and the actual carbon costs will be an estimate, there would be a further adjustment or 'true up' in the following year when the actual cost for the full regulatory year is known.[680]

If APA GasNet is found to be liable for carbon costs, the AER will consider amending its proposed carbon cost event definition.

The AER has not approved APA GasNet's proposed opex allowance for carbon costs,[681] because until there is a declaration by the Greenhouse Energy Officer, it will not be known whether APA GasNet will be liable for those costs. APA GasNet's proposed carbon cost event presupposes the approval of its forecast carbon costs. As the AER has not approved APA GasNet's opex allowance for carbon costs, the proposed true-up mechanism would no longer operate as APA GasNet intended given that it specifically refers to these forecast carbon costs as approved forecasts.

The AER considers that in view of the uncertainty surrounding APA GasNet's liability for carbon costs, it is appropriate to approve an event that enables any carbon costs to be passed through, in the event that any are incurred. The AER requires APA GasNet's proposed carbon cost event to be amended to remove the reference to forecast costs and to apply as a pass through of any carbon costs that are incurred.

The AER also requires that the carbon cost event definition be revised to specify that a carbon cost event will occur only when actual carbon cost data can be used, precluding the

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678 APA GasNet, *Access arrangement submission* - 31 March 2012, p. 223.
679 APA GasNet, *Access arrangement,* 31 March 2012, p. 16.
680 APA GasNet, *Access arrangement submission*, 31 March 2012, p.224.
681 See attachment 6 of this draft decision.

use of estimates. In this regard, the AER's proposed revision is that a single carbon cost true-up take place in the second year after the year carbon costs are incurred.

The AER notes that APA GasNet's proposed carbon cost pass through event will operate without a materiality threshold. The AER considers that this brings the regulatory approach closer to a 'cost of service' model, whereby service providers incur costs and seek to pass those costs through to customers.

The AER is of the view that this model does little to promote efficiency in service provision. The AER prefers to see the efficient costs of service provision estimated and incorporated into allowed revenues over the access arrangement period. This approach in turn creates incentives for service providers to achieve greater efficiencies.

In light of the above considerations, the AER is generally not in favour of cost pass through events with zero materiality thresholds. The AER prefers to see cost pass through events established with a materiality threshold of one per cent of annual approved revenue. The AER considers that changes in costs which amount to less than one per cent of annual revenue should be managed by service providers as a normal aspect of providing services.

In regard to carbon costs, however, the AER considers that the particular circumstances around carbon pricing going forward justifies waiving the 1 per cent materiality threshold. The AER considers this an exception to its preferred approach.

The AER notes that this approach to the materiality threshold is the same as adopted by the AER in its decision on the Roma to Brisbane pipeline.

Insurance Cap event

APA GasNet proposed the following definition for this event:

> Insurance Cap Event means an event that would be covered by an insurance policy but for the amount that materially exceeds the policy limit, and as a result Service Provider must bear the amount of that excess loss and bearing that loss would materially increase the costs to Service Provider of providing the Reference Service. For the purposes of this Cost Pass Through Event, the relevant policy limit is the greater of the actual limit from time to time and the limit under Service Provider's insurance cover at the time of making this Access Arrangement. This event excludes all costs incurred beyond an insurance cap that are due to Service Provider's Gross Negligence/Wilful Misconduct. This also excludes all liability arising from the Service Provider's unlawful conduct, and excludes all liability arising from the Service Provider's unlawful conduct.

The AER does not accept APA GasNet's proposed definition of an Insurance Cap Event in its access arrangement proposal. The AER requires APA GasNet to amend clause 4.7.2 in accordance with Revisions 11.5 and 11.6.

An insurance cap event allows a service provider to pass through costs that exceed the maximum payout that the service provider receives from its insurer when an insured risk eventuates.

APA GasNet's proposed insurance cap event is based on the insurance cap event approved by the AER in its recent gas decisions. However, the proposed event refers to Gross Negligence/Wilful Misconduct rather than negligence.

The AER requires the definition of an Insurance Cap Event to be amended so that the policy limit referred to in the definition is defined as the greater of the actual policy limit at the time of the event that gives rise to the claim and the policy limit at the time the AER makes its final decision on APA GasNet's access arrangement proposal for the 2013–17 access arrangement period. Further, the AER requires the policy limit to be defined with reference to the forecast operating expenditure allowance for the 2013–17 access arrangement period, approved by the AER in its Final Decision.

A network business, acting efficiently and prudently in managing its risks, is expected to take out an insurance policy that provides an efficient level of insurance coverage. It is appropriate to include provision in the cost pass through mechanism to allow the AER to determine whether any excess costs that are not covered under such a policy can be recovered from customers. This may occur in circumstances where a prudent network business has obtained an efficient level of insurance coverage, consistent with the standard expected and approved in its forecast operating expenditure allowance, but due to circumstances beyond its control, the policy coverage does not cover the costs incurred once a claim is made on that policy.

The kinds of circumstances that may lead to such an excess cannot be self-insured nor could the network business have taken actions to reasonably prevent these circumstances from occurring, or to substantially mitigate the relevant cost impact. Where this is the case, the AER does not consider that the network business should bear the costs in excess of their insurance policy coverage. A network business is not in a position to manage the risk of such circumstances occurring as they are beyond its control. It is therefore a legitimate cost that the network business incurs in the provision of reference services, that should be recovered from customers by way of a cost pass through. In these circumstances, the pass through of these costs will not undermine the incentives for the network business to efficiently and prudently manage the risks that are within its control.

APA GasNet's base forecast operating expenditure allowance includes a component for insurance coverage. There is an expectation that APA GasNet will expend that component to obtain an efficient level of insurance coverage, but the AER cannot compel APA GasNet to actually do this.

This raises the risk that APA GasNet might under-insure by obtaining a level of insurance cover lower than that contemplated in the forecast operating expenditure allowance determined in the AER's access arrangement final decision, and then pass through any costs that exceed its insurance cap. In these circumstances, customers are effectively paying twice—for the premiums of an efficient level of insurance as reflected in the forecast operating expenditure allowance, and through the cost pass through mechanism for costs that should have otherwise been covered by that efficient level of insurance.

To address this risk, the AER requires APA GasNet to amend the definition of an Insurance Event so that it is defined with reference to an efficient insurance policy limit as contemplated in the forecast operating expenditure allowance. This ensures that consumers pay for the premium as contemplated in the forecast operating expenditure allowance and beyond this may only pay for any excess loss incurred by the network business that would otherwise be considered an efficient cost.

The AER considers that the amended definition of an insurance event is a preferable alternative that complies with the NGL and is consistent with the NGR and NGO. As previously defined, the inclusion of an Insurance Event in the pass through regime may result

in customers effectively paying twice. This is not in the long term interests of consumers, and therefore is inconsistent with the NGO. However, it is in the long term interests of consumers to allow a network business to recover costs that are legitimately outside of its control. The recovery of such costs is also consistent with ensuring that the network business is provided a reasonable opportunity to recover at least its efficient costs, as is consistent with the revenue and pricing principles.

The AER therefore requires APA GasNet to amend the definition of an Insurance Event in its access arrangement proposal as follows:

> An Insurance Event means an event whereby:
>
> (a) APA GasNet makes a claim on a relevant insurance policy;
>
> (b) APA GasNet incurs costs beyond the relevant policy limit; and
>
> (c) The costs beyond the relevant policy limit materially increase the costs to APA GasNet of providing reference services.
>
> For the purposes of this Insurance Event:
>
> (d) The relevant policy limit is the greater of APA GasNet's actual policy limit at the time of the event that gives rise to the claim and its policy limit at the time the AER made its Final Decision on APA GasNet's access arrangement proposal for the period 2013-17, with reference to the forecast operating expenditure allowance approved in the AER's Final Decision and the reasons for that decision; and
>
> (e) A relevant insurance policy is an insurance policy held during the 2013-17 Access Arrangement Period or a previous period in which access to the pipeline services was regulated.

The AER considers that an assessment of APA GasNet's decisions and actions in relation to the pass through event—including whether the event which was the subject of the relevant insurance claim was within APA GasNet's control—is relevant to the AER's decision whether or not to approve the Relevant Pass Through Event.

To give effect to this, the AER considers that the cost pass through mechanism should include an additional factor which the AER must consider when assessing whether to approve a proposed Relevant Pass Through Event. This factor would require the AER to consider the efficiency of APA GasNet's decisions, actions and omissions in relation to the risk of a pass through event, including whether APA GasNet has taken action to mitigate the risk of the pass through event occurring or the magnitude of the costs of the event. This assessment is not limited to those actions that concern the taking out of an appropriate insurance policy to cover particular risks, but also extends to the actions taken by APA GasNet, or not taken, to mitigate the risk of the event which is the subject of the relevant insurance claim and which has resulted in the pass through event application being made. The AER will assess the extent to which this was within APA GasNet's control.

The AER considers that this will incentivise APA GasNet to take mitigating action to reduce the likelihood of the risk of an Insurance Event eventuating and the extent of costs associated with the occurrence of this pass through event.

The AER considers that this approach will best achieve the NGO. The AER considers that it needs to examine the circumstances that led to or resulted in an application for a pass through of costs in excess of an insurance cap, when making a decision that is in the long term interests of consumers. These circumstances will inform the AER's assessment of what

was within the service provider's control. This is both with respect to the insurance that it obtained and the cause of the claim that led to incurring the excess above the insurance cap. For this reason, the AER has not excluded negligence. Under the additional factor, the AER considers that its enquiry will necessarily encompass any claims or findings of negligence in the context of the specific regulatory framework which empowers the AER to make a pass through determination.

Information concerning the circumstances of the event may include negligence as determined by a court of law. As part of its broad enquiry, the AER may also consider claims of negligence that have not been proved or made in a court of law. For example, there may be claims of negligence but no public admission of negligence, or a confidential settlement that prevents public disclosure. It is also possible that what constitutes negligence may not be settled. The NGL and NGR do not limit the AER in taking such information into account. The AER will consider all such information available to it. Such information may or may not be determinative of whether the event was in the service provider's control for the purposes of the AER's decision on the pass through application.

The AER further notes that unlawful conduct and gross negligence would not be covered by an insurer and that acts or omissions resulting from such unlawful conduct or gross negligence could not trigger this pass through event.

Materiality Threshold

APA GasNet proposed the following materiality threshold:

> For the purpose of a defined Cost Pass-through Event which has a materiality threshold of materially increasing or decreasing the costs to Service Provider of providing the Reference Service, an event is considered to materially increase or materially decrease costs where that event has an impact of one per cent of the smoothed forecast revenue specified in the Access Arrangement Information, in the years of the Access Arrangement Period that the costs are incurred. The defined Cost Pass-through Events with this materiality threshold are: insurance cap event; insurer credit risk event; natural disaster event; regulatory change event; service standard event; tax change event; and terrorism event.
>
> No materiality threshold applies to the carbon liability event.

The AER does not accept clause 4.7.3 of APA GasNet's access arrangement proposal. The AER requires APA GasNet to amend clause 4.7.3 in accordance with Revision 11.7.

The AER considers that the reference to smoothed forecast revenue should be to the AER's final decision rather than APA GasNet's Access Arrangement Information. This will be consistent with the definition of material in the other Victorian gas access arrangements.

11.5 Revisions

The AER requires the following revisions to make the access arrangement proposal acceptable:

Revision 11.1

Delete the definition of Actual EDD and VW in Schedule D5 of the proposed access arrangement and replace it with the following:

Actual EDD is the actual measured EDDs for a Regulatory Year, as reported in the AEMO APR or otherwise made available by AEMO

VW is the actual withdrawal from the VTS excluding:

(i) any tariff refills at WUGS or the LNG Storage Facility; and

(ii) forecast volumes for the incremental Murray Valley tariff.

Revision 11.2

Delete the following text under section 4.7.5 of the proposed access arrangement

If Service Provider proposes adjustments to the Reference Tariffs (other than as a result of a Cost Pass-through Event) and those adjustments have not been approved by the next 1 January, then the Reference Tariffs will be adjusted with effect from that following 1 January in accordance with the notice, until such time as adjustments to Reference Tariffs are approved by the AER.

and replace it with the following:

If Service Provider proposes adjustments to the Reference Tariffs (other than as a result of a Cost Pass-through Event) and those adjustments have not been approved by the next 1 January, then the existing Reference Tariffs will apply until such time varied Reference Tariffs consistent with the access arrangement are approved by the AER.

Revision 11.3

Replace the first paragraph under heading 4.7.2 of APA GasNet's proposed access arrangement with:

Subject to the approval of the AER under the National Gas Rules, Reference Tariffs may be adjusted after one or more Cost Pass-through Event/s occurs in which each individual event materially increases or materially decreases, or is reasonably expected to materially increase or decrease, the cost of providing the Reference Service. If a carbon cost event occurs, Service Provider must apply to the AER for a cost pass through if the carbon cost event materially decreases the cost of providing the Reference Service. Any such adjustment will take effect from the next 1 January.

Revision 11.4

Replace the carbon cost pass through event in APA GasNet's proposed revised access arrangement with:

Carbon cost event–means:

An event that occurs if, for a given Regulatory Year of the Access Arrangement Period, the Service Provider incurs a carbon cost (part of which may be an estimate) in complying with the carbon pricing mechanism established under the Clean Energy Act 2011 (Cth) and associated legislation relating to the management of greenhouse gas for that Regulatory Year. The carbon cost event is taken to have occurred at the time that it is possible for

Service Provider to calculate the carbon costs it has incurred for a Regulatory Year without use of estimation.

Revision 11.5

Delete the definition of insurance cap event in section 4.7.2 of APA GasNet's proposed access arrangement and replace it with the following definition

An Insurance Cap Event means an event whereby:

(a) APA GasNet makes a claim on a relevant insurance policy;

(b) APA GasNet incurs costs beyond the relevant policy limit; and

(c) The costs beyond the relevant policy limit materially increase the costs to APA GasNet of providing reference services.

For the purposes of this Insurance Cap Event:

(d) The relevant policy limit is the greater of APA GasNet's actual policy limit at the time of the event that gives rise to the claim and its policy limit at the time the AER made its Final Decision on APA GasNet's access arrangement proposal for the period 2013-17, with reference to the forecast operating expenditure allowance approved in the AER's Final Decision and the reasons for that decision; and

(e) A relevant insurance policy is an insurance policy held during the 2013-17 Access Arrangement Period.

Revision 11.6

Delete sections 4.7.2 and 4.7.3 of APA GasNet's proposed access arrangement and insert the following at section 4.7.2:

Procedure for a Relevant Pass Through Event Variation in Reference Tariffs

APA GasNet will notify the AER of Relevant Pass Through Events within 90 business days of the relevant pass through event occurring, whether the costs would lead to an increase or decrease in Reference Tariffs.

When the costs of the Cost Pass Through Event incurred are known (or able to be estimated to a reasonable extent), then those costs shall be notified to the AER. When making a notification to the AER, APA GasNet will provide the AER with a statement, signed by an authorised officer of SP APA GasNet verifying that the costs of any pass through events are net of any payments made by an insurer or third party which partially or wholly offsets the financial impact of that event (including self insurance).

The AER must notify APA GasNet of its decision to approve or reject the proposed variations within 90 Business Days of receiving the notification. This period will be extended for the time taken by the Regulator to obtain information from APA GasNet, obtain expert advice or consult about the notification.

However, if the AER determines the difficulty of assessing or quantifying the effect of the Relevant Pass Through Event requires further consideration, the AER may require an extension of a specified duration. The AER will notify APA GasNet of the extension, and its duration, within 90 business days of receiving a notification from APA GasNet.

Subject to the approval of the AER under the NGR, Reference Tariffs may be varied after one or more Relevant Pass Through Event/s occurs, in which each individual event materially increases or materially decreases the cost of providing the reference services. Any such variation will take effect from the next 1 January. In making its decision on whether to approve the proposed Relevant Pass Through Event variation, the AER must take into account the following:

(a) the costs to be passed through are for the delivery of pipeline services

(b) the costs are incremental to costs already allowed for in reference tariffs

(c) the total costs to be passed through are building block components of total revenue

(d) the costs to be passed through meet the relevant National Gas Rules criteria for determining the building block for total revenue in determining reference services

(e) the efficiency of APA GasNet's decisions and actions in relation to the risk of the Relevant Pass Through Event occurring, including whether APA GasNet has failed to take any action that could reasonably be taken to reduce the magnitude of the costs incurred as a result of the Relevant Pass Through Event and whether APA GasNet has taken or omitted to take any action where such action or omission has increased the magnitude of the costs; and

(f) any other factors the AER considers relevant and consistent with the NGR and NGL.

Revision 11.7

Under section 4.7.3 of APA GasNet's proposed access arrangement, delete the words 'Access Arrangement Information' insert the following: 'specified in the AER's final decision on APA GasNet's access arrangement proposal'.

Revision 11.8

Replace the first paragraph under heading 4.6 of APA GasNet's proposed access arrangement with:

The initial Reference Tariffs (excluding GST) to apply from 1 July 2013 to 31 December 2013 are set out in Schedule A.

Revision 11.9

APA GasNet is required to amend its proposed access arrangement:

(1) to make clear the Reference tariffs which applied in 2012 will continue to be apply in nominal terms until 1 July 2013.

(2) to make clear that 2013 Reference tariffs will only apply for the period 1 July 2013 to 31 December 2013

(3) to make changes to the process under section 4 of the access arrangement to reflect that 2013 Reference tariffs will commence on 1 July 2013 rather than on the start of the calendar year (1 January).

Revision 11.10

Delete section A2 and A3 in Schedule A of the proposed access arrangement and replace it with the following:

A.2 Injection Tariffs

(a) Injection at Longford Injection Zone

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Withdrawal Zones except LaTrobe, Maryvale, Tyers, West Gippsland and Lurgi	1.6840	0%
LaTrobe & Maryvale	0.3124	0%
Tyers & Lurgi	1.0104	0%
West Gippsland	0.4465	0%

(b) Injection at Culcairn Injection Zone

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Withdrawal Zones except Interconnect	1.4275	0%
Interconnect	0.3581	0%

(c) Injection at Port Campbell Injection Zone

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Withdrawal Zones except Western, South West and SEAGas Pipeline	1.6915	0%
South West	0.6018	0%
Western and SEAGas Pipeline	-	NA

(d) Injection at Pakenham Injection Zone

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Zones	0.2717	0%

(e) Injection at Dandenong Injection Zone

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Zones	-	NA

(f) AMDQ CC

Matched Withdrawal Zone	Injection Tariff ($/GJ, for the 10 Day Injection Volume)	X-factor
All Zones	0.0025	0%

A.3 Withdrawal Tariffs

(a) Transmission Delivery Tariff

Subject to the exceptions in clauses A.3(b), A.3(c), A.3(d), A.3(e) and A.3(f) of this Schedule, the Withdrawal Tariffs are as follows:

Withdrawal Zone Number	Withdrawal Zone Name	Transmission delivery tariff D ($/GJ)	Transmission delivery tariff V ($/GJ)	X-factor
1	LaTrobe	0.1364	0.1215	0%
25	Maryvale	0.0579	-	0%
2	West Gippsland	0.1569	0.1585	0%
3	Lurgi	0.1774	0.1956	0%
4	Metro North West	0.2586	0.2688	0%
5	Calder	0.7862	0.7351	0%
6	South Hume	0.3942	0.3635	0%
7	Echuca	0.7474	0.8621	0%
8	North Hume	0.7410	0.8295	0%
9	Western	0.4067	0.8102	0%
10	Murray Valley	1.1340	1.2531	0%
11	Interconnect	0.8745	0.8745	0%
13	South West	0.1215	0.1215	0%

17	Wodonga	0.6644	1.2052	0%
18	Tyers	0.1549	0.1635	0%
19	NSW Export	0.6671	0.0000	0%
20	Metro South East	0.2586	0.2688	0%
21	Warrnambool	0.0936	0.1566	0%
22	Koroit	0.1941	0.5858	0%
24	Geelong	0.1460	0.1650	0%

(b) System Export Tariff

Where a Connection Point in an Injection Zone services an export of gas from the VTS to a Connected Transmission Pipeline, gas Injected at that Injection Zone and Withdrawn through that Connection Point is subject to the System Export Tariff specified below, instead of the Withdrawal Tariff specified in clause A.3(a) of this Schedule.

Withdrawal Zone Number	Connected Transmission Pipeline name	System export tariff ($/GJ)	X-factor
31	VicHub	0.0000	0%
33	SEA Gas Pipeline	0.0205	0%

(c) Transmission Refill Tariff

Where a Connection Point services a Storage Facility, all gas Withdrawn through that Connection Point is subject to the Transmission Refill Tariff specified below, instead of the Withdrawal Tariff specified in clause A.3(a) of this Schedule.

Withdrawal Zone Number	Storage Facility Name	Transmission Refill tariff ($/GJ)	X-factor
23	LNG	0.0500	0%
32	WUGS	0.0500	0%

(d) Cross System Withdrawal Tariff

If:

(i) gas is Withdrawn at a Connection Point, other than a Connection Point servicing a Storage Facility, located on an Injection Pipeline other than the Interconnect Pipeline; and

(ii) that Withdrawal is a Matched Withdrawal with respect to an Injection Zone other than the Injection Zone for that Injection Pipeline,

then the Withdrawal is subject to the following Cross System Withdrawal Tariff in addition to the applicable Injection Tariff and Withdrawal Tariff.

Injection Pipeline	Cross System Withdrawal Tariff D ($/GJ)	Transmission delivery tariff V ($/GJ)	X-factor
All	0.1371	0.1473	0%

(e) Matched Withdrawals - Culcairn

If a Withdrawal in one of the following Zones is a Matched Withdrawal relating to Injections in the Culcairn Zone, then the following Matched Withdrawal Tariffs apply instead of the tariffs described in clause A.3(a) of this Schedule:

Withdrawal Zone Number	Withdrawal Zone Name	Transmission delivery tariff D ($/GJ)	Transmission delivery tariff V ($/GJ)	X-factor
8	North Hume	0.2434	0.2380	0%
11	Interconnect	0.0000	0.5570	0%
17	Wodonga	0.1347	0.1480	0%

(f) Matched Withdrawals - Metro (South East)

If a Withdrawal in the Metro South East Zone is a Matched Withdrawal relating to Injections in the Pakenham Zone, then the following Matched Withdrawal Tariffs apply instead of the tariffs described in clause 1.3(a) of this Schedule:

Withdrawal Zone Number	Withdrawal Zone Name	Transmission delivery tariff D ($/GJ)	Transmission delivery tariff V ($/GJ)	X-factor
20	Metro South East	0.1534	0.1723	0%

12 Non-tariff components

APA GasNet's access arrangement proposal sets out terms and conditions that are not directly related to the nature or level of tariffs paid by users. However, these are important to the relationship between APA GasNet and Network Users. These are referred to by the AER as non-tariff components of the access arrangement and include:

- capacity trading requirements—how users may assign contracted capacity and change delivery and receipt points
- queuing requirements—a process or mechanism for establishing an order of priority between prospective users of spare and / or developable capacity
- extension and expansion requirements—the method for determining whether an extension or expansion is a part of the covered pipeline and the effect this will have on tariffs. These requirements are relevant when identifying the covered pipeline and pipeline services which will be regulated through the access arrangement
- commencement and review dates
- terms and conditions on which the reference service will be provided.

A more detailed consideration of the terms and conditions of APA GasNet's access arrangement is also set out below. The remaining non-tariff components are considered after the terms and conditions.

12.1 Terms and conditions

Rule 48(d)(ii) of the NGR requires that a full access arrangement specify for each reference service the other terms and conditions on which the reference service will be provided. The terms and conditions set out in an approved access arrangement will be the terms and conditions that the AER must give effect to in the event that there is an access dispute, requiring it to make an access determination.[682]

Notwithstanding this, nothing in the NGL prevents a Service Provider from entering into an agreement with a user or a prospective user about access to a pipeline service that is different from the applicable access arrangement.[683] The parties are therefore able to negotiate terms and conditions that are suitable to their commercial circumstances. The AER expects that the terms and conditions as set out in an approved access arrangement would act as a starting point for such negotiations.

12.1.1 Draft decision

The AER does not approve APA Gasnet's non-tariff components. The AER requires revisions to be made to the following non-tariff components to:

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682 NGL, s. 189.
683 NGL, s. 332.

- make it clear at what rate interest will be charged
- Provide that APA GasNet cannot terminate the Deed for non-payment where a user has disputed the charge; and
- Make it clear that there are no applicable capacity trading requirements.

12.1.2 Access Arrangement Proposal

APA GasNet sets out its proposed non-price terms and conditions in the Transmission Payment Deed Terms, in Appendix F to its access arrangement proposal. The Transmission Payment Deed Terms contain considerable variations from APA GasNet's current Payment Deed Terms.

APA GasNet submits that the Victorian gas market arrangements means that the scope of relevant terms and conditions of access to the Victorian Transmission Service (VTS) are significantly different to those for contract carriage pipelines. In particular, this is because of the role of AEMO in operating the VTS. Terms and conditions in the access arrangement are limited to payments made by shippers to APA GasNet under the Transmission Payment Deed.[684]

APA GasNet submits that it is implementing a standard form Gas Transportation Agreement across all the assets in the APA group (this is also reflected in the terms and conditions of various access arrangements for covered pipelines). The APA group first proposed these standard form terms in respect of the Amadeus Gas Pipeline (AGP) owned by APA subsidiary by APT Pipelines NT Pty Ltd. APA GasNet states that it has, where relevant, incorporated the terms and conditions (approved by the AER) in respect of the AGP into this access arrangement.[685] However, APA GasNet goes on to state that the different market and operating arrangements for the VTS mean that a significant number of its standard terms and conditions are not relevant to the VTS.[686]

APA GasNet states that it considers that the revised terms and conditions are necessary and that they are consistent with the NGO. APA GasNet submits that shippers and prospective shippers will also benefit from consistency in contracting arrangements across APA Group's assets, as many shippers are common across a number of APA Group assets in a different states and territories.[687]

12.1.3 Assessment Approach

Non-tariff components must be consistent with the NGO.[688] But, otherwise, the AER has full discretion in dealing with them.[689] The AER has considered whether each term of Envestra's access arrangement proposal is consistent with the NGO.[690] The AER considers that assessing consistency with the NGO requires the AER to assess and balance the competing

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684 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 22.
685 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 23.
686 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 23.
687 APA GasNet, *Access arrangement submission*, 31 March 2012, p. 23.
688 NGR, r. 100.
689 NGR, r. 40(3).
690 NGL. s. 23; NGR, r. 100.

interests of the Service Provider, Network Users and consumers. In particular, the AER has considered:

- the appropriate allocation of risk
- the desirability of avoiding a prescriptive approach on commercial matters in the access arrangement.

Allocation of risk

The NGO involves the promotion of efficient investment in and efficient operation and use of natural gas pipeline services for the long term interest of consumers. The AER considers that requiring risk to be borne by the party best able to manage it promotes this objective. This is because such an approach provides the opportunity to minimise the risk, which can ultimately lead to greater efficiency and lower prices.

The AER considers that non-price terms and conditions that unduly favour a gas pipeline service provider are not consistent with the NGO. Such terms could discourage new businesses from entering the retail sector. They are also likely to increase Network Users' costs, which retailers would pass on to end consumers. A similar logic applies to terms and conditions that unduly favour Network Users. If the gas pipeline service providers face an inefficient level of risk, they are likely to pass additional costs on to the Network Users and consumers.

Commercial matters

The AER considers that consistency with the NGO requires terms and conditions to be sufficient to provide for a clear, legally certain and effective ongoing relationship between the parties. This becomes particularly relevant should an access dispute arise. In that scenario, the terms and conditions in the access arrangement will come into central focus.[691] The AER does not consider an access arrangement's terms and conditions can or need to cover every possible area of interaction between the parties.

The AER considers that Envestra and a Network User may wish to reach agreement on several aspects of their commercial relationship, separate from the access arrangment's terms and conditions. These aspects are likely to depend on the parties' particular circumstances. The AER considers that it should provide such parties with commercial flexibility to agree on terms that are relevant to their businesses and circumstances, consistent with s. 322 of the NGL. A prescriptive approach would not provide this flexibility. The AER considers that such an approach would not be consistent with the NGO.

In general, the AER considers that the terms and conditions Envestra has proposed are necessary for there to be a clear, effective and legally certain agreement between Envestra and a Network User.

By itself, a term may be necessary for an agreement to be clear, effective and legally certain. However, there may still be scope to adapt the language or level of detail of that term to apply to different commercial circumstances. In these cases, the AER considers that amendinga

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691 NGL, ss. 181, 184 & 189

term will be consistent with the NGO. Nonetheless, for commercial reasons, a Network User may seek to vary the wording or depth of a term. In these cases the AER considers that the proposed term should be approved. The parties can then negotiate any changes to the wording or detail of the term.

In these cases, the AER will generally avoid proposing amendments. This is particularly the case where the AER has received submissions that it considers go to the commercial form of a term, rather than its operation.

For the above reasons, the AER considers that this assessment approach will deliver a result consistent with the NGO.[692]

12.1.4 Reasons for the decision

The following discussion focuses on the terms and conditions that the AER has concerns with and requires to be amended as well as setting out the AER's reasoning with respect to proposed terms that it has accepted and submissions that it has not referred to in the following discussion.

Billing and Payment

For the reasons set out below the AER considers that this clause, F2, is not consistent with the NGO and requires it to be amended in accordance with Revision 12.1.

APG submitted that invoices to recover additional amounts should be restricted to revised amounts as issued by AEMO as per the previous access arrangement. APG states that this should be limited because any other legitimate recovery will be contemplated under the cost pass through provision, F3. In the case of recovery of additional amounts that specifically pertain to errors, there should be a reference to the last paragraph where a time limitation applies.[693]

TRU Energy submitted that it prefers to retain the wording in the current Transmission Entitlement Deed that relates to disputed amounts. However, if the wording in the proposal is retained, greater clarity is required regarding the interest chargeable where the disputed amount is found to be payable by, or re-payable to the shipper.[694]

The AER considers that the inclusion of F2(c) is consistent with the NGO. The AER considers that there could be a number of reasons for an incorrect amount to be invoiced or paid – such as an error in rendering a bill or tendering payment. This clause operates to the benefit of both APA GasNet and the Network User because it refers to recovering additional amounts which the Service Provider is entitled to recover, and making adjustments for amounts that were invoiced to or paid in error by the Shipper.

The AER considers that permitting invoices to be issued to rectify an error promotes the efficient operation of APA GasNet's system. Allowing a party to retain funds arising from

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692 The AER considered the Australian Competition Tribunal's decision in *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12 in considering this issue.

693 Australian Power and Gas, Submission to APA GasNet's Access Arrangement Proposal, 15 June 2012, p. 6.

694 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 4.

erroneous payments or incorrect invoices could lead to price distortions. This would not be in the long term interests of consumers, an aspect of the NGO.

With respect to APG's submission, the AER notes that clause F3 provides that a reference tariff may be varied in accordance with the Reference Tariff Adjustment Mechanism set out in section 4 of the access arrangement. The AER does not consider that an erroneous payment falls within any of the proposed and approved cost pass through events. Accordingly, the AER does not agree with APG's submission that clause F3 contemplates the recovery of erroneous payments.

The AER considers that the reference to interest in the final two sub-clauses should be amended to refer to the rate of interest set out in the previous sub-clause. This will avoid any uncertainty or disputes which, could lead to increased costs. This is in the long term interests of consumers with respect to price, an aspect of the NGO.

This clause is substantially consistent with the billing and payment clauses approved in recent AER gas decisions.[695]

Prudential Requirements

For the reasons set out below the AER considers that this clause, F4, is consistent with the NGO and does not propose to require any amendments.

APG considers that prudential requirements can form barriers to participants' market entry and expansion. Further, APG considers that the provision of credit support should be commensurate with the level of risk associated with payment default. APG is concerned that clause F4(a) suggests that credit support arrangements are solely at the discretion of APA GasNet. APG also considers that the drafting lacks reference to any consistent calculation methodology in determining the quantum, or criteria for determining the type of this support. APG considers that the clause should give participants flexibility to provide credit support in a low cost manner, commensurate with the risk of payment default.[696]

TRU Energy submitted that APA GasNet's proposed prudential facility should be replaced by the prudential facility in the Deed attached to APA GasNet's current access arrangement.[697]

The AER considers that prudential requirements form an important part of an access arrangement. The financial viability of service providers and prudent investment are essential to the efficient operation of natural gas networks and services. The AER considers that requiring a service provider to provide services to a financially unstable party is not consistent with the NGO. This could potentially leave a service provider with limited finances in the event that a network user becomes insolvent.

The AER considers that the proposed mechanism is consistent with the NGO. It balances the interests of APA GasNet with those of users and consumers. APA GasNet may require the provision of financial security but only to a reasonable extent.

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695 See clauses 81-84 in the terms and Conditions Applying to the Firm Service in the approved Roma to Brisbane Pipeline access arrangement, p. 29.

696 Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012, p. 6.

697 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 4.

Sub-clause F4(a) is the same as the prudential requirements clauses recently approved by the AER for other APA Group subsidiaries.[698] In its draft decision on the Amadeus Gas Pipeline, the AER required the prudential requirements clause to be amended to the format that APA GasNet has proposed. In particular, the AER required the Service Provider's discretion to be limited by the inclusion of a 'reasonable' qualification.[699]

APA GasNet may only require financial security where it is 'reasonably required'. This qualifies APA GasNet's discretion with an objective test. Financial security would be 'reasonably required' where an objective assessment of the circumstances of the user determines that it could potentially be a security risk. If an objective assessment showed that a user was not a potential security risk, it would be unreasonable to require the provision of financial security and financial security would not be 'reasonably required'. The AER considers that it is appropriate to allow the requirement of financial security where it is reasonably required.

APA GasNet is also given discretion to determine the form of financial security. However, this discretion must also be exercised reasonably. Accordingly, the AER considers that there is sufficient limitation on the scope of APA GasNet's discretion and this clause is consistent with the NGO.

The AER agrees that requirements for financial security can form barriers to entry or expansion. However, the AER also considers that it is necessary for APA GasNet to protect its interests in order to achieve the NGO. APA GasNet's proposed prudential requirements limit it to acting reasonably and the AER considers this prevents the arbitrary or capricious use of this clause. The AER does not agree that the credit support arrangements are solely at the discretion of APA GasNet. As discussed above, APA GasNet's discretion is limited to acting reasonably.

The AER acknowledges APG's point that the proposed mechanism does not refer to a consistent calculation methodology. However, the AER considers that the qualification that the financial security must be in the form reasonably required by APA GasNet limits it to requiring security that is reasonable.

This clause is substantially consistent with the prudential requirements clauses approved in recent AER gas decisions.[700]

Termination

For the reasons set out below the AER considers that this clause, F8, is not consistent with the NGO and requires it to be amended in accordance with revision 12.2.

TRU Energy submitted that clause F8 should overtly indicate that failure to pay a disputed amount is not a material default.[701]

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698 Amadeus Gas Pipeline (AGP) - APT Pipelines NT Pty Ltd; Roma to Brisbane pipeline – APT Petroleum Pipelines Pty Limited

699 AER draft decision – Amadeus Gas Pipeline, appendix C, p. 222.

700 See clause 2 in the terms and Conditions Applying to the Firm Service in the approved Roma to Brisbane Pipeline access arrangement, p. 14.

701 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 4.

The AER agrees with TRU Energy's concerns. The AER considers that it is not consistent with the NGO to permit APA GasNet to terminate the Transmission Payment Deed, where a user has disputed an invoice. APA GasNet should not be able to incorrectly charge a user and then terminate the Transmission Payment Deed if the User disputes the invoice. The AER considers that such a circumstance would not promote the efficient use and operation of gas services, an aspect of the NGO.

Assignment

For the reasons set out below the AER considers that this clause, F10, is consistent with the NGO and does not propose to require any amendments.

This clause is substantially the same as the assignment clause (approved by the AER) in recent gas pipeline decisions.[702]

APG submitted that the provisions for change of control should be removed. A "change in control" may be beyond the immediate control of the parties (as in the case of a publically listed company) and in effect, a subsequent trigger that the Deed is not enforced until consent is obtained from the other party may be an unreasonable disruption to continuing business.[703]

The AER considers that APG is concerned that a publically listed company will not have any control over whether there is a change in control, because the change in control could arise from a stock market takeover. APG has not provided any other examples where it considers there could be a change of control of a party that is beyond its immediate control.

The AER notes that in the provisions relating to change of control, point (b) refers to neither the affected party or its ultimate holding company being listed on a recognised public securities exchange. This is a pre-requisite for the further provisions, limiting the ability of the affected party to enforce the Deed, to apply. Accordingly, where the affected party or its ultimate holding company are listed, the limitation on enforcing the Deed does not apply.

This clause provides for affected parties to deal with their assets in a flexible way. However, it also allows the other party to protect its interests by refusing to consent to an assignment if the assignee is not technically or financially capable of performing. The AER considers that this promotes the efficient operation of the network, an aspect of the NGO.

Confidentiality

For the reasons set out below the AER considers that this clause, F11, is consistent with the NGO and does not propose to require any amendments.

This clause is consistent with the confidentiality clauses recently approved by the AER.[704]

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[702] See clauses 98 to 100 in the terms and Conditions Applying to the Firm Service in the approved Roma to Brisbane Pipeline access arrangement, p. 33.

[703] Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012, p. 7.

[704] See clauses 101 to 103 in the terms and Conditions Applying to the Firm Service in the approved Roma to Brisbane Pipeline access arrangement, p. 33.

APG submitted that this clause should make provision for disclosure to any financiers or prospective financiers of a party, as exceptions to consent requirements.[705]

The AER considers that the obligation to obtain written consent to use confidential information for a purpose other than the permitted purposes is not particularly onerous. The AER considers that it is important that parties are able to protect and restrict who deals with their confidential information. Broadening the scope of access to confidential information could act as a disincentive to entry into or investment in the industry. The AER considers that this would not promote efficient investment in and the efficient operation and use of services, which are aspects of the NGO.

Whilst a party would have to obtain written consent to disclose confidential information to its financiers, the AER considers that this is not inconsistent with the NGO.

12.2 Capacity trading requirements

The capacity trading requirements of an access arrangement may allow a user to transfer, by way of a subcontract, all or any of the user's contracted capacity to another user.[706] In doing so, it may enable a secondary market with more efficient price signals and levels of usage.

The NGR provides that capacity trading requirements are to be included in a full access arrangement.[707] Relevantly, the NGR requires that capacity trading requirements must provide for capacity transfers in accordance with the rules or procedures of the relevant gas market, if the service provider is registered as a participant in a particular gas market.[708]

12.2.1 AER Decision

To ensure that the access arrangement is consistent with the NGR, the AER requires APA GasNet to amend its proposal to state that there are no applicable capacity trading requirements for the purposes of rule 48(1)(f)or 105(1) of the NGR.

The AER requires APA GasNet to amend clause 5.1 of its proposed access arrangement in accordance with Revision 12.3.

12.2.2 Access arrangement proposal

APA GasNet's access arrangement proposal states that as it is a registered participant in the Victorian Declared Wholesale Gas Market. Therefore, any transfer of capacity must be undertaken in accordance with the rules or procedures governing the Victorian Declared Wholesale Gas Market.[709] APA GasNet's proposal does not include any further rules in relation to capacity trading.

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705 Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012, p. 7.

25 NGR, r. 105(2).

26 NGR, r. 48(1)(f).

27 NGR, r. 105(2).

28 APA GasNet, *Access arrangement proposal*, 2013-2017, clause 5.1.

12.2.3 Assessment approach

The AER has assessed APA GasNet's capacity trading requirements against the NGO and rules 48(1)(f) and 105 of the NGR.

12.2.4 Reasons for the decision

Capacity trading is not possible on the Victorian gas network (including on APA GasNet's transmission network). This is different to most Australian gas markets. Those markets are based on bilateral arrangements between producers, major users and retailers linked together through pipeline hubs connecting gas fields to gas consumers.[710] By comparison, in Victoria a wholesale gas market has been established to enable competitive trading based on injections into and withdrawals from a transmission system that links multiple producers, major users and retailers.[711] Under this model, Victorian gas networks (including APA GasNet's transmission network) are subject to the Declared Wholesale Market Rules in part 19 of the NGR. These rules do not provide for capacity trading. Rather, AEMO is responsible for managing capacity, on a daily basis, throughout the Victorian wholesale gas market.[712]

Rule 330 of the NGR sets out the applicable procedure for allocating capacity where AEMO and the declared transmission system service provider agree that the declared transmission system has available capacity which has not previously been allocated or reserved.

Capacity trading is therefore not applicable to the APA GasNet's network.

Despite the practical situation, the NGR require that the access arrangement include capacity trading requirements. The AER considers that APA GasNet's access arrangement may meet this requirement by specifying that there are no applicable capacity trading requirements.

12.3 Queuing arrangements

Queuing can be used to determine access to a pipeline that is fully, or close to being fully, utilised. Queuing requirements establish the priority that a prospective user has, against any other prospective user, to obtain access to spare and developable capacity on a covered pipeline.[713] Queuing requirements establish a process or mechanism for establishing an order of priority between prospective users of spare and/or developable capacity.

However, the capacity of APA GasNet's transmission pipelines are managed by AEMO on a daily basis under Part 19 of the NGR (Declared Wholesale Market Rules) meaning that queuing arrangements are unnecessary (there is no queue).

Despite this practical situation, queuing requirements must be included in an access arrangement for a gas transmission pipeline.[714] Where there are queuing requirements they

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710 This model is sometimes referred to as a contract carriage model.

30 This model is sometimes referred to as market carriage model. Australian Energy Market Operator, Victorian Wholesale Market, see: http://www.aemo.com.au/en/Gas/Wholesale-Gas-Markets/Victorian-Wholesale-Market, accessed 30 July 2012.

31 In accordance with the rules in Part 19 of the NGR.

32 NGL, s. 2.

33 NGR, r. 103(1)(a).

must establish a process or mechanism (or both) for establishing an order of priority between prospective users of spare or developable capacity (or both) in which all prospective users (whether associates of, or unrelated to, the service provider) are treated on a fair and equal basis.[715]

12.3.1 AER decision

The AER proposes to accept APA GasNet's proposal that the order of priority between prospective users of spare or developable capacity will be determined on a daily basis by AEMO in accordance with Part 19 of the NGR.

12.3.2 Access arrangement proposal

APA GasNet's access arrangement proposal states that the order of priority between prospective users of spare or developable capacity is determined on a daily basis in accordance with Part 19 of the NGR.[716]

12.3.3 Assessment approach

The AER has assessed APA GasNet's queuing requirements against the NGO and rules 48(1)(e) and 103 of the NGR.

12.3.4 Reasons for the decision

The capacity of the transmission pipelines operated by APA GasNet is managed by AEMO under the rules set out in Part 19 of the NGR. Queuing requirements are not applicable to APA GasNet's network. Accordingly, the AER considers that APA GasNet has specified a policy that works in the particular circumstances and has complied with its obligations under the NGR.

12.4 Extension and expansion requirements

Extension and expansion requirements included in an access arrangement specify the method for determining whether extensions or expansions to the covered pipeline are to be covered by the access arrangement.[717]

Extension and expansion requirements must be included in an access arrangement.[718] Extension and expansion requirements may state whether the applicable access arrangement will apply to incremental services to be provided as a result of a particular extension to, or expansion of the capacity of, the pipeline or outline how may be dealt with at a later time.[719] If

34 NGR, 103(2).
35 APA Gas Net, *Access arrangement,* 31 March 2012, clause 6.1.
36 NGR, r. 104(1).
37 NGR, r. 48(1)(g).
38 NGR, r. 104(1).

the requirements provide that an access arrangement applies to incremental services, the requirements must deal with the effect of the extension or expansion on tariffs.[720]

12.4.1 AER decision

The AER accepts APA GasNet's proposal in relation to its extensions and expansions requirements.

12.4.2 Access arrangement proposal

APA GasNet's proposal is that if it proposes an extension of the covered pipeline, it must apply to the AER. APA GasNet proposes that the AER decide whether the proposed extension will be taken to form part of the covered pipeline. However, APA GasNet would not be required to apply to the AER to the extent that the cost of the proposed pipeline extension has already been included and approved by the AER in the calculation of reference tariffs.[721]

In the event that it expands the capacity of the pipeline, APA GasNet proposes that the access arrangement will apply to incremental services provided as a result of the expansion. The proposal states that APA GasNet can ask the AER to agree that the access arrangement will not apply to the incremental services provided as a result of the expansion.[722]

12.4.3 Assessment approach

The AER has assessed APA GasNet's extension and expansion requirement against the NGO and rules 48(1)(g) and 104 of the NGR.

12.4.4 Reasons for the decision

In assessing the proposed extension and expansion requirements, the AER has also considered the overall purpose of the regulatory regime and the way it has dealt with extension and expansion requirements in the past.

Consistent with its previous decisions,[723] the AER considers that all extensions to transmission pipelines should be assessed on a case-by-case basis for coverage. This is because transmission pipelines could be used either as viable bypass options to end users, or to support the existing network. APA GasNet's proposed extensions and expansions policy is consistent with this view and the AER proposes to accept it.

Clauses 7.1(a), (b), (c) and (d) and 7.2 of APA GasNet's access arrangement proposal set out the extension and expansion requirements of the proposal.

The AER considers that the requirement for the AER to make a decision on the coverage of any extensions to the transmission network is appropriate because it provides for the AER to take the circumstances of the particular extension into account. Clause 7.1(a) sets out the

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39 NGR, r. 104(2).

40 APA GasNet, *Access arrangement,* 31 March 2012, clause 7.1.

41 APA GasNet, *Access arrangement,* 31 March 2012, clause 7.1.

42 For example: AER, *Jemena Gas Network draft decision*, February 2010, pp. 348–350; AER, *ActewAGL draft decision*, November 2009, pp. 185–186; AER, *Country Energy draft decision*, November 2009, pp. 140–141.

process to be taken and the information to be provided to the AER. The AER considers these requirements are clear and reasonable. The AER accepts this clause.

The AER does not agree with Tru Energy's submission that any extension provided by APA GasNet (or any other provider who can meet the technical requirements for connection) should either be rolled in (and AMDQcc assigned), or should remain outside the Victorian Transmission System and be operated by the owner as they see fit (but again, meeting the requirements for connection).[724] The AER has considered this submission but believes that it is appropriate for extensions to be assessed by the AER on a case by case basis.

For the following reasons, the AER considers that, in general, expansions to the pipeline should be covered by default. Pipeline expansions involve the augmentation of pipeline capacity of the existing pipeline, and are likely to be used by existing pipeline users. They are much less likely than an extension to serve new or isolated customers. As such, the AER considers that it is appropriate that pipeline expansions form part of the covered pipeline, unless the AER expressly agrees otherwise. The process in clause 7.2 provides for this.

However, flexibility is provided with the option for APA GasNet to propose that the access arrangement will not apply. The AER is given discretion to consider and approve such a proposal. The AER considers that this approach provides APA GasNet and the AER with the flexibility to take the particular circumstances of the extension into account, when necessary. This is consistent with TRU Energy's submission that the expansion policy proposed for the next access arrangement period is appropriate.[725]

The AER's approach is also consistent with Australian Power and Gas' submission. This submission argued that that extensions and expansions should ultimately recognise the existing regulatory framework and that investments should eventually be rolled into the capital base once the overall economic benefits become positive.[726]

12.5 Terms and conditions for changing receipt or delivery points

A receipt or delivery point is a point on a pipeline at which a service provider takes delivery of natural gas, or delivers natural gas.[727] A user may wish to change the point at which they receive or take delivery of natural gas.

The terms and conditions for changing receipt and delivery are to be included in a full access arrangement.[728] Under the NGR an access arrangement must allow a user, with the service provider's consent, to change the user's receipt or delivery point. The access arrangement must not allow a service provider to withhold its consent unless it has reasonable grounds, based on technical or commercial considerations, for doing so.[729] The access arrangement

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43 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 2.
44 TRUenergy, Submission to the AER: APA GasNet access arrangement proposal, 22 June 2012, p. 2.
45 Australian Power and Gas, Submission to the AER: APA GasNet access arrangement proposal, 15 June 2012, p. 2.
46 NGR, r. 3.
47 NGR, r. 48(h).
48 NGR, r. 106(1).

may specify conditions under which consent will or will not be given to be complied with if consent is given.[730]

However, the rules in part 19 of the NGR govern the Victorian wholesale declared gas market, in particular the injection and removal of gas from the network. The network is managed by AEMO on a daily basis.

12.5.1 AER decision

The AER accepts APA GasNet's proposal in so far as it relates to changes to users' receipt or delivery points.

12.5.2 Access arrangement proposal

APA GasNet's proposal states a change of a user's receipt or delivery point is governed by Part 19 of the NGR and the Gas Scheduling Procedures, and that under these rules and procedures, a service provider's consent is not required for a user to change its receipt or delivery point.[731]

12.5.3 Assessment approach

The AER has assessed APA GasNet's terms and conditions for changing receipt and delivery points against the NGO and rules 48(1)(h) and 106 of the NGR.

12.5.4 Reasons for the decision

APA GasNet's proposal acknowledges that AEMO is responsible for managing the delivery and receipt points of its customers under Part 19 of the NGR. The AER considers that this is appropriate and proposes to accept the proposal in this respect.

12.6 Review dates

Rule 49(1) of the NGR requires that a full access arrangement that is not voluntary must contain a review submission date and a revision commencement date and must not contain an expiry date.

The NGR provides that, as a general rule:[732]

- a review submission date will fall four years after the access arrangement took effect or the last revision commencement date; and
- a revision commencement date will fall five years after the access arrangement took effect of the last revision commencement date.

The AER is required to accept a service provider's proposed review submission and commencement dates if these are made in accordance with this general rule.

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49 NGR, r. 106. (2).
50 APA GasNet, *Access arrangement,* 31 March 2012, clause 5.2.
51 NGR, r. 50.

12.6.1 AER decision

The AER accepts APA GasNet's proposal in relation to the review submission date and revision commencement date.

12.6.2 Access arrangement proposal

APA GasNet proposed a review submission date on or before 1 January 2017 and a revision commencement date on the later of 1 January 2018.[733]

APA GasNet's access arrangement proposal did not include a trigger event for the acceleration of the review submission date.

12.6.3 Assessment approach

The AER has assessed APA GasNet's review submission date and revision commencement date against the NGO and rules 48(1)(i) and 48(1)(j) of the NGR.

12.6.4 Reasons for the decision

APA GasNet's proposed review submission date and revision commencement date are consistent with the general rule and the AER proposes to accept them.

12.7 Revisions

Before the access arrangement can be approved, APA GasNet must make the following amendments.

Revision 12.1: Amend the final two paragraphs of this clause as follows:

Following the word "interest" in each paragraph, insert:

Calculated at the Commonwealth Bank corporate overdraft reference rate plus two percentage points.

Revision 12.2: Amend clause F8 of APA GasNet's Transmission Payment Deed, in appendix F of its access arrangement as follows:

Insert a new paragraph between the first and second paragraph as follows:

This clause does not apply to a failure to pay an amount where Service Provider has included that amount in an invoice issued under F2 and the user has disputed that amount, until such time as it is determined that the disputed amount is required to be paid.

Revision 12.3: Amend clause 5.1 of the proposed access arrangement to include the following:

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52 APA GasNet, *Access arrangement,* 31 March 2012, clauses 1.4 and 1.5.

There are no applicable capacity trading requirements for the purposes of rules 48(1)(f) or 105 of the NGR.

Access arrangement draft decision

APA GasNet Australia (Operations) Pty Ltd

2013–17

Part 3

Appendices

September 2012

AUSTRALIAN ENERGY REGULATOR

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Contents

B Rate of return

In attachment 4, the AER presented its considerations on why a rate of return of 7.16 per cent (subject to updating) is a preferable alternative that is commensurate with prevailing conditions in the market for funds.[1] It noted this appendix would address some matters including arguments raised by APA GasNet and further technical analysis of the evidence.

B.1 Risk free rate

In attachment 4.3.1, the AER presented why a risk free rate based on 10 year CGS measured as close as practically possible to the commencement of the regulatory period is the most appropriate.

This appendix discusses additional material relevant to the risk free rate:

- the selection of an appropriate averaging period
- contentions raised in the CEG report submitted by APA GasNet
- a long term average as an alternative averaging period
- the term of the risk free rate
- the EnergyAustralia matter
- the Telstra matter
- the expectations theory on the term structure of interest rates.

B.1.1 The selection of an appropriate averaging period

The AER agrees with APA GasNet's proposed method for determining the averaging period used to estimate the risk free rate and debt risk premium. APA GasNet proposed the same risk free rate averaging period method be used to estimate the cost of equity and the cost of debt. The method involves three steps:

> 1. At the time of publishing APA GasNet's proposal the AER will publish an indicative timetable for decisions.
>
> 2. The AER will notify APA GasNet, 20 business days in advance of the release of its draft decision on the revisions to the VTS AA, of the date on which that draft decision is expected to be released, and the date on which the Final Decision is expected to be released.
>
> 3. Not later than 10 business days following the AER's notification, APA GasNet undertakes to advise the AER of its nominated averaging period. The APA GasNet averaging period will be for a period commencing after the expected release date of the draft decision and ending not later than 15 business days before the expected release of

[1] NGR, r. 87(1).

> the Final Decision. The advice will specify the term of the averaging period which must be at least 10 and not more than 40 business days.[2]

The AER followed the first two steps of APA GasNet's proposed process.[3]

In section 4.3.2, the AER explains why the averaging period should be estimated over a short period (between 10-40 business days) as close as practically possible to the commencement of the access arrangement period. The three criteria of the third step in APA GasNet's proposed method are consistent with the AER's position in section 4.3.2. Those three criteria are that:

- the averaging period be after the expected date of the draft decision
- end not later than 15 business days before the expected release of the final decision
- be between 10-40 business days in length.

These criteria are also consistent with those that the AER proposed to SP AusNet, Envestra and Multinet.[4]

On 29 August (10 business days after the AER's notification on 15 August) APA GasNet contacted the AER to request a change in its proposed process to instead nominate an averaging period on 3 September.[5] The reason APA GasNet provided was:

> APA GasNet consider that knowledge of the results of Bernanke's QE3 speech (expected Friday in US) will be so significant to global financial markets, that it would be unreasonable for the AER to expect us to nominate an averaging period prior to this looming on the horizon.[6]

The AER did not accept APA GasNet's request.[7] The reasons the AER did not accept this request are set out in a letter the AER sent back to APA GasNet.

On 30 August 2012, APA GasNet provided the AER with an averaging period on a confidential basis.[8] The proposed averaging period was consistent with the three criteria in APA GasNet's proposed method. Accordingly, the AER agrees with APA GasNet's proposed averaging period.

However, APA GasNet again raised concerns about the effect the speech by Ben Bernanke might have on the outlook for global financial markets.[9] APA GasNet also proposed a condition:

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2 APA GasNet, *Access Arrangement Submission—Confidential appendix D-6*, March 2012, p. 288. APA GasNet subsequently informed the AER that the material in appendix D-6 is not confidential. APA GasNet, *Information Request—Disclosure of Confidential Information No. 5,* August 2012.

3 On 15 August 2012, the AER sent APA GasNet a letter requesting an averaging period be provided consistent with this method. AER, *Letter to APA GasNet*, 15 August 2012.

4 See for example: AER, *Letter to SP AusNet*, 16 April 2012.

5 Email to AER, *VTSAA - Nomination of the Averaging Period - DRP and RFR*, 29 August 2012.

6 Email to AER, *VTSAA - Nomination of the Averaging Period - DRP and RFR*, 29 August 2012.

7 Email to APA GasNet, *RE: VTSAA - Nomination of the Averaging Period - DRP and RFR,* 29 August 2012.

8 APA GasNet, *Letter to the AER*, 30 August 2012.

9 APA GasNet, *Letter to the AER*, 30 August 2012.

> Considering the material impact the Bernanke speech may have on global financial market prospects, APA GasNet reserves the right to provide a revised averaging period should the outcome of the Bernanke speech indicate that a different averaging period would result in a more appropriate estimate of the risk free rate and the debt risk premium.[10]

The AER accepts the nominated averaging period but does not accept the condition. Leaving open the "right" to revise the averaging period would introduce unbalanced incentives. In order to maximise their profits, service providers have an incentive to seek a rate of return that is as high as possible. If a service provider can select an averaging period by observing market yields, this may introduce the possibility of an upward bias because it could select a period with the highest yield available.[11] A service provider would be unlikely to depart from the process where such departure is not in its financial interests.

It is also important for the AER to hold APA GasNet to the method as proposed. Doing so promotes certainty, consistency and predictability in regulatory decision making.[12] Further, SP AusNet undertook to propose its averaging period on the same day as APA GasNet and it did so.[13] Permitting APA GasNet to depart from the process while SP AusNet adhered to it would be unfair to SP AusNet.

It is therefore preferable for there to be no conditions attached to a proposed averaging period. This allows certainty for both the AER to make a draft decision and APA GasNet to make any necessary financial arrangements. These concerns are also discussed in section 4.3.2.

For this draft decision, the AER has used an indicative 20 business day averaging period ending on 10 August. The indicative risk free rate has been applied for both the cost of equity and the cost of debt. For the final decision the risk free rate for both the cost of debt and the cost of equity will be updated to reflect the averaging period proposed by APA GasNet.

B.1.2 CEG contentions

APA GasNet submitted a report it commissioned from CEG that makes a number of contentions about the risk free rate. This appendix addresses these additional matters. CEG's main contentions specific to the operation of the CGS market appear to be[14]:

- There is unprecedented demand for CGS
- There is a shortage of supply of CGS in Australia

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10 APA GasNet, *Letter to the AER*, 30 August 2012.

11 Lally, M., *Expert Report of Martin Thomas Lally*, February 2011, pp. 9-10. Lally's comments in this report were made about a specific approach proposed in the relevant determination but are consistent with the approach taken by the AER in this decision.

12 The absence of either an averaging period or a process of nomination from Envestra's, Multinet's and SP AusNet's proposals was significant enough for the AER to find their proposals deficient (see for example AER, *Letter to SP AusNet*, 16 April 2012). Those examples illustrate that the AER considers maintaining the integrity of APA GasNet's proposed nomination process is important. Further, the AER is required to consider submissions made within the time allowed by the AER for the making of submissions, which expired on 18 June 2012. APA GasNet did not make any such submission regarding the averaging period.

13 SP AusNet, *Letter to the AER,* 29 August 2012.

14 CEG, *Internal consistency of risk free rate and MRP in the CAPM*: *Prepared for Envestra, SP AusNet, Multinet and APA*, March 2012, pp. 20–32 (CEG, *Risk free rate and MRP in the CAPM*, March 2012)

- The CGS market is out of line with other bond markets in Australia
- CGS yields have been volatile over the last few years

The AER considers each of these issues below. In some cases, the AER largely agrees with CEG's observations, whereas in other cases the AER disagrees. However at the outset it is important to highlight that it is unclear to the AER what conclusion CEG seeks to draw from these observations and contentions. CEG does not argue these contentions make CGS an inappropriate proxy for the risk free rate in Australia.

CEG contention: There is unprecedented demand for CGS

Under this contention there appear to be three main arguments:

- There is a flight to quality
- Demand from non-resident investors is high
- Basel III requirements are placing huge demands on the CGS market

Each of these arguments is discussed below.

There is a 'flight to quality'

The AER accepts that there may have been 'flight to quality' periods since the onset of the Global Financial Crisis (GFC) or at least, behaviour that fits that description.

A definition of a flight to quality may include:

> Flight to quality episodes involve a combination of extreme risk- or uncertainty-aversion, weaknesses in the balance sheets of key financial intermediaries, and strategic or speculative behavior, that increases credit spreads on all but the safest and most liquid assets.[15]

There have been periods since the onset of the GFC that could be described as being flight to quality periods. However, the AER does not consider there has been a sustained flight to quality since the onset of the GFC. Glenn Stevens recently made the following comment:

> We saw one such one bout of anxiety in the middle of this year when financial markets displayed increasing nervousness about the finances of the Spanish banking system and the Spanish sovereign.
>
> The general increase in risk aversion saw yields on bonds issued by some European sovereigns spike higher; while those for Germany, the US and the UK declined to record lows. This flight to safety also saw market yields on Australian government debt decline to the lowest levels since Federation. Meanwhile many European economies saw a further contraction of economic activity and share markets decline sharply.[16]

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15 Caballero, R. and Kurlat, P., *MIT Department of Economics Working Paper No. 08-21, Flight to Quality and Bailouts: Policy Remarks and a Literature Review*, 9 October 2008, p. 1.

16 Glenn Stevens, *Opening Statement to the House of Representatives - Hansard script*, 24 August 2012, p. 2.

A flight to quality would not provide justification to depart from a prevailing estimate of the risk free rate. Demand for highly liquid assets is likely to increase in a flight to quality period.[17] This would, all else the same, push the yield on risk free assets down. These actions reflect changes in investor expectations and perceptions of the relative value of a risk free asset and would not undermine the risk free nature of that asset.[18]

Shortly before RBA Governor Glenn Stevens made the comments above, the RBA provided the following advice:

> I therefore remain of the view that CGS yields are the most appropriate measure of a risk-free rate in Australia.[19]

This suggests that the RBA does not consider a flight to quality period makes CGS an inappropriate proxy for the risk free rate.

Demand from non-resident investors is high

The AER accepts that demand for CGS from non-resident investors has increased over the past few years and non-resident investors now hold a large portion of CGS. This conclusion is supported by the RBA in its advice to the AER:

> Within the Australian market, one notable source of demand for risk-free assets has come from non-resident investors, whose holdings of CGS now comprise more than three-quarters of outstanding supply.[20]

The number of AAA rated sovereigns globally has fallen over the past few years. The Treasury and AOFM note that 'Australia is currently one of only eight sovereigns to have a AAA rating with a stable outlook from all three major credit rating agencies.'[21]

The AER does not consider an increase in demand for CGS from non-resident investors, and subsequent decline in CGS yields, suggests a short averaging period is inappropriate. In the WACC Review final decision (2009), the AER stated its position that the benchmark firm operates in markets that inevitably include non-resident investors.[22] The Joint Industry Association also considered this to be appropriate in a submission on the topic:

> (A)ny empirical domestic data on the risk-free rate, MRP, equity beta and gamma parameters have, or will certainly continue to be influenced by, both domestic and international investors.[23]

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17 Caballero, R. and Kurlat, P., *MIT Department of Economics Working Paper No. 08-21: Flight to Quality and Bailouts: Policy Remarks and a Literature Review*, 9 October 2008, p. 2.

18 Discussed further in section 4.3.2.

19 Reserve Bank of Australia, *Letter to the ACCC: The Commonwealth Government Securities Market*, 16 July 2012, p. 1 (RBA, *Letter regarding the CGS market*, July 2012).

20 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

21 Australian Treasury and Australian Office of Financial Management, *Letter to the ACCC: The Commonwealth Government Securities Market*, 18 July 2012, p. 2 (Treasury and AOFM, *Letter regarding the CGS Market*, July 2012).

22 AER, *Final decision: Electricity transmission and distribution network service providers: Review of the weighted average cost of capital (WACC) parameters*, 1 May 2009, p. 101 (AER, *Final Decision: WACC Review*, May 2009).

23 Joint Industry Associations (Energy Networks Association, The Australian Pipeline Industry Association Ltd and Grid Australia), *Network industry submission: AER Issues Paper, Review of the Weighted Average Cost of*

While the WACC Review is not binding in a gas context, the AER continues to hold this view. Increased non-resident ownership of CGS is reasonable in today's global markets. The increase in demand for CGS from non-resident investors is likely to reflect the low risk nature of CGS and the deep and liquid AAA-rated market.

Basel III requirements are placing huge demands on the CGS market

The AER accepts that Basel III requirements are imposing requirements on the way an Authorised Deposit-taking Institution (ADI) manages its risk. However, the AER does not accept that Basel III requirements are placing undue strain on the CGS market.

The effect of the Basel III requirements is to require these institutions to hold quantities of liquid assets on their balance sheet large enough to withstand a 30-day stress scenario.[24] CEG argued that these requirements are placing strain on the CGS market.[25]

CEG also referred to a speech by Guy Debelle, Assistant Governor of the Reserve Bank, in which he describes the creation of the Committed Liquidity Facility.[26] CEG submitted that the creation of this facility demonstrates that the CGS market is constrained. CEG stated:

> Importantly, Assistant Governor Debelle was clearly expressing the view that the liquidity premium in the CGS market was, in November 2011, at historically very high levels (and seemingly well in excess of 15bp). The implementation of Basel III can be expected to ensure that this remains so in the foreseeable future.[27]

The Committed Liquidity Facility was in fact created for the very purpose of ensuring the CGS market continues to function well:

> Specifically, the creation of a committed liquidity facility (CLF) by the Reserve Bank is intended to *prevent* a situation in which the liquidity in the CGS market is impaired or in which the premia attached to CGS are increased beyond reasonable levels.[28]

The AER accepts this advice that the CGS market will continue to function well in the presence of Basel III requirements. Furthermore, Assistant Governor Debelle's comments suggest that, over the years prior to the onset of the GFC, the liquidity premium may have been unusually low.[29]

Advice from the RBA and Treasury in 2007 suggested the use of nominal CGS as a proxy for the risk free rate was appropriate.[30] The AER does not consider it appropriate to attempt to determine an average, or 'normal', liquidity premium and only accept prevailing CGS when the observed premium is equal to the 'normal' premium.

Capital (WACC) parameters for electricity transmission and distribution, 24 September 2008, p. 28 (see also pp. 22, 24, 160, 174).

24 G. Debelle (Assistant Governor, Financial Markets, RBA), *Speech to the APRA Basel III Implementation Workshop 2011: The Committed Liquidity Facility*, 23 November 2011, p. 1 (Debelle, *Speech on the committed liquidity facility*, November 2011)

25 CEG, *Risk free rate and MRP in the CAPM*, March 2012, pp. 30-32.

26 CEG, *Risk free rate and MRP in the CAPM*, March 2012, pp. 30-32.

27 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 32.

28 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

29 Debelle, *Speech on the committed liquidity facility*, November 2011, p. 2.

30 RBA, *Letter to the AER*, August 2007, p. 1; Australian Treasury, *The Treasury Bond yield as a proxy for the CAPM risk-free rate*, August 2007, p. 1.

The AER has confidence those authorities understand the requirements in their jurisdiction and have put in place adequate measures to address potential concerns. The AER concludes that the current demand for CGS does not undermine its usefulness as a proxy for the risk free rate.

CEG contention: There is a shortage of supply of CGS in Australia

The AER does not accept that there is a shortage of supply of CGS in Australia. Consequently, the AER does not accept that there is a 'scarcity premium' included in CGS yields.

As discussed in attachment 4.3.2 above, the Australian Government has a stated position recognising the need to ensure sufficient CGS are available to maintain liquidity in the market.[31]

CEG made the following statement:

> This shortage of CGS is well understood to have resulted in a scarcity premium for CGS in recent years - and hance a depressed yield.[32]

CEG provided no empirical evidence of a shortage of supply in the CGS market. CEG also did not discuss how a shortage of supply might be defined or investigated. CEG refer to a quote from Assistant Governor Debelle that 'government paper has been in short supply for many years.' CEG appear to suggest that Assistant Governor Debelle is suggesting that government paper is currently in short supply and that this is commonly understood. For the following reasons, the AER does not consider this to be an accurate suggestion.

Assistant Governor Debelle's comments were made in the context of estimating a historical average liquidity premium that necessarily included the period before the onset of the GFC. CGS were in relatively lower supply at that time.[33] Contrary to CEG's assertion, it does not follow that the supply of CGS is currently low or that prevailing CGS yields are an inappropriate proxy for the risk free rate.

Prior to the GFC the supply of CGS was lower than it is now. In 2007 CGS on issue was approximately $50 billion. As a result of changes to fiscal policy since that time, CGS on issue is now around $235 billion.[34] The AER does not consider that an increase in supply of this magnitude is likely to suggest a shortage of supply. Further, the advice from the Australian Treasury and AOFM provides the AER with confidence that there is currently no shortage of supply in the CGS market.

As there is no shortage of supply in the CGS market, there is unlikely to be a scarcity premium unreasonably pushing the yield on CGS down.

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31 Initially stated in 2002–03 Budget <www.budget.gov.au/2003-04/bp1/html/bst7.htm>; reaffirmed in 2011–12 budget. <www.budget.gov.au/2011-12/content/bp1/html/bp1_bst7-03.htm>.

32 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 29.

33 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.

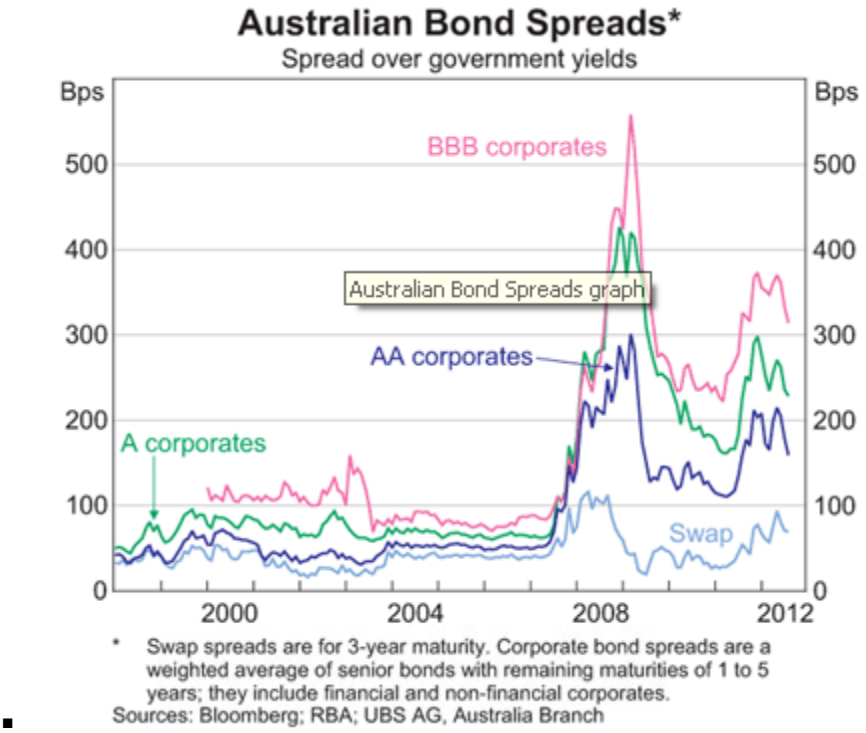
34 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.

CEG contention: The CGS market is out of line with other bond markets in Australia

The AER accepts that the spread between the yield on CGS and other debt securities has increased since the onset of the GFC. This likely reflects relatively greater demand for CGS from non-resident investors and changes in market participants' assessment of the relative riskiness of the assets. The AER does not accept that this suggests that prevailing CGS are not the most appropriate proxy for the risk free rate.

The figure below shows that the spread between the yield on CGS and other debt securities rose significantly after the onset of the GFC and has not returned to pre-GFC levels.

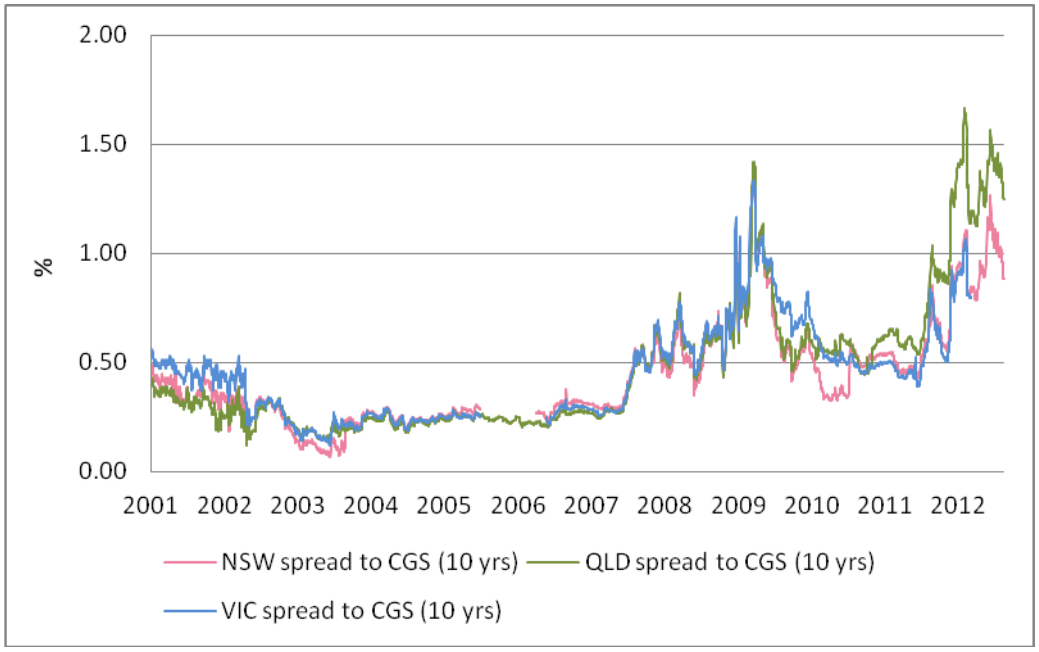
Figure B.1 Australian Bond Spreads



Source: RBA

The figure below shows that the widening of spreads can also be observed in the semi-government bond market.

Figure B.2 Semi-government spreads to CGS



Source: Bloomberg, AER

The RBA advice notes that '(t)his widening [of spreads] indeed confirms the market's assessment of the risk-free nature of CGS and reflects a general increase in risk premia on other assets.'[35]

The Treasury and AOFM advice makes the following statement:

> Other issuers of Australian dollar-denominated debt may not have benefited from this increased demand to the same extent as the Commonwealth owing to investment mandate limitations and/or perceived or actual lower levels of liquidity in other types of debt.[36]

Possibly adding to the spread for semi-government bonds, the September Quarter RBA Bulletin states:

> The increase in spreads during periods of heightened risk aversion may in part reflect the fact that some investors, particularly offshore investors, are not always familiar with the extent of vertical fiscal integration in Australia, whereby state governments receive a large share of their revenue via redistributions of Australian Government tax receipts.[37]

Increased demand from non-resident investors has likely had an influence on the increase in spread. Demand from non-resident investors has been proportionately larger in the CGS market over the past few years. The Treasury and AOFM advice notes that non-resident ownership of CGS increased from around 50 per cent in mid-2009 to around 76 per cent in March 2012.[38] The advice also notes that non-resident ownership of semi-government

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35 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

36 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.

37 Lancaster and Dowling, *The Australian Semi-government Bond Market*, RBA bulletin, September Quarter 2011, p. 54.

38 Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.

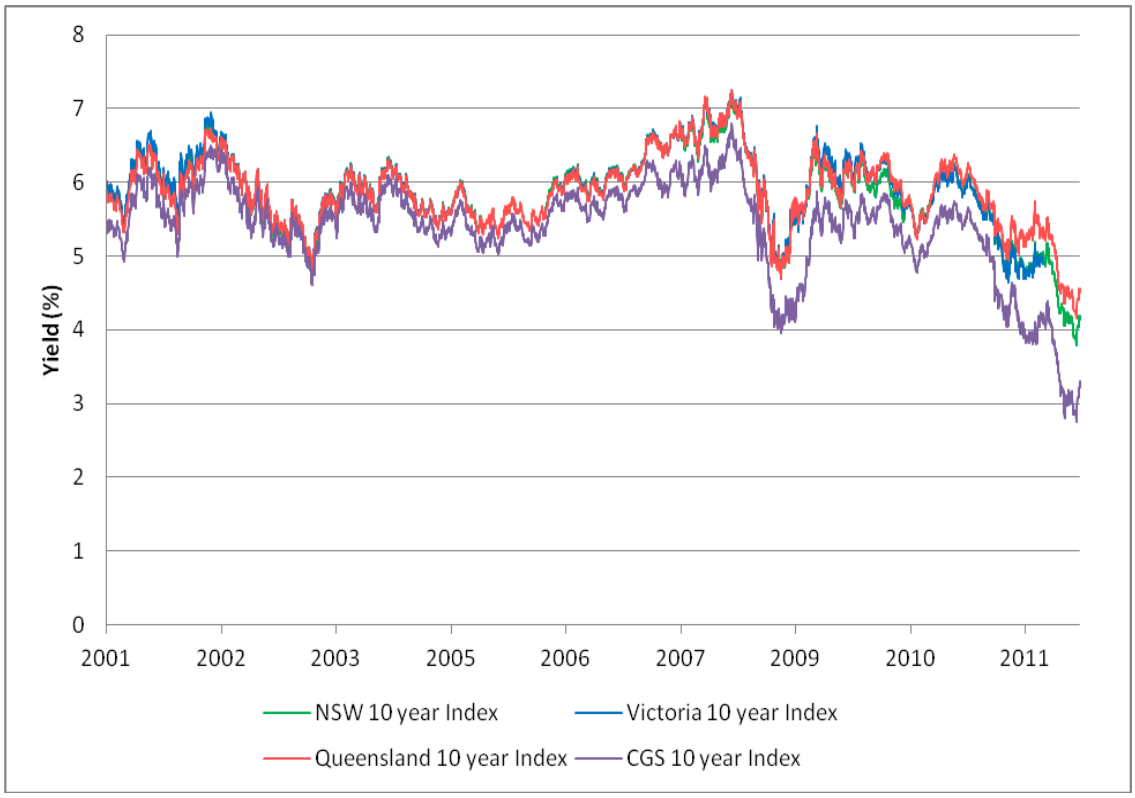
securities has increased in the same period, albeit by a smaller amount.[39] As discussed above, the AER does not consider that increased demand from non-resident investors makes CGS an inappropriate proxy for the risk free rate.

Relative risk assessments are considered in the context of the MRP; found in attachment 4.3.3.

The AER notes that CEG assert that the yield on semi-government securities have not fallen to the same degree as CGS.[40] The AER accepts this is the case. However, semi-government bonds have fallen considerably since the onset of the GFC.

Over the period from mid-2009 to March 2012 the yield on semi government debt has fallen by approximately 100 basis points on average. Before the onset of the GFC the yield on semi government bonds was higher than at present. This suggests that while semi-government bond yields have not moved in lock-step with CGS yields, the forces acting upon them have been very similar. The figure below demonstrates this clearly.

Figure B.3 CGS and semi-government indices over time



Source: Bloomberg, AER

CEG contention: CGS yields have been volatile over the last few years

The AER acknowledges that CGS yields change over time; this does not make CGS yields an inappropriate proxy for the risk free rate. Changes in CGS yields reflect changes in investor

[39] Treasury and AOFM, *Letter regarding the CGS Market*, July 2012, p. 2.
[40] CEG, *Risk free rate and MRP in the CAPM*, March 2012, pp. 21-25.

expectations and CGS yields therefore remain the best estimate of the forward looking risk free rate at any point in time.[41]

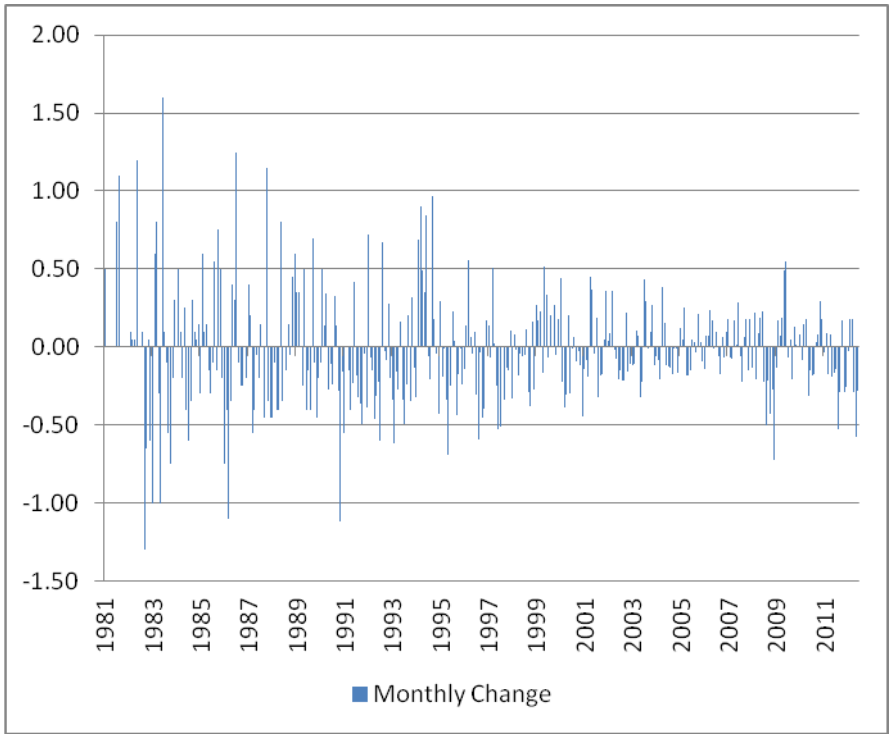
CEG comment that CGS yields have been very volatile over the past few years:

> The nominal and CPI indexed yield on 10 year CGS have been very volatile over the last three years. Twice in this period, first in early 2009 and then in late 2011, yields have fallen to levels not previously seen in the last fifty years.[42]

The CEG report does not explore in any detail what the volatility of CGS yields has actually been over the last three years. CEG point to a graph of CGS yields and suggest this demonstrates volatility.[43]

The AER has examined observed changes in average CGS yields since 1981. The observed change in the monthly average yield is displayed in Figure B.4 below. This analysis is not strictly volatility analysis. Nevertheless, it is useful as it provides an indication of how much CGS yields have historically changed from period to period.

Figure B.4 Observed change of monthly average nominal CGS yields

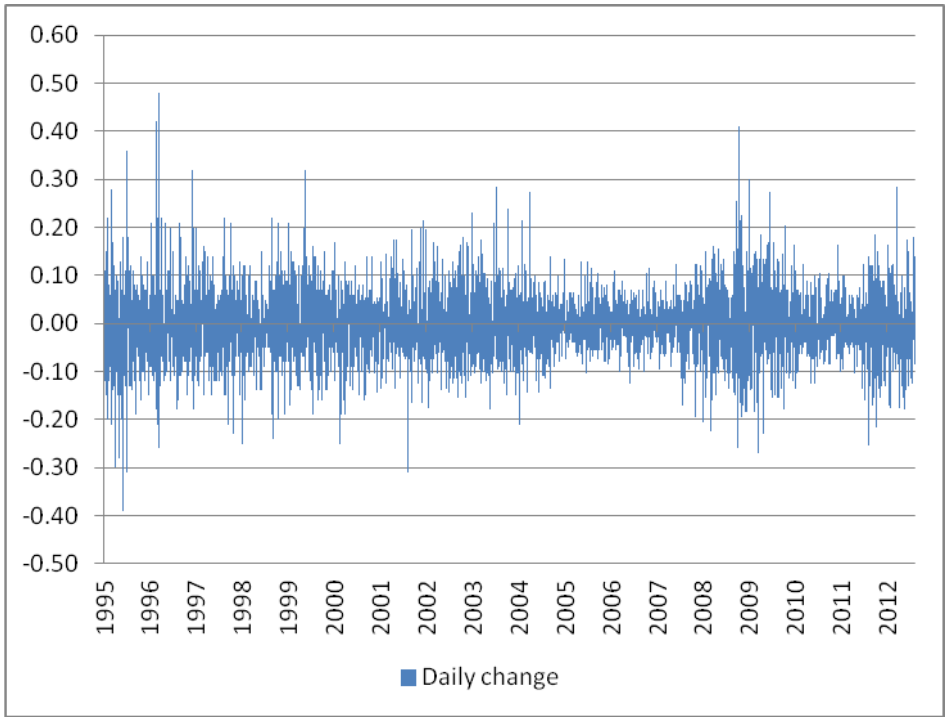


Source: RBA, AER analysis

The figure suggests that CGS yields have not been relatively more volatile when compared to observed changes. This observation is likewise reflected in the observed change of daily average yields since 1995 as shown in Figure B.5 below.

41 Discussed further in section 4.3.2.
42 CEG, *Risk free rate and MRP in the CAPM,* March 2012, p. i.
43 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 4.

Figure B.5 Observed change of daily average nominal CGS yields



Source: RBA, AER analysis

CEG's concerns appear to rest primarily with the low level of prevailing CGS yields, rather than volatility. This is clear from CEG's statement above. The AER has considered the effect of the low level of prevailing CGS yields in sections 4.3.4 and 4.3.9 when considering the relationship between the MRP and the risk free rate, and the overall rate of return.

B.1.3 Long term average as an alternative option

The AER has given consideration to the alternative of using a long term average historical estimate of the risk free rate and concludes that this would not be an acceptable approach, given the requirements of the NGR. This is because, as discussed below, there is limited evidence that the cost of equity is stable through time, a long term average is not consistent with the present value principle and would expose regulatory decisions to bias.

The AER has consistently employed an approach where it estimates a forward looking MRP and risk free rate based on the best evidence available. CEG proposed departure from this consistent approach to the use of a long term historical average for estimating the risk free rate.[44] CEG proposed the use of inflation indexed bonds averaged over the period from July 1993.[45] This approach was proposed by Envestra Victoria and Albury, SP AusNet and Multinet in their respective initial access arrangement proposals, but not by APA GasNet.[46]

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44 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 41–47.

45 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 45–46.

46 Envestra, *Access arrangement information,* 30 March 2012, p. 156; SP AusNet, *Access arrangement information*, 30 March 2012, p. 189 ; Multinet, *Access arrangement information*, 30 March 2012, p. 154; APA GasNet, *Access arrangement submission,* 31 March 2012, p. 132–133.

CEG stated:

> An historical average estimate of the cost of equity can be a reliable proxy for the prevailing cost of equity if the cost of equity is stable through time.[47]

The AER gives consideration to the relationship between the risk free rate and MRP in section 4.3.4 above and considers that there is little evidence that the cost of equity is stable through time.

The reasoning for a departure from the use of prevailing estimates is not clear. Firstly, Envestra Victoria and Albury, SP AusNet, Multinet and CEG appear to argue that there are problems in the CGS market. These concerns are addressed in section B.1.2 above. Secondly, they appear to suggest that using prevailing estimates of CGS yields is inconsistent with using historical estimates of the MRP. This is a mischaracterisation of the AER's approach as discussed in section 4.3.4.

The AER has a number of concerns with using a long term average approach. Importantly, a long term average is not consistent with the present value principle. Lally found that 'the Present Value principle requires use of the risk free rate at the beginning of the regulatory period.'[48]

As discussed in section 4.3.2, a strict interpretation of the present value principle requires the use of the risk free rate on the first day of the period. However, a pragmatic allowance is made from using this strict interpretation of the present value principle. The allowance is to use a short averaging period as close as practically possible to the beginning of the regulatory period. This reduces the exposure of regulated businesses to unreasonable variation that can be reflected in the yield for a single day.

As Lally points out:

> Rates averaged over a much longer historical period would be inconsistent with the present value principle, i.e., they would violate it without offering any incremental pragmatic justification.[49]

Indeed, the AER considers that a long term average would likely introduce problems that are not involved with using a prevailing rate.

A long term average is unlikely to produce an unbiased estimate of the risk free rate. On the face of it, using a long term average may seem a reasonable approach. A difficulty is that the time that is selected for the beginning of the period has a significant influence on the output. The selection of an appropriate averaging period is subjective and therefore subject to manipulation for desired results.

The AER has calculated historical average yields on nominal and indexed CGS using monthly average yields provided by the RBA.[50] These yields show variation as the time period

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47 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. i.

48 M. Lally, *The risk free rate and the present value principle*, 22 August 2012, p. 3 (Lally, *Risk free rate and present value*, August 2012)

49 Lally, *Risk free rate and present value*, August 2012, p. 7.

50 RBA, *Capital market Yields - Government Bonds - Monthly - F2*, available at <http://www.rba.gov.au/statistics/tables/index.html>, accessed 15 August 2012.

changes, as shown in Table B.1 below. These averages are likely to differ from CEG's as the AER has used monthly average yields as opposed to daily average yields. The difference is not likely to be significant for the purposes of this discussion.

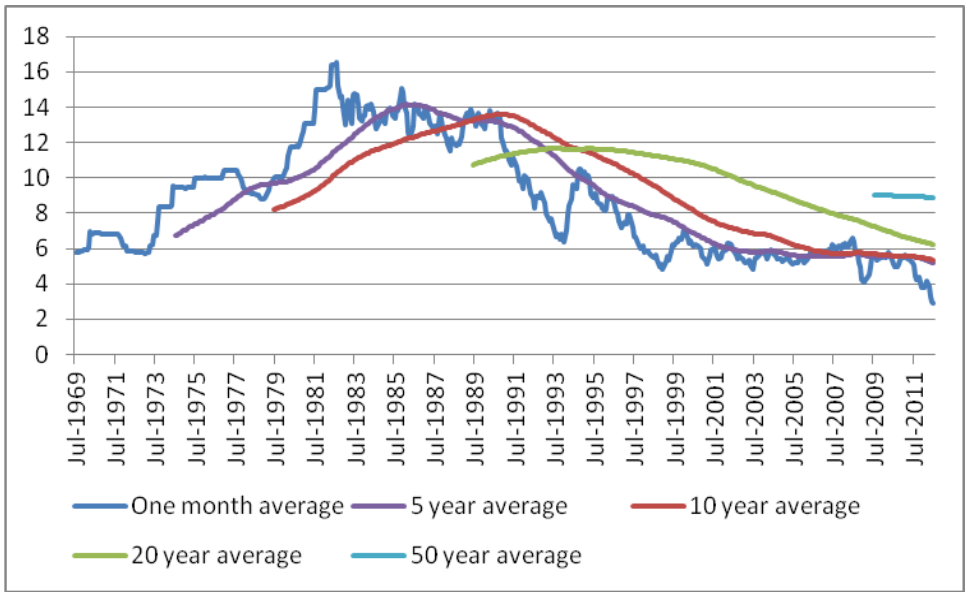
Table B.1 Historical average yields on nominal and indexed CGS

	Nominal 10 year CGS	Indexed CGS
All data		
1969	8.72	
1986		3.76
20 year	6.25	3.35
10 year	5.34	2.63
5 year	5.16	2.38
1 year	3.92	1.60

Source: RBA, AER analysis

The declining average yields over the period reflect the lagged impact of the decline in CGS yields over the past 30 years. The figure below demonstrates this lagged impact. When interest rates decline, or increase, over time, a longer historical averaging period produces a greater difference between the observed yield and the historical average. The 20 year average is higher than the 10 year average, for example.

Figure B.6 Average nominal CGS yields through time



Source: RBA, AER analysis

CEG proposed the use of inflation indexed CGS from July 1993 plus an estimate of the future inflation rate of 2.50 per cent.[51] CEG suggested that July 1993 is a reasonable time to begin the estimation period because this is approximately when the RBA formally adopted an inflation targeting regime.[52]

The AER has a number of reservations with this reasoning. Firstly, the selection of the starting point for the averaging period is subjective. In this case, for example, there is a question about whether the adoption of inflation targeting was seen as credible by market participants at that point in time. The credibility of the inflation targeting regime is important because if expectations did not immediately match the target band, then the yield on CGS may have been higher than if expectations did match the target band.[53] This suggests that a historical average over this period might not be a reliable proxy for the real risk free rate in combination with an inflation estimate of 2.5 per cent.

Secondly, the quality of the historical data is important and at times uncertain. As CEG note, indexed CGS went through a period of very limited supply in the years prior to the GFC.[54] Indeed, the RBA and Australian Treasury confirmed this in advice to the AER.[55] This suggests that a historical average of indexed CGS is unlikely to provide an accurate reflection of the real risk free rate over the period.

There are likely to be many alternative long term historical periods that could be used to determine a historical average with positives and negatives for all such historical periods. However, each of these alternatives is an inferior alternative compared to prevailing yields on long dated CGS.[56]

The Tribunal recently acknowledged the difficulties in determining an appropriate long term averaging period:

> Clearly, the 'right' period for the estimation of capital market parameters that are to be included in calculations of the WACC under the CAPM is one that is likely never to be agreed by parties in a rate of return calculation.[57]

These comments were made in the context of the Tribunal's decision on MRP where long term averages are commonly used. Nevertheless, they capture the AER's concerns about using a long term average for the risk free rate, particularly as a short term average captures market participant's current expectations for the future.

The AER concludes that a long term averaging period is not appropriate and does not result in the best possible estimate in the circumstances. The inherent subjectivity in selecting a period for a long term average increases the likelihood of bias in the estimate of the risk free rate.

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51 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 45.

52 CEG, *Risk free rate and MRP in the CAPM*, March 2012, pp. 16, 45.

53 'A change in expected inflation will cause the same change in the nominal interest rate.' R. Brealey, S. Myers, G. Partington, and D. Robinson, *Principles of Corporate Finance*, McGraw-Hill Australia: First Australian Edition, 2007, p. 691.

54 CEG, *Risk free rate and MRP in the CAPM,* March 2012, p. 45.

55 RBA, *Letter regarding the CGS market*, July 2012, p. 1.

56 Discussed further in section 4.3.2.

57 Australian Competition Tribunal, *Application by DBNGP(WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraph 149.

B.1.4 The term of the risk free rate

The term of the risk free rate

APA GasNet proposed the use of a 10 year term and the AER accepts a 10 year term is appropriate. The AER notes, however, that the selection of an appropriate term is not straightforward.

When determining the term of the risk free rate there are a number of considerations involved. It is important to consider consistency with the present value principle. The AER has also previously considered actual practices by regulated businesses.[58] Finally, a 10 year term ensures consistency in this decision between the risk free rate used for the cost of equity and that used for the cost of debt, including in the calculation of the MRP and DRP. On balance, the use of a 10 year term is appropriate for this decision.

The present value principle is a fundamental element when determining the term of the risk free rate. The AER notes that there are divergent schools of thought on the appropriate term to ensure consistency with the present value principle.

Associate Professor Lally suggests that the AER should use a term that is consistent with the regulatory period when estimating a risk free rate at the start of the period.[59] This suggests the AER should use a 5 year term. Professor Davis has also expressed support for this approach.[60]

On the other hand, the AER notes that there are arguments in favour of using a longer term to more closely match the life of the assets.[61] Broadly, the argument suggests that regulated assets have long lives and corresponding cash flows, therefore the duration of the risk free rate should be as long as is practically possible.

In the WACC Review in 2009, the AER also considered arguments put forward by businesses that common practice was to use long dated financing to manage refinancing risk.[62] This formed an important consideration for the estimation of the DRP using a 10 year term.[63] In contrast, the Economic Regulation Authority (ERA) of Western Australia has recently analysed the average maturity of debt issued by regulated businesses and found this to be approximately 5 years.[64]

Consistency between the cost of equity and the cost of debt may also be important. This would mean that the MRP and DRP would need to be estimated consistently. In the recent DBNGP matter, the Tribunal supported the ERA's consideration that this consistency is

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58 AER, *Final Decision: WACC Review*, May 2009, pp. 148–149.
59 Lally, *Risk free rate and present value*, August 2012, p. 16.
60 K. Davis, *Determining debt costs in access pricing*, *a report to IPART,* February 2011, p. 1.
61 A. Damodaran, *What is the riskfree rate? A search for the Basic Building Block,* December 2008, pp. 6–7.
62 AER, *Final Decision: WACC Review*, May 2009, pp. 156–166.
63 AER, *Final Decision: WACC Review*, May 2009, p. 168.
64 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, Submitted by DBNGP (WA) Transmission Pty Ltd*, 31 October 2011, pp. 126–130 (ERA, *Final decision: DBNGP access arrangement*, October 2011).

important.[65] The Tribunal considered consistency with the calculation of the DRP to be most important.[66]

In summary, while there are arguments in favour of a shorter term, it is appropriate at this time to continue to use a 10 year term. The AER therefore accepts APA GasNet's proposal. The AER also notes that a 10 year term is likely to provide a conservative estimate of the risk free rate.

B.1.5 The EnergyAustralia matter

CEG's submission referred to the Tribunal's decision in *Application by EnergyAustralia and Others [2009] ACompT 8* (the EnergyAustralia matter) to support the position that the averaging period does not need to be as close as practically possible to the commencement of the regulatory control period.[67] The AER has considered carefully whether the Tribunal's decision in the EnergyAustralia matter demonstrates that the approach applied in this decision inappropriate.

There is a history of the AER applying Tribunal decisions. There are two such examples in this determination. The AER has applied the Tribunal's decision on gamma.[68] Also, the AER has followed the Tribunal's decision on the use of the Bloomberg fair value curve to estimate the DRP.[69]

In the time since the EnergyAustralia matter, the Federal Court has handed down its judgement in *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639* (the ActewAGL matter). Also, the Tribunal handed down its decision in *Application by Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1* (the Telstra matter).[70] Further, as the EnergyAustralia matter considered provisions in the transitional chapter 6 of the NER, there are differences in the legislation involved. Therefore, despite its history of applying the Tribunal's decisions, the circumstances surrounding the risk free rate for this determination and the EnergyAustralia matter are somewhat different. Specifically:

- The APA GasNet decision is made under the NGL and NGR. In contrast, the Energy Australia decision was made under the NEL and NER. Further, the Energy Australia

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65 Australian Competition Tribunal, *Application by DBNGP(WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraph 131.

66 Australian Competition Tribunal, *Application by DBNGP(WA) Transmission Pty Ltd (No 3) [2012] ACompT 14*, 26 July 2012, paragraph 132.

67 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. v. Source document is Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8,* 12 November 2009.

68 Australian Competition Tribunal, *Application by Energex Limited (Gamma) (No 5) [2011] ACompT* 9, 12 May 2011.

69 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012. Also, in the Victorian electricity distribution determination, the AER accepted Jemena Electricity Network's proposed averaging period, despite it being inconsistent with the SRI methodology. This was on the basis of the Tribunal's decision in the EnergyAustralia matter. The AER stated at the time that it was still examining the full implications of the Tribunal's decision and its relationship to the requirements of the SRI as well as to the broader NER framework. AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–15*, October 2010, pp. 477–478 (AER, *Final decision: Victorian distribution determination*, October 2010).

70 Australian Competition Tribunal, *Application by Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1,* 10 May 2010.

decision was made under transitional provisions of the NER. There are differences in the legislation involved in the EnergyAustralia matter and the legislation the AER applies for the APA GasNet decision.

- The legislation in the EnergyAustralia matter included provisions deeming the MRP to be 6 per cent.[71] It is not clear to the AER the extent to which these provisions influenced the Tribunal's decision.[72] To the extent this occurred, the AER considers this interpretation was not appropriate. In the ActewAGL matter, the Federal Court upheld the AER's reasons for rejecting ActewAGL's submission that the risk free rate should be adjusted to take into account variations in the MRP. A key reason of the AER was that adjusting the risk free rate to make up for a higher MRP was an attempt by ActewAGL to circumvent the legislation and would undermine the intended certainty provided under the regulatory regime through the deeming provisions.[73]

- At any rate, the legislation here does not include deeming provisions and instead enables the rate of return, including the MRP where the CAPM is adopted as the well accepted financial model, to reflect prevailing conditions in the market for funds. As discussed in attachment 4, the AER has consistently held a position that each WACC parameter should be estimated based on considerations relevant to that parameter, rather than to deal with issues relating to another parameter. In the Telstra matter, the Tribunal made its position clear that CGS yields during the global financial crisis remained representative of the risk free rate, and the mere fact that the yields were 'low' did not change this conclusion.

- In the EnergyAustralia matter, the Tribunal considered that the NER's drafting results in cost of capital needing to represent the return required by investors at the start of each regulatory year. As mentioned above, the legislation here has no such drafting. Also, the Federal Court recognised that the capital asset pricing model (CAPM) requires the use of the most current information for deriving the cost of capital. According to the Federal Court, in theory, this involves the use of the risk free rate at the beginning of the regulatory control period. For the reasons set out in section 4.3.2, the use of the risk free rate near the beginning of the regulatory control period is also consistent with the building block model required under the NGR. Advice from Associate Professor Lally supports both that the CAPM requires the most current risk free rate and that the building block model requires the use of a risk free rate commensurate with prevailing market conditions at the start of the regulatory control period.

- In the EnergyAustralia matter, the Tribunal's reasons for finding that the AER acted unreasonably in withholding consent to EnergyAustralia's proposed averaging period included that the AER did not examine the evidence regarding forward interest rates.[74] However, the Federal Court noted evidence that no Australian regulator has done so. It

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71 NER, transitional chapter 6, clause 6.5.2(b)

72 Some support for the conclusion that they did can be found at paragraph 73(d)(1) where the Tribunal stated that a principle assisting it in the determination of the issue was '...whether the period proposed is likely to result in an unbiased risk free rate, given that the equity beta and the market risk premium are deemed to be 1.0 [sic] and 6.0 per cent respectively'. Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8, 12 November 2009.*

73 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639*, 8 June 2011, paragraph 148.

74 Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8,* 12 November 2009, paragraph 94.

also very much doubted that the NER required the AER to deploy forward rates to make the averaging period decision.[75]

- Further the EnergyAustralia matter involved a legislative regime where a service provider's proposal has presumptive approval, and the AER cannot unreasonably withhold its approval. In contrast, the rate of return provision in the NGR is a full discretion provision. This means the AER retains the discretion to not approve a service provider's proposal, even where that proposal complies with and is consistent with the relevant legislative requirements and criteria. If the AER considers there is a preferable alternative that also complies with and is consistent with the relevant legislative provisions it may implement it.[76]

As the Federal Court noted, the Tribunal and the Federal Court apply different tests. However, given the differences noted above, the AER does not consider it appropriate to merely apply the Tribunal's decision in the EnergyAustralia matter as if it were a precedent. Accordingly, in these circumstances, the AER does not consider that it should accept on face value that the Tribunal's decision demonstrates that the approach applied in this decision is inappropriate. Instead, throughout attachment 4 and this appendix the AER has assessed all of the evidence available on its merits.

For the reasons set out in this decision the AER does not consider the Tribunal's decision in the EnergyAustralia demonstrates that the approach applied in this decision is inappropriate.

In the remainder of this section the AER considers:

- The Tribunal's and the Federal Court's interpretations of the statutory scheme under clause 6.5.2 of the NER.
- The usefulness of forward interest rates in assessing a proposed risk free rate averaging period.
- In section 4.3.2 the AER considers the economic insights that can be gained from the 'present value principle' and how this principle is consistent with both the use of the building block model and the use of the CAPM. In section B.1.6 below the AER considers the Tribunal's considerations in the Telstra matter.

The Tribunal's and the Federal Court's interpretation of the statutory scheme

In withholding its approval to EnergyAustralia's proposed averaging period, the AER stated that the AER's regulatory practice was supported by accepted expert views in the economic and finance literature.[77] In response to the reports referenced by the AER, the Tribunal set out its interpretation of the statutory scheme:

> The rate of return, or WACC, is applied to the value of the regulatory asset base of the NSP as at the beginning of a regulatory year to produce the return on capital (in dollar terms) for that regulatory year (cl 6.5.2(a)). (The regulatory asset base is updated each

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75 Federal Court of Australia, *ActewAGL Distribution v The Australian energy Regulator [2011] FCA 639*, 8 June 2011, paragraph 145.

76 NGR, r. 40(3).

77 The AER referenced the following three reports in support of this statement: M. Lally, *Determining the risk free rate for regulated companies*, August 2002; K. Davis, *Report on the risk free interest rate and equity and debt beta determination in the WACC*, 28 August 2003; M. Lally, *The cost of capital for regulated utilities—Report prepared for the QCA*, 26 February 2004 (Lally, *Cost of capital for regulated utilities*, February 2004).

> year (cl 6.5.1(e)(2).) Thus the WACC is applied in each of the five regulatory years within the regulatory control period. It follows that the WACC to be applied each year should in principle be the rate of return required by investors at the beginning of that year. This rate of return would naturally be expected to differ from year to year.
>
> That is not, however, the scheme set out in cl 6.5.2. Rather it provides for a single value of the WACC to be calculated and applied to each year's starting regulatory asset base.
>
> …
>
> The risk free rate, whether agreed or specified, is, it seems to be agreed by all parties, that which prevails at some time (the averaging period) prior to the start of the regulatory control period; similarly with the benchmark corporate bond rate. Those inputs might generate a rate of return value reasonably close to that actually required by investors at the start of the regulatory control period, and applied to the first year's starting regulatory base. But with changes in market conditions over the regulatory control period, it is hard to see why the rate of return value would represent the return required by investors at, say, the start of the final year of the regulatory control period.
>
> In the meantime, the risk free rate and corporate bonds rates would almost certainly have varied from their initial values. Consequently, there appears to be no virtue in setting those rates at values that prevailed close to the start of the regulatory control period, or to the publication of a final determination.
>
> It may be accepted that, [the AER's practice] …and the practice of regulators more generally has been to apply a nominal risk free rate averaging period closer to the start of the regulatory period. This practice has been supported by economic experts. The Tribunal observes, however, that this is not a universal practice. In market conditions that are not wildly out of the norm, this may be expected to provide a figure that is fairly close to being an unbiased estimate of the risk free rate consistent with market conditions at the time of the final determination; and may consequently be expected to provide a reasonable estimate of the rate of return on capital that would be required by investors at the time of the final determination.
>
> But as explained above, there is no proper basis for seeking such an estimate. The views of economic experts appear to be based on a model where the regulatory control period is considered to be a single period (of five years), not five consecutive one-year periods. In the scheme set out in the Transitional Rules, the nexus is broken between the period to which the rate of return applies and the period for which that rate of return is estimated. Once that is realised, the basis for withholding agreement to an averaging period proposed by EA falls away. [Emphasis added][78]

As is clear from this quote, the Tribunal considered that the statutory scheme rendered expert economic advice in support of the AER's position irrelevant. The Tribunal's view appears to be that the rate of return set under clause 6.5.2 of the NER needs to be representative of the (10 year) return required by investors at the start of each year of the regulatory control period.[79] Once again, the NGR do not contain any drafting similar to that the Tribunal referred to. Therefore, it appears that the EnergyAustralia decision has limited influence in the present circumstances.

In the ActewAGL matter, the Federal Court was careful to point out that the tests it applied on judicial review are different from the tests applied in the Tribunal's merits review. The Federal Court expressly stated that the Tribunal's view on the merits of the AER's decision were

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[78] Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009]* ACompT 8, 12 November 2009.

[79] The term of the risk free rate was deemed to be 10 years in the transitional chapter 6 clause 6.5.2 that applied in the EnergyAustralia matter.

irrelevant in the judicial review.[80] However, in commenting on the statutory scheme, the Federal Court also stated:

> The relevant equation is that which determines the return on equity (ke), which paragraph (b) provides must be determined using the Capital Asset Pricing Model ("CAPM") and certain defined parameters. …
>
> The Capital Asset Pricing Model requires the use of the most current information for deriving the rate of return. This in theory involves the use of the risk-free rate on the day that required returns are to be estimated (in this case, the beginning of the regulatory period). Nevertheless, there are recognised problems with the use of an on-the-day rate which an averaging period is intended to address. In particular, deploying an averaging period will minimise day-to-day volatility in the market.[81] [Emphasis added]

Clearly, this is not an express statement that the Tribunal's interpretation is incorrect. However, it appears that the Tribunal considered clause 6.5.2(a) to require the rate of return to be that required by investors at the beginning of each regulatory year. On the other hand, the Federal Court recognised that the CAPM—proposed by APA GasNet and approved by the AER—requires the rate of return to be that required by investors at the beginning of the regulatory period. It seems difficult to reconcile the two statements. Based on this reason and others,[82] the AER considers that the economic evidence it presented in the EnergyAustalia matter remains relevant. Further, the economic evidence presented in Associate Professor Lally's report to the Federal Court in the ActewAGL matter and recent advice to the AER is also relevant. Those reports are considered in the section 4.3.2.

On this basis, the AER considers that, conceptually, the rate of return set under the CAPM should represent the return required by investors at the beginning of the regulatory control period (over the relevant forward looking period). The AER does not consider that rule 87 of the NGR requires a rate of return (over the specified term) representative of the return required by investors at the start of each year of the regulatory control period.

The use of forward interest rates

In the EnergyAustralia matter, the Tribunal said the AER should use forward interest rates to assess a service provider's proposed averaging period. The Tribunal stated:

> Rather than assume that the rate at a closer date would give a better estimate, the AER should have examined the evidence regarding expected future rates. Such evidence of forward interest rates, ie, rates that will apply at some future time for a prospective period, is available from market data. Comparisons could be made between the rates expected to prevail during the averaging period proposed by the NSP and rates expected at later periods. But it follows from the Tribunal's reasoning that it would be insufficient and inappropriate to only compare with rates expected to prevail close to the time of the final determination.[83]

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80 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639,* 8 June 2011, paragraph 113.

81 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639*, 8 June 2011, paragraphs 22 and 28.

82 For example, if the Tribunal's interpretation is correct, it seems that the AER misinterpreted clause 6.5.2(a). If so, it seems likely that the Federal Court would have made a similar finding. However, it did not. The AER acknowledges that the Federal Court did not address this issue in detail.

83 Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8*, 12 November 2009, paragraph 94.

The AER has considered the usefulness of forward interest rates to assess the averaging period's predictability of the risk free rate at a future point in time. In their reports to the Federal Court, Lally and Houston advised that they were not aware of any Australian regulatory decision in which forward rates had been used to guide the selection of an averaging period for the risk free rate.[84]

Lally further advised that there were 'two major difficulties' in using forward interest rates in this way. On the first major difficulty, he advised that the appropriate predictor of a future interest rate is not the forward rate but the forward rate less the term premium.[85] On estimating the term premium, Lally stated:

> However, the sizes of the term premiums vary over time and they are not precisely determinable. So, any attempt to estimate the extent to which an interest rate at a given point in time is a biased predictor of a subsequent rate would be fraught with difficulty.

Lally concluded:

> …in choosing an interest rate to serve as the best predictor of the rate prevailing at a particular future point in time, the best interest rate will be that which is closest in time to the predicted date.[86]

As is clear from the Tribunal's decision, the Tribunal's view on the usefulness of forward interest rates was based on its view that the relevant rate of return is that required by investors at the start of each year of the regulatory control period rather than the rate required at the start of the regulatory control period. The AER does not agree with this position, as explained above.

The problems associated with using forward interest rates that Lally raised were in the context of predicting the 'spot' interest rate at the start of the regulatory control period—a period only two months after the publication of the AER's final decision. If forward interest rates are an unsuitable predictor of interest rates over such a short time horizon, they would appear to be at least an equally unsuitable predictor of the 'spot' interest rate at more distant points in the future (which is the context in which the Tribunal considered them).

Accordingly, there are both in principle and practical difficulties with using forward interest rates in determining the risk free rate.

In the ActewAGL matter there was some debate between the experts on the use of forward interest rates, in a context that involves a deemed MRP value. That aside, Justice Katzmann concluded:

> Whether or not the criticism of the AER's decision is valid, I very much doubt the AER is bound by the statutory scheme to deploy forward rates to make the averaging period decision.[87]

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84 Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639,* 8 June 2011, paragraph 145.

85 Lally advised this is because the 'expectations hypothesis' is not a satisfactory characterisation of the term structure of interest rates. Lally went on to explain that even if the expectations hypothesis held, the use of forward interest rates to assess two different averaging periods is still a flawed approach. M. Lally, *Expert report of Martin Thomas Lally*, 13 February 2011, p. 15 (Lally, *Expert report*, February 2011).

86 Lally, *Expert report*, February 2011, p. 15.

Based on the Federal Court's view, the AER concludes that the use of forward interest rates to assess averaging periods is not a requirement of the NER (let alone the NGR). Based on Lally's advice, the AER also concludes there are sound economic reasons for not using forward interest rates. The AER has not used forward interest rates to assess APA GasNet's proposed averaging period.

For the above reasons, the AER considers that the Tribunal's comments do not demonstrate that an averaging period as close as practically possible to the commencement of the regulatory control period is not appropriate.

B.1.6 The Telstra matter

The AER has reviewed the Tribunal decision in *Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010. The Tribunal's reasons appear to support the approach adopted by the AER in this decision.

Like this decision, the Telstra matter also involved the appropriate estimation of the risk free rate at a time when CGS yields were 'low' compared to historically observed rates. The ACCC adopted a 4.51 per cent risk free rate. Telstra submitted the risk free rate was 6.33 per cent.[88]

Telstra submitted that the global financial crisis had significantly impacted on the yields of CGS resulting in an anomalous or unrepresentative risk free rate value during the relevant averaging period. The Tribunal disagreed. The Tribunal considered:

> The dispute turns on whether the data derived over the period chosen by the ACCC is anomalous or unrepresentative.
>
> The risk free rate refers to the return from an asset with no risk of default. There is every reason to assume (and little evidence to doubt) that the yields on commonwealth bonds over this period continued to provide an accurate proxy for a return on assets bearing no risk of default. To the extent that the yields factored the impacts of the global financial crisis, the bond rate continued to provide a representative indicator of the risk-free rate.
>
> It is also not unusual for yields to move from time to time in order to reflect prevailing market conditions and the expectations about the prospect for prices into the future. A downward movement in yields over this period is therefore hardly anomalous, given market conditions.[89]

The Tribunal also stated that Telstra's proposal introduced value judgements. This is similar to the AER's findings, in this Appendix, that a long term average creates the potential for arbitrariness and introduces subjectivity into the estimation of the risk free rate. The Tribunal considered:

> … that the approach advanced by Telstra would impose an obligation on the regulator (or the Tribunal) to make value judgments. Those value judgments include whether the period over which the data is taken is in some manner unusual, and whether the data derived is in some way anomalous or unrepresentative of the value that should apply to

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87 Australian Competition Tribunal, *Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8*, 12 November 2009, paragraph 145.

88 Australian Competition Tribunal, *Application by Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010, paragraph 364.

89 Australian Competition Tribunal, *Application by Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010, paragraphs 415–417.

> that parameter. This could involve predicting future rates, although means are available to do that.[90]

It is clear that the Tribunal did not consider that the decrease in CGS yields caused by the effects of the global financial crisis impinged upon CGS yields being an appropriate proxy for the risk free rate.[91]

The Tribunal made its position clear that CGS yields during the global financial crisis remained representative of the risk free rate. The mere fact that the yields were 'low' did not change this conclusion.

The averaging period in the Telstra matter was in March to April 2009 and resulted in a risk free rate of 4.51 per cent. The indicative averaging period adopted by the AER for APA GasNet is in August 2012 and results in a risk free rate of 2.98 per cent. The Tribunal's reasons why CGS yields remained an appropriate proxy for the risk free rate in March to April 2009 continue to apply in August 2012.

B.1.7 The expectations theory on the term structure of interest rates

In sections 4.3.2 and 4.3.4 the AER raised the concept of the term structure of interest rates and the relevance of the 'expectations theory' when considering a forward looking estimate of the risk free rate. The expectations theory provides support for the use of prevailing 10 year CGS yields as forward looking estimates. The theory is further explained in this section.

The expectations theory is generally regarded as an important part of the explanation of the term structure of interest rates.[92] The term structure is also commonly referred to as the yield curve.[93] As Brailsford, Heaney and Bilson describe:

> The expectations theory suggests that longer maturity yields are a function of the current interest rates and expected future interest rates. For example, under this theory an investor is indifferent between the yield on a six month bill and a series of two consecutive three month investments or, alternatively, three consecutive two-month bill investments. Thus, with this theory, a multi-period rate can be written in terms of a series of one-period rates consisting of the current one-period rate and the series one-period expected future rates.[94]

The expectations theory suggests then that current yields on long-dated bonds incorporate current market yields on short dated bonds and expectations of future market yields on short dated bonds. This relationship is explained in the following mathematical expression[95]:

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90 Australian Competition Tribunal, *Application by Telstra Corporation Limited ABN 33 051 775 556 [2010] ACompT 1*, 10 May 2010, paragraph 418.

91 In a recent determination process Aurora Energy Pty Ltd submitted that the Tribunal's comments at paragraph 422 supported a departure from a short tem average approach. The AER does not take the same interpretation of those comments. Further discussion can be found in the Aurora final determination. AER, *Final distribution determination: Aurora Energy Pty Ltd 2012–13 to 2016–17, Appendices,* April 2012, pp. 11–13 (section A.1.4).

92 E. Elton, M. Gruber, S. Brown and W. Goetzmann, *Modern Portfolio Theory and Investment Analysis*, Wiley: Eighth edition, 2010, pp. 516–521.

93 G. Peirson, R. Brown, S. Easton and P. Howard, *Business Finance*, McGraw-Hill: Eighth edition, 2003, p. 103.

94 T. Brailsford, R. Heaney, and C. Bilson, *Investments: concepts and applications*, Nelson Australia Pty Ltd: Third edition, 2007, p. 155 (Brailsford et al, *Investments: concepts and applications*, 2007).

95 T. Brailsford, R. Heaney, and C. Bilson, *Investments: concepts and applications*, Nelson Australia Pty Ltd: Third edition, 2007, p. 156.

$$(1 + R_0^n) = (1 + R_0^1)(1 + E_0[R_1^2]) \dots (1 + E_0[R_{n-1}^n])$$

Where:

$E_0[R_s^n]$ = expected nominal yield per annum for the period from time s to time n, with expectations formed.at time 0

R_0^s = nominal yield per annum observed now for the period 0 to s

The expectations theory is not the only theory that has been developed to explain the term structure of interest rates. Other theories are the 'liquidity premium theory', the 'segmented markets theory' and the 'preferred habitat theory'.

The expectations theory is unlikely to provide a complete explanation of the term structure of interest rates.[96] There are many factors that may influence the term structure. Notwithstanding this, the expectations theory provides an important and relevant understanding of the term structure of interest rates.

B.2 Market risk premium

While APA GasNet advocated the dividend growth model (DGM) and NERA's regime switching model to estimate the MRP, the AER considered other methods (namely, the SFG method and the VAA implied volatility glide path approach) because they are forms of forward measure, currently do not support an MRP above 6 per cent, and have been previously proposed by the businesses.

In this appendix, the AER considers:

- further analysis on the use of arithmetic and geometric averages to estimate historical excess returns
- survey evidence:
  - an assessment of survey evidence against the criteria suggested by the Australian Competition Tribunal in the Envestra matter
  - an explanation of 'triangulation' and its use in refining survey evidence
- DGM estimates
- consultants' view
  - CEG's approaches
  - Capital Research's DGM estimates
  - NERA's regime switching model

[96] These concerns have been raised by Lally when considering the use of forward interest rates to predict future interest rates. Lally, *Expert report*, February 2011, p. 15–17.

- the report by Professor McKenzie and Associate Professor PartingtonAssociate Professor Lally's advice
- the SFG method (implied volatility, credit spread and dividend yield)
- VAA's implied volatility glide path approach

- further analysis of NERA's regime switching model
- further analysis of the SFG method (implied volatility, credit spreads, dividend yields)
- further analysis on the VAA implied volatility glide path approach
- market commentary
- reasons for the AER's departure from the WACC review

After considering all available approaches to estimate the MRP, the AER applied its judgement and considered an MRP of 6 per cent is the best estimate in the circumstances and commensurate with prevailing conditions in the market for funds.

B.2.1 Arithmetic and geometric averages of historical excess returns

Historical excess market returns are highly sensitive to the method of averaging returns over multiple periods. Handley, for example, found the historical excess market return (relative to bonds) for the period 1958-2011 was 3.5 per cent using a geometric average or 6.1 per cent using an arithmetic average.[97]

If returns vary over time, then a geometric average will always be less than an arithmetic average—the greater the volatility in returns is, the greater is the difference between an arithmetic average and a geometric average.[98] With the level of volatility present in historical stock market returns, a difference of around 200 basis points (2 per cent) is common. Box B.1 uses a simple numeric example to explain the difference between an arithmetic average and a geometric average.

Box 1.1 The difference between arithmetic averages and geometric averages

Arithmetic averages are more appropriate when observations are considered independent in a statistical sense. In contrast, geometric averages are more appropriate when observations are related to each other over time—for example, if yearly excess returns are the relevant observations, then returns can be expected to accumulate over time. As long as returns vary over time a geometric average will always be less than an arithmetic average. The greater the volatility in returns is, the greater is the difference between arithmetic and geometric averages.

[97] J. Handley, *An estimate of the historical equity risk premium for the period 1883 to 2011*, April 2012, p. 6. Estimates are based on an assumed value of imputation credits of 0.35.

[98] For example, if an index starts at 100, falls to 80 and then increases again to 100, the arithmetic average return is 2.5 per cent (the average of the initial 20 per cent fall and subsequent 25 per cent rise) and the geometric average return is zero (because the value of the index at the end of the second period is the same as at the beginning of the first period).

The difference between arithmetic and geometric averages becomes apparent through a simple example. Suppose an index starts at 100, falls to 80 (a loss of 20 per cent) by the end of year 1 and then increases again to 100 (a gain of 25 per cent) by the end of year 2.

The arithmetic average return simply takes the average of the rates of return over the life of the investment. In this example, the arithmetic average rate of return = (rate of return in year 1+ rate of return in year 2) / total years of investment = (-20% + 25%) /2 = 2.5%.

On the other hand, a geometric average rate of return measures the change between the initial value and final value of the investment over the life of the investment. In this example, the geometric average rate of return = (final value of the investment / initial investment) ^ (1 / total years of investment) - 1 = (100 / 100) ^ (1/2) – 1 = 0%.

If 0 per cent annual return is applied to the index for two years, then the index is at 100 by the end of year 2. This zero return is consistent with the outcome that the index has not changed after two years. By contrast over a two year investment horizon, the arithmetic average would overstate the return because the index value has not changed after two years.

However, if the investment horizon is one year, then the arithmetic return would be the correct estimate. To form an expectation about one year in the future based on historical evidence one would look at what is possible over a one year horizon. In this example, we assume either a loss of 20 per cent or a gain of 25 per cent. Assuming these outcomes are of equal possibility, the expected return would be 2.5 per cent. In this case, the geometric average would be an underestimate of the expected forward looking return.

Since the WACC review, the AER has developed a deeper understanding of the averaging of historical excess returns over multiple periods. It considered the arithmetic average of one year historical excess returns overstates the arithmetic average of 10 year historical excess returns. It held this position in the Envestra South Australia decision (and subsequent decisions),[99] so had regard to both arithmetic and geometric averages in considering the appropriate value for the MRP in this decision.

In July 2011, Envestra sought review by the Australian Competition Tribunal of the AER's reliance on geometric averages, among other matters.[100]. In that matter, the AER considered the following:

- The arithmetic average of 10 year historical excess returns would likely be an unbiased estimator of a forward looking 10 year return (the appropriate benchmark).
- However, historical excess returns are conventionally estimated as the arithmetic or geometric average of one year returns. The historical excess return evidence available to the AER was based on this one year returns. Accordingly, the AER interpreted the (one

[99] See: AER, *Final decision: Envestra Ltd access arrangement proposal for the SA gas network 2011–2016*, June 2011 p. 191 (AER, *Final decision: Envestra access arrangement SA*, June 2011); AER, *Final decision: Envestra Ltd access arrangement proposal for the Qld gas network 2011–2016*, June 2011, p. 179 (AER, *Final decision: Envestra access arrangement Qld*, June 2011); AER, *Final distribution determination, Aurora Energy Pty Ltd 2012–13 to 2016–17*, April 2012, p. 145 (AER, *Final decision: Aurora distribution determination*, April 2012); AER, *Final decision: APTPPL access arrangement*, August 2012, p. 69.

[100] See Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012 and Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 4*, 11 January 2012.

year return) data based on the strengths and weaknesses of how closely the data reflected the relevant benchmark (being a 10 year rate, expressed in annual terms).

- Mathematically, if the one year historical excess returns are variable, then the arithmetic average of one year historical excess returns overstates the arithmetic average of 10 year historical excess returns. This overstatement occurs because the process of averaging one year returns does not account for the cumulative effect of returns over a 10 year horizon.

- Also mathematically, if the one year historical excess returns are variable, then the geometric average of one year historical excess returns understates the arithmetic average of 10 year historical excess returns.

- The AER concluded the arithmetic average of the data it considered was an overestimate of the relevant benchmark and the best estimate of historical excess returns over a 10 year period was likely to be somewhere between the geometric and arithmetic averages of annual excess returns.[101]

The Tribunal stated it did not have to decide this matter, but made some comments. It appeared to agree with the AER when noting:

> It may be accepted that an arithmetic mean of historical excess returns is an unbiased estimate of expected future one year returns. It is not, however, an unbiased estimate of expected future returns over longer time horizons. A geometric mean of historical annual returns does not provide an unbiased estimate of expected returns over longer time horizons, either.[102]

The AER considered a report prepared by SFG in the Roma to Brisbane Pipeline process. In that report, SFG submitted it was wrong to place any reliance on geometric averages and to the extent that reliance is (incorrectly) placed on geometric averages, the resulting MRP estimate is downwards biased. SFG presented a Harvard Business School case note in support of this position.[103]

The AER sought advice from McKenzie and Partington on the SFG report and Harvard Business School case note. In their February 2012 supplementary MRP report, McKenzie and Partington explained the Harvard case study 'assumes away the source of bias in arithmetic averages'.[104] The AER does not consider it is appropriate to assume no uncertainty about the mean of the distribution when analysing historical excess returns. Accordingly, it did not find SFG's evidence persuasive.

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101 Corrs Chambers Westgarth, *Appendix B—market risk premium, the Australian Energy Regulator's submissions*, 11 November 2011, pp. 17–18.

102 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012, paragraph 157.

103 SFG, *Market risk premium, Report for APT Petroleum Pipelines Ltd*, 11 October 2011, p. 16 (SFG, *MRP for APTPPL*, October 2011).

104 In the Harvard case study, it assumes the probability of distribution is known. Since there is no uncertainty about the arithmetic mean of the return, the probably of measuring the MRP as discussed in the MRP section largely goes away. See further discussion at: M. McKenzie and G. Partington, *Report to the AER, Supplementary report on the equity market risk premium*, 22 February 2012, pp. 5–6 (McKenzie and Partington, *Supplementary report on the MRP*, February 2012).

SFG also submitted the MRP in the CAPM is an expected return, so the arithmetic average (not the geometric average) 'must' be used.[105] The Tribunal previously dismissed this argument when Envestra presented it:

> Envestra's submission that, because the CAPM model uses expected returns, only the arithmetic mean may be used cannot be accepted once it is understood that the arithmetic mean of annual historic returns is not an unbiased estimate of expected ten-year returns.[106]

McKenzie and Partington supported the AER's view. After a review of literature on arithmetic and geometric averages, they concluded:

> The evidence solidly supports the AER's position that over the ten year regulatory period the unbiased MRP lies somewhere between the arithmetic average and the geometric average of annual returns.[107]

The AER also considered a recent NERA report, which argued against using geometric averages[108]. NERA argued the WACC is used to determine regulated revenue using the building block equation; this equation deals with one year returns. Similarly, the AER noted the new advice from Lally that no compounding effect occurs in regulatory situations. Without a compounding effect, the arithmetic mean is preferable to geometric mean if annual returns are independent and drawn from the same distribution.[109]

The AER noted the building block model is a tool to achieve an outcome whereby the present value of expected revenue equals the present value of expected expenditure over the life of the regulated assets. From this perspective, the AER considers an appropriate discount rate requires the evaluation of an expected multi-period cost of equity.[110] Further as shown in attachment 4, the arithmetic averages of historical excess returns range from 4.9 to 6.1 per cent. Accordingly, even if the AER were to only rely on the arithmetic average, this would not change its position on the appropriate MRP value.

Further, in the Envestra matter, the Tribunal also queried whether there is a method to produce an unbiased estimate. It stated it could not form a conclusion on that issue based on the material before it.

The AER sought McKenzie and Partington's advice on whether such a method is available. They analysed alternative proposals in the literature and concluded in their February 2012 MRP report that no single best estimator is indisputably best for long run excess returns. Given current knowledge, McKenzie and Partington recommended the use of both arithmetic averages and geometric averages, tempered by an understanding of their inherent biases.[111]

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105 SFG, *MRP for APTPPL*, October 2011, p.1 8.

106 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012, paragraph 157.

107 McKenzie, and Partington, *Supplementary report on the MRP*, February 2012, pp. 5–7.

108 NERA, Prevailing conditions and the market risk premium*: A report for APA Group, Envestra, Multinet and SP AusNet*, March 2012, pp. 49–50 (NERA, *Prevailing conditions and the MRP*, March 2012).

109 M. Lally, *The cost of equity and the market risk premium,* 25 July 2012, pp. 3–15 (Lally, *Cost of equity and the MRP*, July 2012).

110 The AER's consideration was discussed in detail in AER, *Draft decision, APT Petroleum Pipeline Pty Limited access arrangement proposal for the Roma to Brisbane Pipeline 12 April 2012 – 30 June 2017*, April 2012, pp. 295–296.

111 McKenzie, and Partington, *Supplementary report on the MRP*, February 2012, pp. 7–9.

The advice of McKenzie and Partington supported the AER continuance with its current approach.

The AER notes the consultants have different views, which need assessing to determine a reasonable approach. In view of the conflicting evidence, the AER considers it should review both arithmetic and geometric averages when considering the historical estimates of the MRP. It is aware of potential deficiencies with both averages, so does not exclusively rely on one or the other. In attachment 4.3.3, the AER had regard to both arithmetic and geometric averages of historical excess returns tempered by an understanding of the biases associated with these averages.

B.2.2 Survey evidence

Addressing the Tribunal's comments on the use of survey evidence

The AER considers survey results are relevant as they reflect the forward looking MRP applied in practice. The Tribunal reviewed the final decision for Envestra, which included the issue regarding the use of survey evidence to inform the value of MRP.[112] The Tribunal stated while it did not have to decide this matter, it made a few comments:

> Surveys must be treated with great caution when being used in this context. Consideration must be given at least to the types of questions asked, the wording of those questions, the sample of respondents, the number of respondents, the number of non-respondents and the timing of the survey. Problems in any of these can lead to the survey results being largely valueless or potentially inaccurate.
>
> When presented with survey evidence that contains a high number of non-respondents as well as a small number of respondents in the desired categories of expertise, it is dangerous for the AER to place any determinative weight on the results.

In its February 2012 report, NERA raised similar questions about the use of survey evidence. About the surveys that the AER cited, NERA stated:

- the surveys typically do not explain how those surveyed were chosen
- a majority of those surveyed did not respond
- it is unclear what incentives were provided to ensure respondents would provide accurate responses
- whether respondents supplied MRP estimates that use continuously compounded or not continuously compounded returns is unclear
- the risk-free rate that respondents use is unclear
- the relevance of some of the surveys is unclear given changes in market conditions since the surveys were conducted.[113]

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112 Australian Competition Tribunal, *Application by Envestra Limited (No 2) [2012] ACompT 3*, 11 January 2012, paragraphs 165–166.

113 NERA Economic Consulting, *The market risk premium: A report for CitiPower, Jemena, Powercor, SP AusNet and United Energy*, February 2012 (NERA, *MRP for the Vic electricity DNSPs*, February 2012), p. 31.

In light of the Tribunal's comments, the AER engaged McKenzie and Partington to review the Tribunal's criteria on survey evidence. The following sections discuss the main findings of McKenzie and Partington and the AER's own review. These findings apply to much of the concerns raised by NERA.

Timing of the survey

The AER considers the timing of the surveys is reasonably clear: Across the surveys, it ranged from 2000 to February 2011. Comparison of survey results over different time periods can provide information on how market practitioners' perception of the MRP change over time. By considering survey results for the past 10 years, the AER notes market participants have not changed their view on the MRP. This consistency in survey responses over time suggests the AER can reasonably rely on the earlier surveys.

Sample of respondents

Financial managers, expert valuers, actuaries and finance academics were the target respondents of surveys. These professionals apply the MRP, so the AER considers the surveys' target populations can make informed judgments about the MRP. McKenzie and Partington supported this view in their February 2012 MRP report.[114] In their August 2012 report, McKenzie and Partington further noted many surveys clearly described the selection of the sample surveyed. These academic papers would be published only with a clear explanation of how the sample was chosen.[115]

Wording of survey questionnaires

The quality of questionnaire wording is important for reducing bias and promoting the accuracy of survey results. The AER agrees with McKenzie and Partington that the adequacy of survey wording can be subjective to judge and often relies on the quality of the authors. [116]

It also agrees that confidence can be enhanced when the work is published in a refereed academic journal, or when the survey is repeated. In the former case, the work has to be peer reviewed. In the latter case, a stable set of questions allows comparison of responses over time. With repeated surveys, the observed changes over time are less susceptible to issues with the wording. Further, any significant problems with wording and respondents' interpretation of questions may be detected and corrected over time.[117] In terms of the surveys cited here, most were published in refereed journals and/or repeated over time.[118] The AER is thus reasonably satisfied with the adequacy of the wording in the survey questionnaires.

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114 McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p. 17.

115 M. McKenzie, and G. Partington, Report to the AER: Review of regime switching framework and critique of survey evidence, 7 September 2012, p. 27 (McKenzie and Partington, *MRP: regime switching framework and survey evidence*, September 2012, p.27)

116 McKenzie and Partington, *Supplementary report on the* MRP, February 2012, pp. 17–18.

117 McKenzie and Partington, *Supplementary report on the* MRP, February 2012, pp. 17–18.

118 Truong, Partington and Peat (2008) and Asher (2011) were published in academic journals. Fernandez surveys are repeated over time. KPMG (2005), Capital Research (2006) and Bishop (2009) are neither of these.

Adjustment for imputation credits

The AER noted some surveys implicitly acknowledged imputation credits:

- Truong, Partington and Peat (2008) found 15 per cent of responses adjusted for the value of imputation credits. Of the remaining 85 per cent of responses, the main reasons given for not adjusting for imputation credits were:
  - it was too difficult
  - it would have a very small impact
  - it was unnecessary because the market already adjusts stock prices for the value of imputation credits, which are thus already reflected in the cost of capital estimate.
- In Asher (2001) survey, 27 of 49 respondents indicated they adjusted their MRP estimates for imputation credits.

The AER also notes other surveys suggested respondents do not typically allow for imputation credits. Even for the surveys that discussed imputation credits, the extent of adjustments made to the MRP estimate was unclear. McKenzie and Partington acknowledged this uncertainty and noted any adjustment for imputation would likely be within the margin of measurement error. They thus recommended the AER take the survey evidence at face value, but tempered by the uncertainty of whether an imputation credit adjustment is needed.[119] The AER accounted for this uncertainty when interpreting survey evidence.

Survey response rate and non-response bias

The AER considers a sufficient level of response rate is important for survey evidence. But what constitutes a sufficiently large sample is subjective. McKenzie and Partington suggested a sample size of more than 30 is sufficiently large statistically so a representative sample of 30 respondents is expected to be adequate.[120] Most surveys considered in this decision received around 30 responses.

The AER recognises low response rates are a common problem with the survey evidence. However, while the number of responses in a survey is important, the main concern is whether respondents are representative of the target population. That is, for some reason, non respondents may systematically favour a different MRP from that of the respondents of the survey. McKenzie and Partington supported this view.[121]

A direct assessment of representativeness is difficult because the responses of the non-respondents are unknown. McKenzie and Partington noted Graham and Harvey (2010) concluded the response rate is not a significant concern for representativeness, for the following reasons:

- The response rate was within the range documented in many other survey studies.

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119 McKenzie and Partington, *MRP: regime switching framework and survey evidence,* September 2012, p. 28.
120 McKenzie and Partington, *Supplementary report on the MRP, February 2012*, pp. 17–18.
121 McKenzie and Partington, *Supplementary report on the MRP, February 2012*, pp. 18–19.

- Graham and Harvey (2001) conducted a standard test for non-response biases and found no evidence of bias.

- Brav, Graham, Harvey and Michaely (2005) conducted a captured sample survey at a national conference in addition to an Internet survey. The captured survey responses (to which over two-thirds participated) were qualitatively identical to those for the Internet survey (to which 8 per cent responded)

- Brav, Graham, Harvey and Michaely (2005) contrasted survey responses to archival data from Compustat and found archival evidence was consistent with the responses from the survey sample.

- Campello, Graham, and Harvey(2010) showed the December 2008 response sample was fairly representative of the firms included in the commonly used Compustat database.

The AER recognises the surveys considered in this decision do not specifically address the non-response bias. However, Graham and Harvey's findings are likely to apply to the other survey evidence, so the AER is reasonably satisfied low response rates or a potential non response bias is not reason to exclude the survey evidence from consideration.

Triangulation

McKenzie and Partington placed weight on the survey evidence because triangulation across surveys enhanced their confidence in the results. The idea behind triangulation is that a specific survey may be subject to a type of bias, even if that bias is not evident. However, this problem would be much less likely to be consistent across surveys with diverse methods and different target populations.

McKenzie and Partington illustrated triangulation in survey evidence considered by the AER. They found the Australian surveys conducted using different methods and different target populations at different times supported a MRP estimate of 6 per cent:

> ...consider an illustration of triangulation in action. The KPMG survey looks at the market risk premiums used in expert reports. This might be criticised on the basis that the same expert might have produced many reports and thus that one expert's views are overweighted. If that expert's view is divergent from other experts, then the result will be a biased estimate of the MRP for the expert sample. The effect is analogous to non-response bias in a traditional questionnaire survey. Bishop (2009) addresses this problem by surveying experts' reports and collecting the MRP by expert, so each expert's opinion is equally weighted. Bishop also uses a different, although probably overlapping, sample of reports to KPMG. Both studies give a MRP of 6%, thus confidence is enhanced that the MRP used by experts is 6%.[122]

The triangulation of survey results is a relevant consideration. By examining a wide range of survey evidence, which uses different methods and targets different respondents, it improves the reliability of survey results.

Conclusion on survey evidence

Survey evidence reflects the forward looking MRP when applied in practice. It is subject to limitations, such as the uncertainty on imputation credit adjustment. However, based on its own review and the advice from McKenzie and Partington, the AER considers survey based

[122] McKenzie and Partington, *Supplementary report on the MRP,* February 2012, p. 20.

estimates of the MRP are relevant to inform the forward looking MRP. In this decision, it considered a range of survey evidence conducted in different time periods and targeted at different respondents. The evidence supported a forward looking MRP of 6 per cent as the best estimate in the current circumstances.

B.2.3 DGM estimates

DGM analysis can provide information on the expected MRP. It examines the forecast future distributions of businesses and derives the cost of equity that makes these distributions consistent with the market valuation of the equity of those businesses. However, the AER considers the DGM based estimates of the return on equity and inferred estimates of the MRP are highly sensitive to the assumptions made. If all assumptions are not sound, estimated results from DGM analysis may be inaccurate.[123] McKenzie and Partington supported this view in their December 2011 MRP report:Clearly valuation model estimates are sensitive to the assumed growth rate and a major challenge with valuation models is determining the long run expected growth rate. There is no consensus on this rate and all sorts of assumptions are used: the growth rate in GDP; the inflation rate; the interest rate; and so on. A potential error in forming long run growth estimates is to forget that this growth in part comes about because of injections of new equity capital by shareholders. Without allowing for this injection of capital, growth rates will be overstated and in the Gordon model this leads to an overestimate of the MRP.[124]

In the WACC review and its recent decisions, the AER considered the following:

- The implied MRP produced by DGM estimates is sensitive to both the model specification and the exact point in time of estimation.
- No input assumptions are reliable. Generally, the expected market growth rate in dividends per share (a key input) is proxied with analysts' short term forecasts of market wide earnings per share growth, or long term expectations of GDP growth (or both). Associate Professor Lally advised such proxies are likely to produce an upward bias in the MRP estimates.[125]
- Regulators had previously been wary to lower the MRP when DGM estimates were below 6 per cent.[126] The AER is similarly wary to increase the MRP (based on DGM estimates) even though the DGM estimates can produce estimates above 6 per cent.
- At the WACC review, academics (Officer and Bishop, and CEG) and industry representatives (ENA) considered DGM estimates should be used as a 'cross check' on the reasonableness of other methods to estimate the MRP, rather than as the primary method.[127]

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123 Corporate finance texts have noted '[t]he simple constant-growth DCF [discounted cash flows] formula is an extremely useful rule of thumb' but '[n]aive trust in the formula has led many financial analysts to silly conclusions'. R. Brealey, S. Myers and F. Allen, *Principles of Corporate Finance,* McGraw-Hill Boston: 9th International Edition, 2008, p. 95.

124 M. McKenzie and G. Partington, *Report to Corrs Chambers Westgarth: Equity market risk premium*, 21 December 2011, p. 25 (McKenzie and Partington, *Equity market risk premium*, December 2011).

125 Lally, *Cost of equity and the MRP*, July 2012, pp. 11–18.

126 AER, *Final decision: WACC review*, May 2009, p. 220.

127 AER, *Final decision: WACC review*, May 2009, pp. 218–219.

- Although DGM is extensively used by the US economic regulators in estimating the return on equity[128], it is not well accepted for use in the Australian context.[129]

The AER considered submissions advocating DGM inferred MRP estimates. CEG, Capital Research, NERA and Lally all recommended the DGM for estimating a forwarding looking MRP. The DGM estimates derived by CEG, Capital Research and NERA supported an MRP estimate above 6 per cent. But, while DGM based analysis can provide information on the expected MRP, the AER considers the limitations discussed below limit the emphasis that should be attached to that analysis.

DGM estimates and its assumptions

BHP, McKenzie and Partington, and Lally supported the view that DGM estimates are highly sensitive to the assumptions made.[130] Further, different consultants produce widely different DGM based MRP estimates over a short period. Table B.2 illustrates the consultants' current estimates, which range from 6.18 per cent to 9.56 per cent.

Table B.2 Recent DGM based MRP estimates produced by consultants

		Dividend yield	Dividend per share growth	RFR	MRP estimate
CEG (March 2012)		5.68%	6.60%	3.77%	8.52%
Capital Research (Feb 2012)		4.70%	7.00%	5.08%	6.62%
Capital Research (Feb 2012)		5.23%	7.00%	5.08%	7.15%
Capital Research (Feb 2012)		5.71%	7.00%	5.08%	7.63%
Capital Research (Mar 2012)		6.29%	7.00%	3.73%	9.56%
NERA (Feb 2012)	Bloomberg and IBES forecasts		5.65%	3.96%	7.72–7.75%
NERA (Feb 2012)	Bloomberg and IBES forecasts		5.65%	5.50%	6.18–6.21%
NERA (March 2012)	Bloomberg and IBES forecasts		5.65%	3.99%	7.69–7.72%

Sources: CEG, Capital Research, NERA.

In the February 2012 report, Capital Research estimated an implied MRP range of 6.6 to 7.5 per cent. In estimating this range, it assumed a compound average growth rate of 7 per cent based on analysts' forecast, and a theta value of between 0 and 0.5.[131] Capital Research's analysis demonstrated the sensitivity of the DGM analysis to its assumptions. Capital Research illustrated an increase of 0.5 in the theta assumption translates to a 0.8 to 1.2 per cent increase in the implied MRP.[132] Further, in the March 2012 report, Capital Research

128 CEG, *Risk free rate and MRP in the CAPM*, March 2012, p. 38.

129 The AER understands that the US might have better quality data for DGM analysis.

130 BHP Billiton, *Submission to the AER: APA GasNet access arrangement proposal*, 29 June 2012, pp. 13–14; McKenzie and Partington, Equity market risk premium, December 2011, pp. 23–27; Lally, Cost of equity and the MRP, July 2012, pp. 15–18.

131 Capital Research, *Forward estimate of the market risk premium: Update: A response to the draft distribution determination by the AER for Aurora Energy Pty Ltd*, February 2012, pp. 19–23 (Capital Research, *MRP estimate for the Aurora determination*, February 2012).

132 Capital Research, *MRP estimate for the Aurora determination*, February 2012, table 2, p.21.

updated this estimate to 9.6 per cent (an increase of more than 2 per cent) with a more recent risk free rate and a net theta value of 0.2625.[133]

NERA's DGM estimates also illustrated this problem. NERA estimated an MRP of 5.06 per cent in February 2011 based on the DGM analysis. Using the same dividend yield and growth assumptions, the MRP estimate was at 8.01 per cent in December 2011—a difference of 295 basis points.[134] This difference was a result of the lower risk free rate. Table B.3 illustrates the sensitivity of NERA's DGM analysis to different risk free rates.

Table B.3 NERA MRP estimates with different risk free rates

Risk free rate	Dividend yield	Dividend per share growth	MRP estimate
5.47%	Bloomberg consensus forecasts	5.65%	5.06%
3.99%	Bloomberg consensus forecasts	5.65%	7.69%
3.67%	Bloomberg consensus forecasts	5.65%	8.01%

Source: NERA, *Prevailing conditions and the market risk premium*, March 2012, pp. 39 and 50.

Similarly, tables 1.4-1.6 below illustrate how sensitive CEG's DGM based estimate is to different assumptions. The MRP estimates move 'one-for-one' with the changes in assumptions.

Table B.4 MRP estimates with different growth assumptions

DPS growth	Div yield	RFR	MRP estimate
6.60%	5.68%	3.77%	8.52%
6.00%	5.68%	3.77%	7.91%
3.50%	5.68%	3.77%	5.41%
0.00%	5.68%	3.77%	1.91%

Source: AER analysis

Table B.5 MRP estimates with different dividend yield assumptions

DPS growth	Div yield	RFR	MRP estimate

[133] Capital Research, *Forward estimate of the market risk premium: Update: A report prepared for the Victorian gas transmission and distribution businesses: APA Group, Envestra, Multinet Gas and SP AusNet*, March 2012, p. 33 (Capital Research, *MRP estimate for the Vic NSPs*, March 2012).

[134] NERA, *Prevailing conditions and the market risk premium: A report for APA Group, Envestra, Multinet and SP AusNet,* March 2012, pp. 49–50 (NERA, *Prevailing conditions and the MRP*, March 2012).

6.60%	5.68%	3.77%	8.52%
6.60%	5.00%	3.77%	7.83%
6.60%	3.00%	3.77%	5.83%
6.60%	1.00%	3.77%	3.83%

Source: AER analysis

Table B.6 MRP estimates with different prevailing risk free rates

DPS growth	Div yield	RFR	MRP estimate
6.60%	5.68%	3.77%	8.52%
6.60%	5.68%	3.00%	9.28%
6.60%	5.68%	5.00%	7.28%
6.60%	5.68%	6.00%	6.28%

Source: AER analysis

Bias in DGM estimates

Lally noted other problems with the DGM analysis:

- At a given time, the estimated cost of equity for the market is assumed to be the same for all future years. This 'perfect offsetting' hypothesis is implausible.
- The method assumes the current value of the market matches the present value of future dividends. If the current value of the market is below the present value of future dividends, then the resulting estimate of the market risk premium will be too high.
- Short term fluctuations in the market's earnings retention rate have a significant impact on the estimates. The DGM method does not account for these changes.[135]

In addition to the above limitations, Lally identified two further problems with the 8.5 per cent MRP estimate derived by CEG:

- By using the historical dividend yield, CEG ignores the (1+g) term in deriving the market cost of equity.
- It is inappropriate for CEG to set the dividend growth to the long term GDP growth. By making such an assumption, the expected long term growth rate in all dividends from all companies would exceed that for gross domestic product. This outcome is logically impossible.[136]

Lally considered the net effect of these two problems is to overestimate the MRP by about 1 per cent. This overestimation is additional to the limitations discussed above.[137]

135 Lally, *Cost of equity and the* MRP, July 2012, pp. 15–18.
136 Lally, *Cost of equity and the* MRP, July 2012, pp. 18–20.
137 Lally, *Cost of equity and the* MRP, July 2012, p. 20.

The AER also considered a report by Capital Research in 2005, which derived negative MRP estimates from DGM analysis for the period 1980–2004. Capital Research suggested a negative result is 'nonsense' and noted:

> ...We must be careful not to ask too much of this model. Recall that it is based on a constant growth assumption. Any model which makes such highly stylised and constant assumptions about the world is going to struggle to be relevant in a world undergoing dramatic changes. The result of the model suggesting negative risk premia is an outcome of a too precious model rather than the investment world being irrational.[138]

Similarly, the AER notes the CEG AMP method was producing MRP estimates at or below zero per cent back in 1994. The AER does not consider a zero or a negative MRP is realistic at any particular point in time. Lally supported this view:

> ...this assumption underlying Figure 8 can be tested by observing that the model gives rise to an estimated market risk premium of zero in 1994; this outcome is not plausible and therefore suggests that the underlying assumption is not plausible.[139]

The AER notes DGM analysis is producing high positive MRP estimates. However, it is not aware of evidence suggesting the estimates derived from DGM analysis are more reliable now than in 1994. Further, no new information has come to light that causes the AER to rely more on DGM estimates.

B.2.4 Consultants' views

The AER considered views from different consultants on the best estimate of the MRP. These views included:

- views submitted by APA GasNet in support of its proposal—that is, the CEG approaches, Capital Research DGM estimates, and NERA regime switching model
- advice received by the AER—that is, the McKenzie and Partington report and Lally's advice
- approaches proposed by other regulated businesses in recent regulatory processes—that is, the VAA implied volatility glide path approach and the SFG method.

Different consultants have widely different views. After carefully assessing these views, the AER places limited emphasis on DGM, the regime switching model, implied volatility glide path approach and other financial market indicators in estimating the value of the 10 year forward looking MRP. Its reasons are set out below.

CEG's approaches

CEG proposed three alternative approaches to estimate the cost of equity:

- use DGM to directly estimate the cost of equity for comparable firms
- use DGM to estimate the cost of equity for the market portfolio and derive a DGM estimate for the MRP

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138 Capital Research, *Australian market risk premium*, January 2005, pp. 31–32.

139 Lally, *Cost of equity and* MRP, July 2012, p. 22.

- estimate a normal level for cost of equity for the reference service and make adjustments based on the current market evidence.[140]

The DGM estimates proposed by CEG are subject to the same limitations as discussed in the previous section. Lally further noted the CEG approaches are subject to problems, including errors in the AMP method, exposure to fluctuations in the earnings payout rate and ambiguity over the appropriate averaging period.[141] The AER considers these problems are relevant, so places limited emphasis on the CEG approaches.

Capital Research's DGM estimates

Capital Research advocated using DGM to directly estimate the forward MRP. It suggested the best forward looking MRP is 9.6 per cent, assuming a risk free rate of 3.73 per cent and a net theta of 0.2625.[142]

Capital Research's DGM estimate is subject to the same limitation as discussed in the DGM section. In addition, the DGM assumes growth at a constant rate in perpetuity. Capital Research use analysts' forecast dividend growth as a proxy. [143] Analysts' forecast is often based on short to medium terms. The AER considers using analysts' forecast growth rate in the DGM analysis is likely to result in an upward bias in the MRP. Mckenzie and Partington supported this view:

> Since analysts only cover a subset of firms, whether we get a representative estimate for the market is an open question. Another problem is that analyst's forecasts are known to be biased (generally upwards) and subject to gaming (see Scherbina, 2004, and Easton and Sommers, 2006).[144]

NERA's regime switching model

NERA produced DGM estimates of 7.69 and 7.72 per cent based on Bloomberg and I/B/E/S forecasts. However, NERA proposed a regime switching model would provide the most suitable MRP in the prevailing market condition. This model is highly complex and involves:

- determining the appropriate assumptions of high and low volatility states
- estimating the current probability of being in the high volatility state
- using a Markov chain to roll over this probability
- calculating a short term MRP in relation to the three month bill return
- deriving a forward one year bill rate
- converting the short term MRP to a five year MRP.[145]

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140 CEG, *Risk free rate and MRP in the CAPM,* March 2012, p. 49.
141 Lally, *Cost of equity and the* MRP*,* July 2012, pp. 11–23.
142 Capital Research, *MRP estimate for the Vic NSPs*, March 2012, p. 33
143 Capital Research, *MRP estimate for the Aurora determination*, February 2012, pp. 19–23.
144 McKenzie and Partington, *Equity market risk premium*, December 2011, p. 26.
145 NERA, *Prevailing conditions and the MRP,* March 2012, pp. 24–31.

The AER is not aware of any regulators that used a regime switching model in deriving their MRP estimates. Further, this complex process could create errors in calculation.[146] In their August 2012 report, McKenzie and Partington found the NERA regime switching model is not a good fit of the data and does not provide sensible volatility estimates. They also noted the SFG report that reviewed the NERA regime switching model did not provide insights to address this problem.[147] Section B.2.5 details the AER's considerations of the NERA regime switching model.

McKenzie and Partington report

In their December 2011 MRP report, Professor McKenzie and Associate Professor Partington considered four areas of evidence: historical excess returns, survey evidence, DGM analysis and other methods (including using international data, credit spreads and implied volatilities). They advised placing weight on historical excess returns and survey evidence; DGM and other methods can be used only as reasonableness checks and need to be interpreted with caution. McKenzie and Partington concluded there is little persuasive evidence for deviating from the long standing regulatory consensus of a market risk premium estimate of 6 per cent. If anything, the risk with this estimate is that it may prove to be an overstatement.[148] McKenzie and Partington remained of this view in their February 2012 and August 2012 report, after having reviewed further materials submitted by businesses.[149] The AER accepts McKenzie and Partington's advice and considers their approach supports an MRP estimate of 6 per cent.

Lally's advice

Associate Professor Lally reviewed the AER's current approach and three approaches suggested by CEG. Lally found a number of problems with the CEG DGM approach and concluded DGM should be considered as a complement to rather than a substitute for the AER's current approach.[150]

The AER considers that Lally broadly supported the methodology to estimating the MRP adopted by the AER. In addition to the historical excess returns and survey evidence, Lally advised weight should also be placed on other methodologies including the Siegal approach, the DGM analysis and results from international markets.[151]

SFG's method

SFG proposed the three financial market indicators (implied volatility, credit spread and dividend yield) for estimating a 10 year forward looking MRP:

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146 For example, NERA estimated the probability of the market remaining in the high volatility state was 0.935 per cent and the probability of it remaining in the low volatility state was 0.951 per cent. However, NERA estimated probability of the high volatility state for 2012–2016 based on the probability of it remaining in the low volatility state (0.951).

147 McKenzie and Partington, *MRP: Regime switching framework and survey evidence,* September 2012, pp. 21–22.

148 McKenzie and Partington, *Equity market risk premium*, December 2011, pp. 36–37.

149 McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p. 5.
McKenzie and Partington, *MRP: Regime switching framework and survey evidence*, September 2012, pp. 24–25.

150 Lally, *Cost of equity and the MRP*, July 2012, p. 3.

151 Lally, *Cost of equity and the* MRP*,* July 2012, p. 34.

- Implied volatility relies on contentious assumptions to derive an MRP estimate.[152] In particular, the assumption that the price of risk per unit of implied volatility is constant is disputed on theoretical and empirical grounds.[153] As noted above, this method provides only a short term estimate of the MRP (usually three months, matching the term of the implied volatility measure), and the AER is unaware of any settled method to extrapolate to a longer term. Given the relevant MRP is the 10 year forward looking rate, the AER placed limited weight on the MRP estimate derived on this basis.

- Credit spread refers to the difference in yields between bonds with high (AAA rated) and low (BBB rated) credit ratings. Similarly, relative debt spreads will differ based on the method chosen to measure the bond yields. McKenzie and Partington noted this method has no well developed, reliable and precise way to separate out the effect of changes in the MRP from other effects.[154] Given this key limitation to the credit spread analysis, the AER placed limited weight on this method when determining the 10 year forward looking MRP.

- Dividend yield in this context this is calculated for the entire market, using forecast distributions (dividends) for all firms in a broad share market index divided by the total value of those shares. The dividend yield estimate will differ based on the choice of index, the method of obtaining and aggregating dividend forecasts, and the horizon of those dividend forecasts. The AER considers the key limitation is the unclear relationship (if any) between dividend yield and the 10 year forward looking MRP.

Section B.2.6 details the AER's assessment of the three financial market indicators.

VAA's implied volatility approach

In its 2010 report, the VAA suggested an implied volatility glide path approach in estimating the MRP.[155] It derived the one year MRP estimate from the Black-Scholes option pricing formula for 12 month ASX200 index call options, then estimated a geometric average MRP over five years. The AER considers this approach is not a reliable method of estimating a forward looking 10 year MRP. It has the following concerns with this approach:

- The MRP estimate relies on an assumption that the market risk per unit of option implied volatility is constant at 0.5.

- Academic literature suggests option implied volatility is too highly variable to be used as a basis for estimating the forward looking 10 year MRP.

- Projecting MRP estimates on this short term basis can result in highly variable estimates being produced over different short periods of time.[156]

Section B.2.7 details the AER's consideration of implied volatility.

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152 Further, the appropriate measure of implied volatility is difficult to determine, with different measures (based on different underlying options) producing conflicting figures.

153 See discussions in AER, *Draft decision*: *Envestra Ltd*: *Access arrangement proposal for the SA gas network 2011–2016*, 17 February 2011, pp. 282–283 (AER, *Draft decision: Envestra access arrangement SA*, February 2011).

154 McKenzie and Partington, *Equity market risk premium*, December 2011, pp. 30–31.

155 VAA, *Market risk premium: Comments on the AER draft distribution determination for Victorian electricity distribution network service providers,* July 2010, p. 19 (VAA, *MRP for Vic electricity DNSPs*, July 2010).

156 The Australian Competition Tribunal also recognised this view, in the DBNGP decision. See: Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14,* 26 July 2012, paragraphs 153–154.

B.2.5 NERA's regime switching model

NERA estimated an MRP of 8.44 per cent from the regime switching model. NERA submitted this estimate provided the most suitable guide to the MRP prevailing in the market because it provided an estimate of the MRP in each future year.[157]

NERA's regime switching model was based on Hamilton (1989), in which the probability of being in each state is governed by a Markov chain (the probability of being in the high-volatility state next year will depend only on whether the process is currently in the high-volatility state). It calculated continuously compounded MRP estimates for each of the five future years using Brailsford, Handley and Maheswaran (2011) data and annualised 3 month bill rates. NERA then converted these continuously compounded MRP estimates into average not continuously compounded return of 8.44 per cent. [158] SFG peer reviewed NERA's regime switching model. SFG concluded NERA approach is appropriate for obtaining a prevailing MRP estimate in current circumstances.[159]

The AER engaged McKenzie and Partington to review this approach. They concluded the NERA regime switching model was not a good fit of the data and did not provide sensible volatility estimates. McKenzie and Partington fitted Handley (2012) data to a number of models. Although none of the switching models fit the data particularly well, relatively, the restricted switching model was the best fit. Further, McKenzie and Partington examined a simple GARCH model and found this model was more consistent with events in the equity markets than regime switching models. They advised the AER to reject NERA's approach on the grounds of misspecification of the functional form of the model.[160]

The AER notes McKenzie and Partington's view is relevant. It does not consider NERA's regime switching model can provide the best MRP estimate prevailing in the market when this model is misspecified. The AER also notes this model uses a Markov chain to govern the transition from one state to another. The stochastic nature of the states implies there is great uncertainty of the estimated current state. Tsay (2010) noted it is much harder to estimate a Markov switching model than other models because the states are not directly observable.[161] Mckenzie and Partington illustrated this uncertainty with the Brailsford, Handley and Mahareshwan (2012) data:

> ... Figure [9] also features two horizontal dashed lines that represent one and two standard deviations of this data. These standard deviation based reference points serve to highlight the arbitrary nature of the two regime approach NERA (2012) take to modelling volatility. One could just as easily argue that rather than two regimes (high and low), a three regime approach is more sensible with a low, average and high volatility regime classified using these standard deviation based reference points. In fact, an n-regime approach is possible, where n is > 1, with no compelling argument to be made

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157 NERA, *Prevailing conditions and the MRP*, March 2012, p. 42.

158 NERA, *Prevailing conditions and the MRP*, March 2012, pp. 24–31.

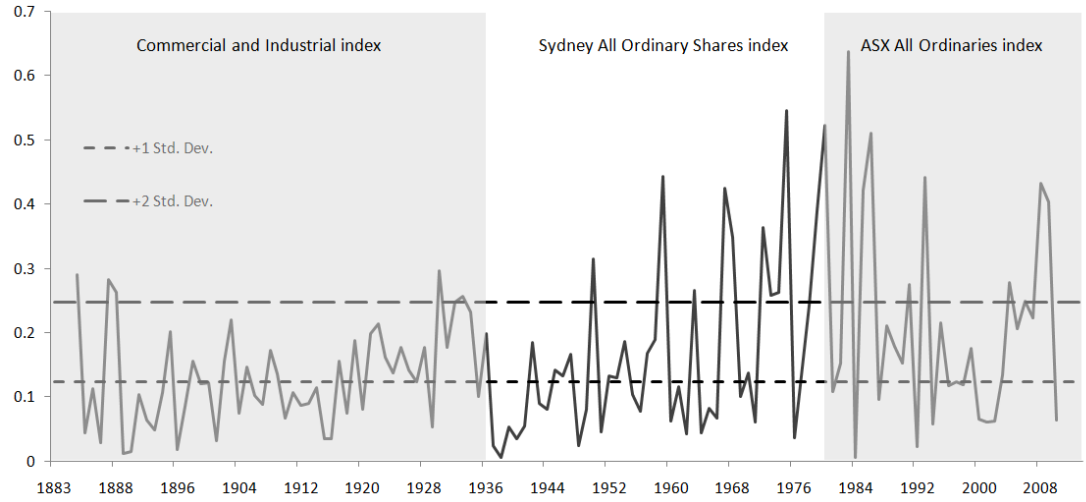
159 SFG, *Review of NERA regime-switching framework: Report for APA Group, Envestra, Multinet Gas and SP AusNet*, 29 March 2012, p. 8 (SFG, *Review of NERA regime-switching framework*, March 2012).

160 McKenzie and Partington, *MRP: Regime switching framework and survey evidence*, September 2012, pp. 5–25.

161 R. Tsay, *Wiley series in probability and statistics: Analysis of financial time series*, Wiley: Third edition, 2010, p. 187.

for any one approach. The two regime model is certainly easier to estimate, however, ease of estimation is not a particularly valid justification for model choice.[162]

Table B.7 Brailsford, Handley and Mahareshwan (2012) data with different source indices highlighted



Source: McKenzie and Partington, *Review of regime switching framework and critique of survey evidence*, 27 August 2012, Figure 9

B.2.6 SFG financial market indicators

The AER considered the use of other financial market indicators put forward in recent SFG reports as relevant to the estimation of the prevailing MRP. SFG used three financial market indicators—implied volatility, dividend yields and relative debt spreads—as 'conditioning variables' to adjust the MRP estimate around its long run average.[163]

The SFG approach using financial market indicators was put forward:

- by Envestra in March 2011 as part of the South Australia and Queensland gas access arrangements[164]
- by APTPPL (a subsidiary of APA Group) in October 2011 as part of the Roma to Brisbane Pipeline gas access arrangement[165]
- by the Victorian electricity distribution network service providers (noting the overlap in ownership between these businesses and the Victorian gas networks) in a February 2012 submission on Aurora's regulatory determination[166]

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162 McKenzie and Partington, *MRP: Regime switching framework and survey evidence*, September 2012, p. 20.

163 SFG, *Market risk premium: An updated assessment and the derivation of conditional and unconditional estimates: Report for the Victorian electricity distribution businesses*, 20 February 2012, pp. 8–13, 26–30 (SFG, *Conditional and unconditional MRP for the Vic DNSPs*, February 2012).

164 SFG, *Issues affecting the estimation of MRP: Report for Envestra*, 21 March 2011.

165 SFG, *MRP for APTPPL*, October 2011.

166 SFG, *Conditional and unconditional MRP for the Vic DNSPs*, February 2012.

This technique was not proposed by APA GasNet in this review. The Victorian gas networks (including APA Group) did jointly commission two reports from SFG on the estimation of the MRP,[167] but neither report included this technique.

Before assessing the combined SFG approach, the AER considers below each of the three financial market indicators put forward by SFG as relevant to the estimation of the MRP.

Implied volatility

Implied volatility is calculated from observing the price of put or call options over a broad share market index, such as the S&P/ASX 200. Applying a mathematical formula allows the calculation of the level of market volatility expected by market participants over the life of the underlying options.[168] Hence, the term of the implied volatility will accord with the option term—usually three months, but ranging between one year and one month.[169] The underlying principle is that higher implied volatility is indicative of higher risk and consequently a higher MRP.

The AER considered the use of implied volatility to inform the forward looking MRP in the WACC review and its previous decisions.[170] The AER considers it cannot be used directly to estimate the MRP for the following reasons:

- Term mismatch—the implied volatility measures are short term and there is no reasonable method to extrapolate to a longer term, but the relevant MRP term is 10 years.[171]
- Measurement problems—different implied volatility measures produce different (and sometimes conflicting) results. Further, there is evidence that these measures are systematically biased (upwards).[172]
- Contentious assumptions—observing the amount of risk (via implied volatility) does not equate to the price of that risk (which is what is relevant to the MRP). This gap is most commonly breached by assuming a constant ratio (for example, if the current implied volatility is double the long run average, then the MRP will also be double its long run average. This assumption is disputed on theoretical and empirical grounds.[173]

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167 SFG, *Review of NERA regime-switching framework,* March 2012; and SFG, *Market risk premium: Response to selected issues arising out of the AER final decision for Envestra (South Australia): Report for APA Group, Envestra, Multinet and SP AusNet*, 29 March 2012 (SFG, *Response on MRP for the Vic DNSPs*, March 2012).

168 The Black-Scholes option pricing model is most often used, but other methods are possible.

169 To clarify, options are sold with different maturities beyond this range, but the implied volatility calculations are found only at these short term horizons.

170 See AER, *Final decision: WACC review*, May 2009, pp. 231–234; AER, *Draft decision: Envestra access arrangement SA*, February 2011, pp. 282–283; and AER, *Final decision: Envestra access arrangement SA*, June 2011, pp. 196–197.

171 See the discussion below on the VAA implied volatility glide path approach; also see AER, *Draft decision: Envestra access arrangement SA*, February 2011, pp. 282–283; and AER, *Final decision: Envestra access arrangement SA*, June 2011, pp. 196–197.

172 See the discussion of Chernov (2007) and Santa-Clara and Yan (2010) in AER, *Draft decision: Envestra access arrangement SA*, February 2011, pp. 282–283; and AER, *Final decision: Envestra access arrangement SA*, June 2011, pp. 196–197.

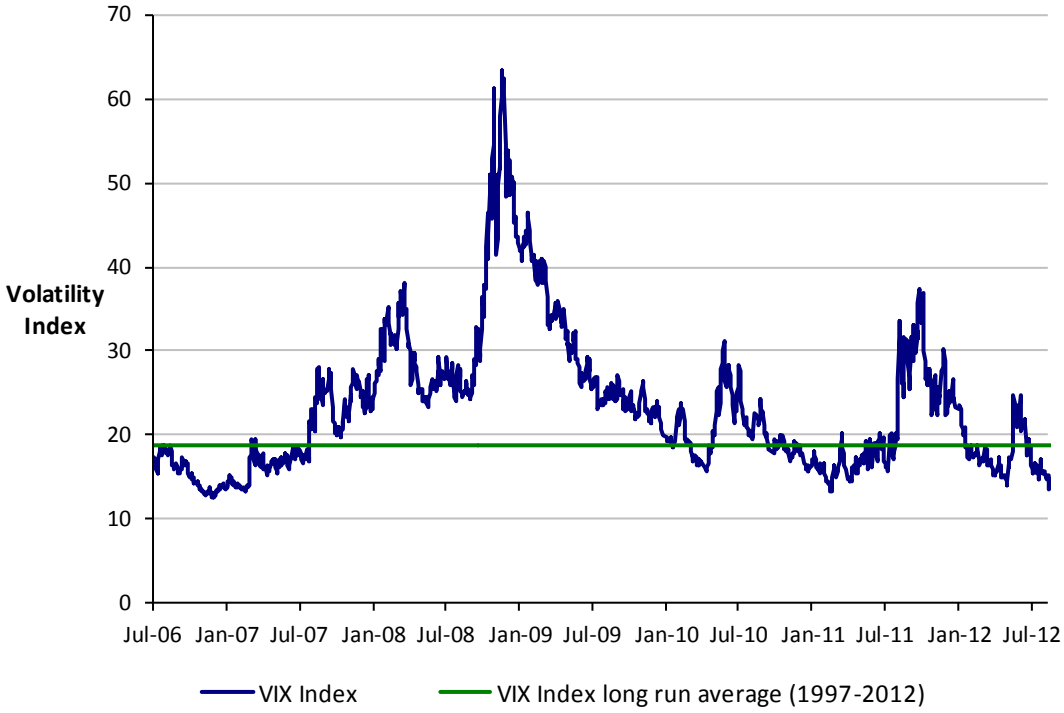
173 McKenzie, and Partington, *Supplementary report on the MRP*, February 2012. Also see the discussion of Doran (2005) in AER, *Draft decision: Envestra access arrangement SA*, February 2011, pp. 282–283; and AER, *Final decision: Envestra access arrangement SA*, June 2011, pp. 196–197.

The AER's view is shared by McKenzie and Partington who concluded in their February 2012 supplementary MRP report:[174]

> Further work on this technique (implied volatility) might be warranted, but given the current state of play it could hardly be regarded as a validated method, let alone an accurate and reliable adjustment to the MRP.

When using its conditioning variables approach, SFG assessed implied volatility using 3 month options over the S&P/ASX 200 (labelled the Citibank Volatility Index or VIX). In its various reports, SFG stated that since the VIX was above its long run average, this indicated that the MRP was similarly above its long run average.[175] Figure B.7 shows the value of this measure of implied volatility relative to its long run average level across the period since the global financial crisis.

Figure B.7 Implied volatility (VIX) over time



Source: Citibank VIX implied volatility index (3 month put/call options on S&P/ASX 200), sourced via Bloomberg code CITJAVIX.

As is evident from this figure, implied volatility is quite variable and can change substantially in months. The AER considers that this variability suggests implied volatility is not a reliable method to estimate the MRP. Figure also shows that although implied volatility rose dramatically during the GFC, this peak has subsided and the level of implied volatility has dropped below the long run average on several occasions.

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174 McKenzie and Partington, *Supplementary report on the* MRP, February 2012, pp. 26–27

175 Since the SFG assessment of implied volatility is relative to the 'baseline' long run average, the choice of baseline period is particularly important to the final result. The AER has previously noted that SFG inappropriately chose a shorter (post 2000) baseline period in its analysis, rather than the longest available data series; see AER, *Final decision: APTPPL access arrangement*, August 2012, pp. 222, 225–226.

SFG advocated using the most recent data available when inferring the current MRP from implied volatility.[176] Using data updated to 10 August 2012, it measures at 15.2 per cent, slightly below the long run average of 18.8 per cent (measured from the commencement of the data series in 1997). If this latest point estimate is used to inform the forward looking 10 year MRP, it appears to support a value at or slightly below the long term average MRP (that is, 6 per cent).[177]

Credit spreads

SFG also proposed the use of credit spreads to inform the estimation of the MRP. The idea is that the difference between an index of the yield to maturity on BBB-rated bonds and a corresponding index of AAA-rated bonds proxies for credit or default risk. During recessions, this debt yield spread widens, commensurate with an increase in risk premiums generally which implies a higher risk premium for equity.[178]

The AER considered the use of credit spreads to inform the forward looking MRP. But the AER considers a direct comparison of the yield on debt and the MRP is problematic. McKenzie and Partington supported this view for the following reasons:[179]

- McKenzie and Partington expected the widening credit spreads during the GFC were substantially driven by increasing concern about the risk of default and this concern dries up the liquidity in debt markets. A combination of default premiums and liquidity premiums, therefore drove up returns in debt markets.
- Given the GFC, the default risk component of the credit spread might reasonably be expected to have increased. Consequently, much of the change in debt yields during and after the GFC is likely due to a changed assessment of default risk.
- A key element of the GFC was increasing credit risk, with a widespread perception that default risk had increased sharply. Consequently, the expected cash flow on risky debt declined, which caused the price of the debt to fall. Because the yield is calculated on the promised cash flow relative to the price, the yield on risky debt went up and the credit spread widened. This outcome would have happened even if the MRP, or debt betas, did not change.
- An increase in credit spreads due to increased default risk does not automatically require a shift in the MRP. The MRP is an expected return and the yields on debt are a promised return. The promised return is only the same as the expected return for debt when there is no default risk. For all other debt the promised return is higher than the expected return. Because the debt yield and the MRP measure different things, effectively they are measured in different dimensions, they are not constrained to move in the same way and comparisons between them can be misleading.

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176 However, it appeared that SFG did not always update its reports to include the most recent data, even allowing for a short practical delay encompassing analysis and publication. See AER, *Final decision: APTPPLaccess arrangement*, August 2012, pp. 218–226.

177 Briefly, the proposed relationship is that the current value of implied volatility relative to its long term average is indicative of the current value of the market risk premium relative to its long term average.

178 SFG, *MRP for APTPPL*, October 2011, p. 11.

179 McKenzie and Partington, *Supplementary report on the* MRP, February 2012, pp. 21–23.

Dividend yields

Dividend yields refer to the forecast dividends (or other distributions) for all shares in a broad based market index divided by the current price of all shares in that index. A data provider generally aggregates the dividend forecasts from reports by different equity analysts, with the forecast horizon generally one year. The dividend yield is thus a simple indicator of the expected return to equity holders through dividends (although not allowing for capital gains/losses or imputation credits) over the next year. While closely related to the DGM, dividend yields are a different direct indicator of MRP.[180]

SFG stated higher dividend yields indicate a higher MRP. It is based this claim on several academic studies that found a statistically significant relationship when using dividend yields to predict equity market returns. [181] The intuitive explanation was that when dividend yields were high, a given set of cash flows was being discounted at a higher rate, indicating a higher MRP. In the February 2012 report, SFG estimated the dividend yield for the Australian share market at 31 January 2012 was 4.69 per cent. This value was above the long run average dividend yield, supporting an MRP above its long run average (SFG proposed 7 per cent).[182]

But the AER does not use the dividend yield approach to inform its MRP estimate because evidence of a relationship between the two is insufficient. While the AER acknowledges the three reports cited by SFG[183] a broader consideration of the academic literature (by McKenzie and Partington) does not indicate the relationship is statistically reliable.[184] The AER agrees with McKenzie and Partington's conclusion on this matter:[185]

> SFG presents the dividend yield as a conditioning variable as though it were established fact. In contrast, in our main report we begin by excluding consideration of predictive models based on dividend yield. This is because in our view, this is still a developing area of research, rather than a well developed practical tool. We are not alone in this view as it is shared by others such as Dimson, Marsh and Staunton (2011), who are leading scholars in the area of the MRP.

The AER considers the underlying mechanism relating dividend yields and the MRP (as presented by SFG) is not persuasive. SFG appears to overlook other factors that could result in a higher observed dividend yield even when the MRP was unchanged (or lower).[186] The forecast horizon for the dividends is short (generally one year); so a reduction in expected dividends beyond this point would result in a lower price and a higher dividend yield. That is, a change in expected cashflow (not the discount rate or MRP) explains the result. McKenzie

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180 More specifically, the DGM includes consideration of changes in dividends beyond the immediate dividend forecast horizon.

181 SFG, *MRP for APTPPL*, October 2011, p. 9.

182 Specifically, SFG stated that the current dividend yield was 1.02 standard deviations above the long run average. The AER does not consider this calculation to be correct, and discusses this later in the decision. SFG, *Conditional and unconditional MRP for the Vic DNSPs*, February 2012, p. 29.

183 Fama and French (1988, 1989) and Keim and Stambaugh (1986); see also Cochrane (2011) cited by McKenzie and Partington.

184 For example, papers by Stambaugh (1999); Fisher and Statman (2000); Goyal and Welch (2003); Armitage (2011), Dimson, Marsh and Staunton (2011); Jun, Gallagher and Partington (2011); and Min (2011). Papers cited in McKenzie and Partington, *Equity market risk premium*, December 2011, p. 4; and McKenzie and Partington, *Supplementary report on the MRP*, February 2012, pp. 13–14, 23–25.

185 McKenzie and Partington, *Supplementary report on the MRP*, February 2012, p. 23.

186 Other techniques build on the dividend yield approach in an attempt to address these shortcomings. The DGM projects dividend movements beyond the immediate dividend forecast horizon. The SFG 'market based' assessment using dividend yields combines the dividend yield with a forecast for capital gain/loss.

and Partington explained this point.[187] The dividend yield calculation does not account for expectations about capital gain or loss. So, a change to expect relatively more of the total return from dividends instead of capital appreciation would also result in a higher dividend yield, even if the MRP did not change.

Finally, as with the other financial market indicators, as assessed higher than average dividend yield is predicated on an accurate estimate of the baseline figure. SFG calculated its long run average using data from 2000, but did not justify using this time period.[188] In this case, the relevant data series is available back to 1973.[189] Using the longer data series would result in a higher baseline dividend yield. In turn, this increase would reduce the extent to which the current dividend yield was above the average and thus support a lower MRP.

Updated data using SFG method

Across recent reports, the conditioning variables presented by SFG have been relatively high. The core argument from SFG is that where there is a consistent pattern across these three financial market indicators, the prevailing MRP will be consistent with this pattern. For instance, if all three indicators are above their long run average, the prevailing MRP will be similarly above its long run average.

Table B.8 summarises the SFG results by presenting one key figure for each variable—the standardised difference between the current value and the long run average. 'Standardised' means that the difference is expressed in terms of the standard deviation for that data series. For example, a standardised value of +1.5 means that the current value is above the average value by 1.5 times the standard deviation for that series.

Table B.8 Conditioning variables presented by SFG in recent reports

SFG report date	Implied volatility	Dividend Yield	Relative debt spread
March 2011	+0.80	+0.44	+0.87
October 2011	+2.17	+1.59	+0.77
February 2012	+2.17	+1.02	+1.95

Source: SFG figures provided to the AER, AER analysis

The AER updates the SFG data using a baseline that encompasses the longest available data series. Table B.9 shows the standardised difference between the current value and long run average for the three financial market indicators. However, the AER does not update the relative debt spread figures, because there is no reasonable data available. The table includes the uncorrected relative debt spread figures for comparative purposes.

Table B.9 Conditioning variables after correction

Data period	Corrected implied volatility	Corrected dividend yield	Uncorrected relative debt spread

[187] McKenzie and Partington, *Supplementary report on the MRP*, February 2012, pp. 12–13.
[188] SFG, *Conditional and unconditional MRP for the Vic DNSPs*, February 2012, p. 12.
[189] That is, the data series used by SFG and provided by them to the AER commences at this point.

To 15 March 2011	+0.10	+0.10	+0.87
To 23 September 2011	+2.25	+1.17	+0.77
To 31 January 2012	–0.12	+0.53	+1.95
To 10 August 2012	–0.49	+0.76	NA

Source: SFG figures provided to the AER, Bloomberg, AER analysis
Notes: The dates of the first three rows coincide with the data presented in the three SFG reports. The Datastream data on the relative debt spread (used by SFG) is not available to the AER and so cannot be updated. The Datastream data on dividend yields is not available to the AER, but an alternative series from Bloomberg has been used (correlation of 0.97).

As is evident in Table B.9, based on recent data, there is no consistent pattern across these three indicators. Implied volatility is slightly below its long run average. Dividend yield is slightly above its long run average. It is difficult to speculate on the value of an updated relative debt spread (the most recent SFG figure is now 7 months out of date).[190]

The AER does not consider SFG's approach, using three financial market indicators to establish a conditional MRP, is a relevant basis to estimate a forward looking 10 year MRP. However, even if weight were to be given to this approach, it would support an MRP of 6 per cent.

B.2.7 VAA implied volatility glide path

VAA previously proposed the use of option implied volatility combined with a 'glide path' to estimate the forward looking MRP.[191] The VAA approach has been put forward:[192]

- by the Australian Pipeline Industry Association (the industry group that represents all of the Victorian gas networks) in its January 2009 submission to the AER's WACC review[193]
- by the Victorian electricity distribution network service providers (noting the overlap in ownership between these businesses and the Victorian gas networks) in their 2010

190 To prevent misinterpretation, the AER does not consider that this figure is reliable.

191 The AER has previously referred to this technique as 'Officer and Bishop's implied volatility glide path', recognising that the authors of the VAA reports mentioned in this section are Professor Bob Officer and Dr Steven Bishop.

192 In addition to those listed below, the VAA approach has also been put forward by ETSA (SA electricity transmission) in June 2009, Westnet Energy (WA gas distribution) in December 2009 before the ERA, in a published journal article, and by NBN Co (national telecommunications) in December 2011 before the ACCC. VAA, *Market risk premium: An estimate for 2010 to 2015: Prepared for ETSA*, June 2009; VAA, *Market risk premium: Estimate for January 2010 – June 2014: Prepared for WestNet Energy*, December 2009; S. Bishop, M. Fitzsimmons, and B. Officer, *JASSA The Finsia Journal of Applied Finance*, 'Adjusting the market risk premium to reflect the global financial crisis', May 2011 (Issue 1 2011), pp. 8–14 (Bishop, Fitzsimmons and Officer (2011)); and VAA, *Report on WACC component of NBN Co's Special Access undertaking*, December 2011.

193 VAA, *Market risk premium: Further comments: Prepared for Energy Networks Association, Australian Pipeline Industry Association and Grid Australia*, January 2009.

regulatory determination,[194] as well as the 2011 Advanced Metering Infrastructure determination[195]

- by Envestra in the South Australia and Queensland gas access arrangements in 2011.[196]

The AER considered this approach, although APA GasNet did not propose it in this review.

Like the DGM and NERA's regime switching model, the VAA's approach estimates the prevailing MRP. Since the MRP estimate generated from implied volatility will have the same horizon as the underlying options, VAA estimated the MRP based on a 'glide path' approach. The basis of this technique is to:

- first, estimating the volatility implied by the Black-Scholes option pricing formula for 3 month or 12 month S&P/ASX 200 index options.
- second, converting this to a short term (3 month or 12 month) estimate of the MRP by assuming a constant market risk per unit of option implied volatility (in the range of 40–50 basis points per unit of risk)
- third, estimating the geometric average MRP over five years assuming the MRP would revert (glide) down from the short term MRP estimate to a long term historical average.

VAA has considered different possible glide paths, such as a quicker return to the long term average, or a sustained elevated period before the decline commences. VAA has also given some consideration to 1 month and 6 month options, overseas implied volatility estimates, and the use of realised volatility (that is, the observed historical volatility using a rolling window containing the previous 30 or 90 days of data) as a proxy for implied volatility.

The AER has already set out above (in the discussion of SFG's approach using financial market indicators) concerns with using implied volatility when estimating the MRP. Further to those general concerns, the AER considers that the VAA implied volatility approach:

- inappropriately determines the baseline long run average implied volatility by using a different data series—the realised volatility of a 90 day data window for the S&P/ASX 30 from 1980 onwards.[197] Using this (historical) realised volatility series results in a long run average volatility of 14 per cent. The actual long run average of one of the (forward looking) implied volatility series used by VAA (3 month VIX) s 18.8 per cent. Adopting the higher baseline would reduce the MRP estimated using the VAA approach in all scenarios.
- incorrectly calculates the price per unit of implied volatility using a 'long run historical average MRP' of 7 per cent, when the evidence indicates that this value is 6 per cent.[198]

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194 VAA, *Market Risk Premium, Estimate for 2011–2015, Draft*, October 2009; and VAA, *MRP for Vic electricity DNSPs*, July 2010. Note that although labelled as 'draft', the October 2009 report was submitted by the service provider as a finalised report.

195 VAA, *Market Risk Premium, An update prepared in response to the draft determination by the AER on the Victorian Advanced Metering Infrastructure Review: 2012–15 budget and charges applications*, August 2011.

196 VAA, *Comments on the Market Risk Premium in Draft Decision by AER for Envestra February 2011*, March 2011 (VAA, *MRP for Envestra*, March 2011).

197 VAA, *MRP for Envestra*, March 2011, p. 4 (footnote 7). Further, VAA appears to end its baseline period in 2009 even when using implied volatility data up to the end of 2010. See Bishop, Fitzsimmons, and Officer (2011), pp. 9, 14 (endnote 5).

198 The AER sets out earlier in this decision its analysis of the historical excess return series.

Adopting the lower historical average MRP would reduce price per unit of volatility, which in turn reduces the MRP estimated using the VAA approach in all scenarios.

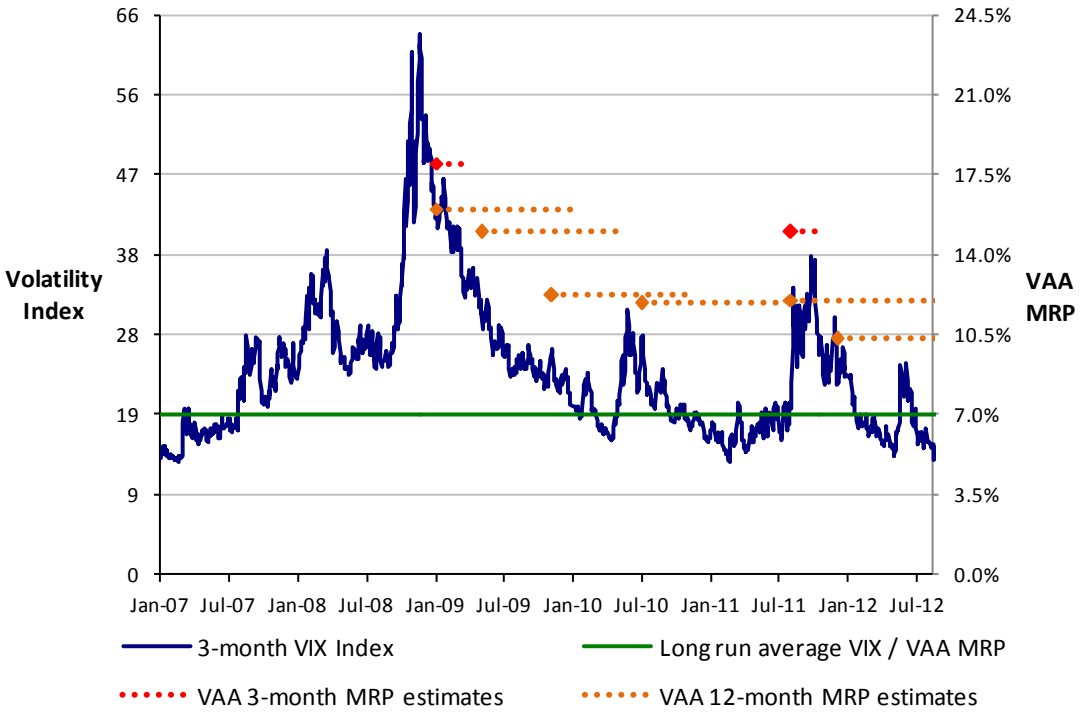
The AER also has concerns with the glide path approach used to extend this (short term) implied volatility estimate. The glide path approach incorporates a variable three or twelve month estimate of implied volatility and then combines it with a long term historical estimate over a five year time horizon.[199] The AER has previously noted the realised MRP could be below long term estimates in some years. The glide path approach excludes this possibility by construction. The AER also noted that the VAA approach averages five years of MRP estimates, and that this is inconsistent with the 10 year horizon assumed for the risk free rate. Further, the time period for reversion cannot reasonably be determined. Figure B.1 demonstrates that from the peak, it took just 15 months for implied volatility to fall back below its long run average. This is considerably shorter than the three year reversion period preferred by VAA in their reports.

As noted above, although implied volatility was high during the worst of the GFC, the current level is below the long run average. Using data updated to 10 August 2012, it measures at 15.2 per cent, slightly below the long run average of 18.8 per cent (measured from the start of the data series in 1997). It is not entirely clear what glide path would be proposed by VAA in these circumstances, since no VAA report has been submitted where implied volatility was below the long run average.

Figure B.8 shows the same implied volatility measure as the previous figure, generated from 3 month options on the S&P/ASX 200 (plotted against the left hand axis). Superimposed on this are a number of MRP estimates submitted by VAA (plotted against the right hand axis), with a diamond marking the date of the report. These are the implied volatility estimates prior to the application of a glide path. Accordingly, the MRP estimates are for either 3 months or 12 months, as per the underlying option—this is shown by a dashed line extending across the relevant time period. This figure has been rescaled such that the long run average volatility (18.8 per cent, plotted against the left hand axis) matches the long run average MRP proposed by VAA (7 per cent, plotted against the right hand axis).

[199] A geometric average of the five years is used.

Figure B.8 Implied volatility and VAA MRP estimates



Source: Citibank VIX implied volatility index (3 month put/call options on S&P/ASX 200), sourced via Bloomberg code CITJAVIX; VAA reports; AER analysis

Figure B.8 shows the central relationship of the VAA implied volatility glide path approach—where the implied volatility is above its long run average, VAA considers that the MRP will also be above its long run average. In current circumstances, where implied volatility is below its long run average, the VAA approach to estimating the prevailing MRP would indicate that it is below the long run average.

The AER does not consider that VAA's implied volatility glide path approach is a relevant basis to estimate a forward looking 10 year MRP. However, even if weight were to be given to this approach, it would support an MRP estimate of 6 per cent (or slightly below).

B.2.8 Market commentary and economic outlook

General market commentary and economic outlook provided by eminent bodies gives useful insights into the current and future state of the financial market. However, because most commentaries do not specifically refer to returns in equity markets, the link between the market commentary and the MRP is difficult to quantify. Consistent with comments by the Australian Competition Tribunal in a recent decision[200] and the views of Multinet[201] and SFG[202], the AER places limited weight on this evidence.

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200 Australian Competition Tribunal, *Application by Envestra Limited (No 2) [2012] ACompT 4*, 11 January 2012, paragraph 161.

201 Multinet, *Access arrangement information*, 30 March 2012, Appendix H-1, pp. 5–6.

202 SFG, *Response on MRP for the Vic DNSPs*, March 2012, pp. 18–19.

B.2.9 Reasons for the AER's departure from the WACC review

The AER agrees with the view of APA GasNet and SFG that the AER's decision to increase the MRP to 6.5 per cent in mid 2009 was not well justified.[203] It was being conservative at a time of significant uncertainty. In the WACC review at that time, the AER considered a range of evidence to decide on the best estimate of the forward looking 10 year domestic MRP. Acknowledging significant uncertainty in financial markets, it considered one of two scenarios could explain the market conditions:

- either the prevailing medium term MRP was above the long term MRP, but would return to the long term MRP over time, or
- a structural break had occurred in the MRP, and the forward looking long term MRP (and thus also the prevailing MRP) was above the long term MRP that previously prevailed.[204]

These reasons led to the AER's departure from the previously adopted value of 6 per cent.
The global financial crisis (GFC) was a significant event, and its magnitude should not be understated. However, the impact of the GFC for Australian capital markets was moderate relative to international experience. The alternative scenario contemplated by the AER in the WACC review does not warrant keeping the MRP above the long run average in perpetuity. Information and data available since the release of the WACC review suggests the prevailing medium term MRP has not been above the long term MRP. The AER reached this conclusion based on the following evidence:

- Survey measures since the height of the GFC accord with those from before the GFC.[205]
- Implied volatility since the height of the GFC has returned to its long run average.[206]

Cyclical trends are observed in financial markets over time and typically involve shifts between periods of strong economic growth (boom) and periods of relative stagnation or sharp decline (recession). The fluctuations in financial markets are unpredictable, and cycle duration varies from more than a year to 12 years.[207] When an investor considers the likely return across a 10 year horizon, these cyclical fluctuations are a normal experience. The long term expected return takes account of the expected future investment growth and decline. That is, the long term MRP has always been determined in the inevitable presence of these business cycles.

McKenzie and Partington noted the AER's decision in the WACC review to increase the MRP to 6.5 per cent was not well justified. In their February 2012 MRP report, they stated:

> We further consider that the decision to increase the MRP by 0.5% for a ten year regulatory period was not well justified as we would not expect the crisis conditions and extreme volatility to extend over such a long period. With the benefit of observing what has happened post-GFC it is appropriate for the AER to move back to the relatively safe

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203 APA GasNet, *Access arrangement submission,* 31 March 2012, p. 145.
204 AER, *Final decision: WACC review,* May 2009, p. 238.
205 See Fernandez (2009), Fernandez and Del Campo (2010), Fernandez et al. (2011), Asher (2011).
206 For clarity, the AER notes the differing opinions on the implications of implied volatility measurements for the long run MRP. This statement does not depend on such an assessment. Rather, the return of the implied volatility index to the pre-GFC average indicates this indicator of financial markets conditions did not undergo a structural break.
207 Burns and Mitchell, *Measuring business cycles*, National Bureau of Economic Research, 1946.

> ground of the unconditional MRP of 6% rather than persist with the conditional MRP of 6.5%. To put it another way the conditions justifying the shift to a conditional MRP have substantially abated so there is good reason to move back to the unconditional MRP.[208]

The AER has developed its understanding since the WACC review. Now, rather than increasing the MRP due to any short term effects, it considers it is reasonable to determine a long term (10 year) forward looking MRP.

The Energy Users Coalition of Victoria (EUCV)supported this view:

> Regulated firms were supportive of the AER increasing the MRP in the depths of the GFC because the outcome increased their WACCs at a time when there was great uncertainty. The result of this move was to over-provide a rate of return for a considerable period and provide an unearned and unnecessary benefit to regulated firms. Quite sensibly the AER reduced the MRP when stability returned to the market as a whole and it was seen that the WACC based on a MRP of 650 bp was then providing a WACC that was excessive. Such an approach reflected the requirement for setting an efficient WACC based on best practice – both aspects that are explicitly required by the Gas Rules.[209]

B.3 Reasonableness checks on overall rate of return

In attachment 4, the AER evaluates the evidence on each WACC parameter individually. It also takes into account the interdependencies between WACC parameters where relevant. In this section the AER evaluates the overall rate of return derived from the individual WACC parameter values. The AER considers its determined overall rate of return is commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.[210] In turn, the AER considers this overall rate of return provides a reasonable opportunity for APA GasNet to recover at least its efficient costs.[211]

In this appendix, the AER examines:

- assets sales
- trading multiples
- broker WACC estimates
- recent decisions by other regulators and the AER
- recent decisions by overseas regulators
- the relationship between the cost of equity and the cost of debt.

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208 McKenzie and Partington, Supplementary report on the MRP, February 2012, pp. 28–30.

209 Energy Users Coalition of Victoria, *Submission to the AER: APA GasNet access arrangement proposal,* 18 June 2012, p. 46

210 NGR, r. 87(1).

211 NGL, s. 24.

Recent regulated asset sales

For recent transactions of regulated assets, for which relevant data is available, the AER compares the market value (i.e. the sale price) with the book value (i.e. the regulatory asset base).

Over the past few years, regulated assets have generally been sold at a premium to the RAB. If the market value is above the book value, this may imply that the regulatory rate of return is above that required by investors. Conversely, when the market value is below the book value, this may imply that the regulatory rate of return is below that required by investors.

Caution must be exercised before inferring that the difference indicates a disparity in WACCs, particularly where the difference is small. A range of factors may contribute to a difference between market and book values. A RAB multiple greater than one might be the result of the buyer: [212]

- expecting to achieve greater efficiency gains that result in actual operational and capital expenditure below the amount allowed by the regulator
- increasing the service provider's revenues by encouraging demand for regulated services
- benefiting from a more efficient tax structure or higher gearing levels than the benchmark assumptions adopted by the regulator, and growth options
- expecting to achieve higher returns if regulation is relaxed.[213]

Regulated asset sales in the market are also infrequent allowing limited opportunity to conduct this analysis. This is of particular relevance at present as the AER is setting a lower overall rate of return than in previous decisions. While asset sales in the future may reflect changes to the overall rate of return that are occurring at present, sales that have already occurred will not.

Regulated asset sales do, however, provide a useful real-world indication of whether market participants consider the AER's benchmark WACC to be, broadly speaking, reasonable. The consistent positive trend as discussed below provides evidence that the AER's WACC approach is not unreasonable.

The RAB multiples from each of these transactions, together with the transactions discussed above, are summarised in Table B.10 from most recent to least recent.

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[212] Each of these reasons assumes the purchasing firm is making a rational purchasing decision. Another reason for a RAB multiple greater than one might be that the purchasing firm misjudged the value of the target assets and paid too much for those assets. Each transaction considered by the AER involved sophisticated investors with significant knowledge of the industry. Accordingly, the AER does not consider it likely that the RAB multiples greater than one result from poor valuations of the target assets.

[213] Grant Samuel & Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock and Brown Infrastructure*, 9 October 2009, p. 77 (Grant Samuel, *Expert report: Babcock and Brown Infrastructure*, October 2009).

Table B.10 Selected acquisitions – RAB multiples

Date	Acquirer	Entity/Asset acquired	RAB multiple (times)
Dec 2011	Marubeni Corp/RREEF	Allgas	1.20
Dec 2011	Marubeni Corp/RREEF	Allgas	1.02
July 2011	ATCO	25.9% of West Australian Gas Networks	1.20
July 2011	DUET	20% of Multinet Gas	1.13
July 2011	DUET	20% of Dampier to Bunburry Natural Gas Pipeline	0.95[214]
Dec-06	APA	Directlink	1.45
Oct-06	APA	Allgas	1.64
Aug-06	APA	APA GasNet	2.19
Apr-06	Alinta	AGL Infrastructure assets	1.41-1.52
Mar-06	APA	Murraylink	1.47

Source: DUET[215], APA[216], Grant Samuel, AER calculations.

In October 2010, Envestra purchased Country Energy's NSW gas network at a multiple of 1.25 times the 2010 RAB.[217] Further details on this transaction can be found in the AER's draft decision for the QLD/SA gas distribution networks.[218]

In July 2011, DUET sold its 25.9 per cent stake in West Australian Gas Network (WAGN) to ATCO Ltd in return for a 20 per cent interest in the Dampier to Bunbury pipeline (DBP) and a 20.1 per cent interest in Multinet.[219] These transactions were at multiples of 1.20, 0.95 and 1.13 respectively.

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214 Dampier to Bunbury Natural Gas Pipeline (DBNGP) presents an unusual case because it is 96% contracted until 2016 under shipper contracts. As the Economic Regulation Authority (ERA) of Western Australia states, these contracts 'are substantially independent of the access terms and reference tariffs established under the access arrangement for the DBNGP.' ERA, *Final decision: DBNGP access arrangement*, October 2011, p. 14. For this reason the DBNGP RAB multiple appears to be not driven by regulatory rates of return and does not provide a useful comparison for RAB multiples analysis.

215 DUET, *ASX announcement: Presentation to Macquarie Retail Adviser Network*, 19 January 2012, p. 3, viewed 9 February 2012, <http://www.asx.com.au/asxpdf/20120119/pdf/423tx0cd2v7qq3.pdf>.

216 APA Group, *ASX announcement: Completion of the sale of 80% of Allgas*, 16 December 2011, viewed 10 January 2012, <http://www.asx.com.au/asxpdf/20111216/pdf/423b5mnt9sqvzh.pdf> (APA Group, *ASX ASX announcement on sale of Allgas*, December 2011).

217 AER, *Final decision: Country Energy Gas Pty Ltd: Access arrangement proposal for the Wagga Wagga natural gas distribution network, 2010–2015*, March 2010 and Envestra, *ASX announcement: Envestra's to acquire NSW gas networks - Market presentation*, 26 October 2010, pp. 3, 6–7, viewed 10 January 2012, <http://www.asx.com.au/asxpdf/20101026/pdf/31tcv1nblp4xqc.pdf>.

218 AER, *Draft decision: Envestra access arrangement SA*, February 2011, p. 63.

219 DUET, *ASX announcement: Completion of AET&D sale process*, 29 July 2011, viewed 9 February 2012, <http://www.asx.com.au/asxpdf/20110729/pdf/420312nw1jxhdv.pdf>

In December 2011, APA divested 80 per cent of its holding of APT Allgas (a gas distributor in South East Queensland) to Marubeni Corporation and RREEF; each acquiring 40 per cent equity stakes.[220]

APA stated that net funds released from the sale were $477 million after transaction costs and the net enterprise value was $526 million.[221] Applying a RAB value, estimated at the sale date, to this enterprise value produces a multiple of 1.20.

This transaction involved the sale of both regulated and unregulated assets. Accordingly the RAB multiple may overstate the premium on the regulated assets as unregulated assets generally require a higher cost of capital.[222]

APA also stated that the sale price was in line with the book value of the assets. The gross sale price was $500.9 million, with the book value of assets sold at $488.8 million.[223] This equates to a multiple of 1.02. These multiples can be considered the upper and lower bound estimates of the RAB multiple for this transaction.

Other historical sales have been at premiums of between 20 and 119 per cent to the regulated asset base.[224]

As Grant Samuel has previously explained, listed infrastructure entities should theoretically trade at, and be acquired at, 1.0 times the RAB.[225] However, nearly all recent asset sales have been transacted at RAB multiples of greater than one.

Acquisition premiums have been substantial and are, as a result, unlikely to be solely explained by the factors noted above. This suggests that the regulated rate of return has been at least as high as the actual cost of capital faced by regulated businesses. Moreover, the consistency of the numbers across many transactions lends support to the conclusion that the regulated rate of return has been at least consistent with the efficient rate of return.

The AER notes that it is not possible to use RAB multiples analysis as an input when assessing individual parameters. The AER does not place any weight on this analysis during that process.

Recent regulated asset sales analysis provides a degree of confidence that the approach used in calculating the rate of return is reasonable. The AER has maintained a largely consistent approach to the calculation of the rate of return since the WACC review and that approach has been maintained for this decision.[226] This suggests the AER's approach in this decision will also provide APA GasNet with a reasonable opportunity to recover efficient costs.

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220 APA Group, *ASX announcement on sale of Allgas*, December 2011.

221 APA Group, *ASX announcement on sale of Allgas*, December 2011 .

222 Allgas is a holding company that also owns the unregulated Moura pipeline and the Gatton-Gympie easement.

223 Net proceeds after transaction costs was $478.4 million, with transaction costs of $22.5 million and a gain on sale of $12.1 million. APA Group, *Interim Financial Report for the half year ended 31 December 2011*, 22 February 2012, p. 3.

224 Grant Samuel, *Expert report: Babcock and Brown Infrastructure*, October 2009, p. 78.

225 Grant Samuel, *Expert report: Babcock and Brown Infrastructure*, October 2009, p. 77.

226 Changes have been made to the value of gamma, the value of the MRP and the estimation approach for the DRP.

Trading multiples

A comparison of the asset value implied by share prices against the regulatory asset base—often expressed as a 'trading multiple'—also provides insight into the required rate of return.[227]

As with regulated asset sales, a trading multiple above one may imply that the market discount rate is below the regulated WACC. The same cautions with interpreting the results of the regulated asset sales approach apply to trading multiples. In addition, this assessment relies on the assumption that share prices reflect the fundamental valuation of the company.

Recent broker reports have identified RAB trading multiples.[228] These multiples are consistently greater than one, as shown in Table B.11 to **Error! Reference source not found.**. None of these multiples are less than or equal to one.

Table B.11 JP Morgan trading multiples

Date of report	Company	2010–11	2011–12
10 August 2012	DUET	1.26	1.18
24 August 2012	ENV	1.20	1.25
27 August 2012	SKI	1.26	1.22
29 August 2012	SPN	1.21	1.20

Source: JP Morgan[229]

Table B.12 Macquarie trading multiples

Date of report	Company	2011	2012
1 August 2012	DUET	1.14	1.17
27 August 2012	SKI		1.35
28 June 2012	SPN	1.16	1.17

Source: Macquarie Group[230]

[227] The AER has not made any calculations of its own in this section. Trading multiples have only been stated where they could be identified in an external report.

[228] The AER has reported trading multiples from reports published in August 2012—noting that the brokers do not always provide these figures (one report from June 2012 was included). Where possible, trading multiples for the previous year have also been presented to provide context, but only for those broker reports where a recent (August 2012) update was available.

[229] JP Morgan, *Envestra Limited: FY12 Result - dividend growth held back by regulatory concerns*, 24 August 2012, p. 6; JP Morgan, *DUET Group: FY12 Result Preview*, 10 August 2012, p. 5; JP Morgan, *Spark Infrastructure Group: 1H12 result earnings strength driven by regulatory tariff increases*, 27 August 2012, p. 7; and JP Morgan, *SP AusNet: AER decision positive, but risk remains*, 29 August 2012, p. 9.

[230] Macquarie, *DUET Group, Curtain call,* 1 August 2012, p. 3; Macquarie, *Spark Infrastructure Group, ETSA sparkles through reliability*, 27 August 2012, p. 1; Macquarie, *SP AusNet, Cash generation set to improve*, 28 June 2012, pp. 1, 8.

Table B.13 Credit Suisse trading multiples

Date of report	Company	2012
7 August 2012	DUET	1.14
7 August 2012	ENV	1.32
7 August 2012	SKI	1.36
7 August 2012	SPN	1.14

Source: Credit Suisse[231]

Table B.14 Bank of America Merrill Lynch trading multiples

Date of report	Company	2012
23 August 2012	ENV	1.10
27 August 2012	SKI	1.39

Source: Bank of America Merrill Lynch[232]

Finally, Spark Infrastructure recently released a *Fact Book* showing an unadjusted trading multiple of 1.34 as at 24 February 2012. The *Fact Book* reports that this decreases to 1.10 when adjusted for total revenue excluding customer contributions.[233]

There are also other listed entities that hold regulated assets, such as APA and Hastings Diversified Utilities Fund. These companies are not conducive to RAB multiples analysis because they have a diverse portfolio of assets, sometimes unregulated, which makes it difficult to isolate the RAB.

Each of these figures cannot be considered definitive without careful consideration of the assumptions and methodologies used. They do, however, provide a useful insight into whether market analysts, and indeed industry analysts, consider the AER's benchmark WACC is appropriate. Importantly, each multiple is calculated after the GFC and also after the AER's WACC review.[234]

Recent comments by Macquarie in a broker report also suggest the AER's WACC approach does not under-compensate service providers:

> The importance of the RAB growth reflects our belief there is a sustainable arbitrage beyond the current regulatory period, that justifies paying a premium above RAB for these assets…This arbitrage reflects WACC calculations in the regulatory setting have a degree of conservatism.[235]

231 Credit Suisse, *Regulated Utilities Monthly*, *Sector review,* 7 August 2012, p. 10.

232 Bank of America Merrill Lynch, *Envestra Limited, Earnings review, Flat divi in FY13*, 23 August 2012, p. 5; Bank of America Merrill Lynch, *Spark Infrastructure Group, Earnings review, Solid underlying cash flows*, 27 August 2012, p. 5.

233 Spark Infrastructure, *2012 Fact Book*, 27 February 2012, p. 9.

234 While the WACC review has no legal standing under the NGL or NGR, the AER has maintained a largely consistent approach across gas and electricity decisions since the WACC review final decision was published.

235 Macquarie, *DUET Group: Limited RAB growth, At fair value*, 8 November 2011, p. 2.

Comments made by the AEMC in its recent Directions Paper also lend support to the AER's interpretation of broker reports and suggest the cost of debt may be a driver of the RAB multiple premiums:

> A number of these [broker] reports indicate that the recommended valuations placed on these businesses by the equity analysts assume an ability for the NSPs to raise debt at a rate lower than the cost of debt allowed by the regulator. A number of the reports have indicated that a major reason why they value the NSPs at above their RAB is due to their ability to out-perform their cost of debt allowance. [236]

When coupled with the consistently high multiples shown above, these comments suggest the regulatory rate of return has been at least as high as the actual cost of capital, and may have been in excess of it. The conclusion then is that the AER's approach to setting WACC parameters provides a degree of confidence that the rate of return has been reasonable. It also provides a degree of confidence that the rate of return has allowed service providers a reasonable opportunity to recover at least efficient costs.

As with recent regulated asset sales, the AER notes that it is not possible to use RAB trading multiples analysis as an input when assessing individual parameters. The AER does not place any weight on this analysis during that process.

However, recent regulated asset sales analysis may provide a degree of confidence that the approach used in calculating the rate of return is reasonable. The AER has maintained a largely consistent approach for calculating of the rate of return since the WACC review and that approach has been maintained for this decision.[237] This suggests the AER's approach in this decision will also provide APA GasNet with a reasonable opportunity to recover efficient costs. .

Broker reports

Equity analysts publish broker reports on listed companies operating regulated energy networks in Australia. These reports generally include WACC estimates along with a range of information, including analysis of current financial positions and forecasts of future performance.

In several previous decisions, the AER has used the WACC estimates from those broker reports as a reasonableness check on the rate of return determined by the AER through its detailed assessment of each individual parameter. In the *Envestra* matter, the Tribunal noted the reasons put forward by Envestra that the use of broker WACC estimates was an unreliable methodology. In response, the Tribunal stated:

> It is fair to note that, as to those matters, the AER largely recognised the possible reasons why broker estimates might be unreliable and sought to make adjustments in that light. More importantly. the Tribunal accepts the AER submission that it did not estimate the WACC or the DRP by reference to the broker reports. It used them as a "useful reasonableness check" that its WACC estimate did not produce results which did not broadly accord with a range of market opinions concerning firms that are a reliable

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[236] Australian Energy Market Commission, *Directions Paper*, 2 March 2012, p. 108.

[237] Changes have been made to the value of gamma, the value of the MRP and the estimation approach for the DRP.

> proxy to the benchmark firm. Its use of the broker reports was thus an "output" test of the nominal vanilla WACC rather than an input into its calculation of the WACC. [238]

The Tribunal emphasised that its finding that the AER's use of broker WACC estimates did not fall into reviewable error was in the context of the 'limited use' to which the AER applied the broker WACC estimates.[239]

Consistent with its approach in previous decisions, the AER uses broker WACC estimates as a reasonableness check on the overall rate of return.

The limitations of the use of broker WACC estimates include:

- the broker reports generally do not state the full assumptions underlying their analysis, or provide thorough explanations of how they arrive at their forecasts and predictions. As such, caution should be exercised in the interpretation of these broker reports[240]
- the five listed companies considered undertake both regulated and unregulated activities, which are assessed by the brokers in aggregate. However, only the regulated activities are directly relevant to the risk in providing reference services. It is generally considered that the regulated activities of the firms—operation of monopoly energy transmission and distribution networks—tends to be less risky than the unregulated activities they undertake in competitive markets. As the regulated activities tend to be less risky, the return required on these activities could be expected to be less than the return required by these firms as a whole.[241] This means that the overall WACC estimate implied by broker reports may overstate the rate of return for the benchmark firm
- it is generally not clear what assumptions the brokers have relied upon when developing their WACC estimate. Further, variation in WACC estimates suggests that these assumptions are not consistent across the different brokers
- the broker reports do not always provide sufficient information for the AER to calculate a nominal vanilla WACC estimate. Only those brokers who report the WACC in nominal vanilla form or provide sufficient detail to enable conversion to this form were considered. These figures are not necessarily precise estimates of the broker's nominal vanilla WACC, since the AER has relied on its interpretation of the information provided

Based on this analysis, Table B.15 sets out the range for the broker WACC estimates (converted to a nominal vanilla WACC) which is 7.76-10.02 per cent.[242] The nominal vanilla

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238 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012, paragraph 166.

239 Australian Competition Tribunal, *Application by Envestra Ltd (No 2) [2012] ACompT 3*, 11 January 2012, paragraph 167.

240 In particular, the AER considers that the price and dividend forecasts from these reports do not constitute a sufficiently reliable basis for calculation of an overall rate of return. However, the broker reports do often report discount rates, which are equivalent to the broker's estimate of the WACC for the company.

241 Associate Professor Lally makes this point in relation to dividend growth model (DGM) estimates of the cost of equity which are based on listed regulated energy networks. That is, he states that as the unregulated activities tend to be have higher risk, the estimated cost of equity (based on data which takes into account the entirety of the firm's activities) will tend to overestimate that for its regulated activities. Lally, *Cost of equity and the MRP*, July 2012, p. 14.

242 The table presents broker reports from August 2012.

rate of return determined by the AER for APA GasNet in this draft decision is 7.16 per cent. This is approximately 60 basis points below the range of the broker WACC estimates.

The AER considers that broker WACC estimates do not demonstrate that the overall rate of return, which is based on analysis of individual parameters, is not commensurate with prevailing conditions in the market for funds and the risk involved in providing reference services. For the reasons outlined in the specific parameter sections above, the AER is satisfied this is the case. The broker WACC technique is subject to known limitations and inherent imprecision. Further, the review of broker WACCs is the only aspect of the overall reasonableness check that has indicated a potential concern.

Table B.15 Broker WACC estimates (per cent)[a,b]

Measure	Minimum	Maximum
Broker headline post-tax WACC	6.50	8.60
Calculated nominal vanilla WACC	7.76	10.02

Source: AER calculations.
a Issuers of broker reports considered: Credit Suisse, Goldman Sachs, JP Morgan, Deutsche Bank.
b Regulated energy networks evaluated in broker reports: APA , DUET Group, Envestra Limited, Spark Infrastructure Group, SP AusNet.

Recent decisions by other regulators and the AER

The AER reviews a range of returns it approved for other gas and electricity service providers and also the rates of return in recent decisions by other Australian regulators. This provides a test of the reasonableness of the rate of return in this determination. Recent rate of return values set by the AER since the WACC review are lower than those previously provided. However, recent decisions by other regulators suggest that these values—and 7.16 per cent in this case—are reasonable.

The rate of return range applied by the AER in recent decisions for other gas and electricity service providers is 7.31 to 10.43 per cent.[243] This range covers gas and electricity decisions made by the AER since the WACC review was completed in 2009 and includes the Roma to Brisbane final decision.

The AER has also considered recent decisions by other regulators giving a rate of return range from 5.70 to 9.08 per cent (converted to nominal vanilla form).[244] The decisions

[243] AER, *Final Decision: APTPPL access arrangement*, August 2012; AER, *Final Decision: Aurora distribution determination*, April 2012; AER, *Final Decision*: *Powerlink Transmission determination 2012–13 to 2016–17*, April 2012; AER *Final Decision: Victorian* d*istribution determination*, October 2010, p. 519; AER, *Final Decision: Queensland electricity distribution network service providers: Distribution determination 2010–11 to 2014–15*, May 2010, p. 267; AER, *Final decision: N. T. Gas access arrangement proposal for the Amadeus gas pipeline 2011–2016,* July 2011, p. 80; Australian Competition Tribunal, *Envestra: Annexure A (Part 2), Amended Access Arrangement*, February 2012, p. 13; Australian Competition Tribunal, *APT Allgas: Annexure A, Amended Access Arrangement*, February 2012, p. 17; Australian Competition Tribunal, *NSW Gas Networks: Annexure A, Amended Access Arrangemen*t, June 2011, p. 18; Australian Competition Tribunal, *ActewAGL Gas Distribution Network: Order,* September 2010, p. 2.

[244] ACCC, *Final report: Inquiry to make final access determinations for the declared fixed line services*, July 2011, p. 59; ESC, *Final decision: Metro* p*roposed* a*ccess* a*rrangement*, August 2011, p. 87; ACCC, *Final decision: Airservices Australia price notification*, September 2011, p. 7; ERA, *Final decision: Access arrangement information for the Dampier to Bunbury Natural Gas Pipeline*, December 2011, p. 159; Queensland

reviewed are shown in Table B.16 and have been taken from those made in the last 12 months. The WACC of 7.16 per cent applied for APA GasNet falls within this range. This suggests that the rate of return for this determination is reasonable and in line with regulatory decisions that have been made in the past year.

Table B.16 Recent decisions by Australian regulators (per cent)

Regulator	Decision	Date	Nominal vanilla WACC
ACCC	FAD Fixed line services – Final decision	Jul 2011	8.54
ESC	Metro Access Arrangement – Final decision	Aug 2011	9.08
ACCC	Airservices Australia – Final decision	Sep 2011	8.60
ERA	Dampier to Bunbury Pipeline – Final decision	Oct 2011	7.57
QCA	SunWater – Final decision	Nov 2011	7.55
IPART	Sydney Desalination Plant – Final decision	Dec 2011	8.16–8.59[a]
ESCOSA	Advice on a regulatory rate of return for SA Water – Final decision	Feb 2012	8.07
ESCV	V/Line Access Arrangement – Final decision	Jun 2012	8.65
IPART	Sydney Catchment Authority – Final decision	Jun 2012	8.16–8.38[a]
IPART	Sydney Water Corporation – Final decision	Jun 2012	8.16–8.38[a]
ERA	Western Power – Final decision	Sep 2012	5.70

Notes: For comparative purposes, all WACCs have been converted to the nominal vanilla WACC formulation consistent with the AER's reported figure for APA GasNet (which excludes debt raising costs).

(a) Ranges are presented for recent decisions by the IPART where the point estimate (real post-tax or real pre-tax) was not sufficiently disaggregated to allow precise conversion to the correct formulation (nominal vanilla WACC).

Cost of equity vs. Cost of debt

While not necessarily directly relevant to the overall rate of return, comparing the cost of equity with the cost of debt can provide a useful indication of reasonableness. Consistent with

Competition Authority, *Draft Report: SunWater Irrigation Price Review: 2012–17*, Volume 1, November 2011, p. 392; Independent Pricing and Regulatory Tribunal (IPART), *Final Report: Review of water prices for Sydney Desalination Plant Pty Limited*, December 2011, p. 80; Essential Service Commission of South Australia (ESCOSA), *Final Advice: Advice on a Regulatory Rate of Return for SA Water*, February 2012, p. 50; IPART, *Water – Final report: Review of prices for Sydney Water Corporation's water, sewerage, drainage and other services*: From 1 July 2012 to 30 June 2016, June 2012, pp. 198, 204; IPART, *Water – Final report: Review of prices for Sydney Catchment Authority: From 1 July 2012 to 30 June 2016,* June 2012, pp. 90, 118, 123; ERA, *Final decision on proposed revisions to the access arrangement for the Western Power* network submitted by Western Power, 5 September 2012, p. 241.

previous decisions,[245] the AER considers that the expected cost of equity should be greater than the expected cost of debt.[246] This relationship holds in this decision.

The AER has prepared a graph showing the cost of equity, cost of debt and WACC over time, using the DRP estimation methodology proposed by APA GasNet. This graph shows that the cost of equity has been consistently greater than the cost of debt over the last two years, using the AER's approach in this decision. If the cost of debt had been estimated using the ERA's approach then the difference between the cost of equity and cost of debt would have been greater.

It is also worth noting that this graph clearly shows that a large portion of the change in the overall rate of return can be attributed to the decline in the cost of debt. The fact that the overall rate of return in this decision is lower than in previous decisions does not of itself make it unreasonable. The cost of debt in this decision makes up 60 per cent of the overall rate of return. The AER accepts APA GasNet's approach in determining the cost of debt. If flows from this that the AER and APA GasNet would agree that this reduction reflects prevailing conditions in the market for funds and the risk involved in providing reference services. This provides the AER with a degree of confidence that a fall in the overall rate of return, in itself, is not unreasonable.

APA GasNet's concerns surround the cost of equity and the extent to which the cost of equity determined by the AER in this decision is lower than that determined in previous decisions. The AER has discussed these concerns in detail in attachment 4.

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245 AER, *Final decision: APTPPL access arrangement*, August 2012, p. 102; AER, *Draft decision: Envestra Ltd: Access arrangement proposal for the Qld gas network 2011–2016*, February 2011, p. 243; AER, *Final decision: Envestra access arrangement Qld*, June 2011, pp. 148–149.

246 However, the AER does not consider that the *expected* cost of equity should be greater than the *promised* cost of debt. This critical distinction is explained below.

Figure B.9 Cost of Debt, Cost of Equity and WACC – AAA paired bonds approach

The conceptual relationship set out above holds when the cost of equity and the cost of debt are expressed in consistent terms—as expected returns. However, there is a distinction between the expected cost of debt and the promised cost of debt:

- the promised cost of debt is calculated by assuming that the bond issuer does not default, and the promised payments of interest and capital occur (in full and on time)
- the expected cost of debt extends this calculation to include consideration of the likelihood of default, where the bond issuer does not make the promised payments of interest and capital[247]
- where there is a non-zero probability of default, the promised cost of debt will exceed the expected cost of debt
- there is no conceptual reason why the expected cost of equity should be greater than the promised cost of debt.[248]

There has been some debate about whether the cost of debt graphed above (and adopted by the AER) reflects the expected or promised cost of debt.[249] The point is inconsequential in

247 The basic method is a probability-weighted value calculation. If (for example) there was a 1 per cent chance of default, the calculation would assign 99 per cent weight to the promised yield (when all interest and capital is paid) and 1 per cent to the (much lower) yield arising if the default occurred and interest and capital were not repaid (or paid only in part).

248 For instance, consider the situation where the expected return on equity is 4 per cent; the promised return on debt is 5 per cent; but there is a non-zero default probability such that the expected return on debt is 3 per cent. There is no problem with the promised return on debt being above the expected return on equity (5 > 4), as long as the expected return on debt is below (4 > 3).

current conditions, since under either interpretation the expected cost of debt is below the expected cost of equity.[250] If the cost of debt were to rise above the cost of equity, it would be necessary to carefully examine the cost of debt to ensure that it did not reflect promised returns.

Further, recent advice from the Reserve Bank of Australia (RBA) also touches on the relationship between the cost of debt and the cost of equity.[251] The RBA noted that there was a general increase in the spread between CGS and other Australian-denominated debt securities (i.e. an increase in the DRP). However, the RBA cautioned against directly equating changes in the cost of debt with changes in the cost of equity:

> While it is a reasonably simple matter to infer changes in debt risk premia from market prices, it is less straightforward to do so for equity premia. In making use of a risk free rate to estimate a cost of capital, it is important to be mindful of how the resulting relativity between the cost of debt and that of equity can change over time and whether that is reasonable.[252]

Consistent with this advice from the RBA, the AER is mindful of the relative positions of the cost of debt and cost of equity set in this decision. The AER considers that, since the cost of equity exceeds the cost of debt, this check indicates that the AER's estimates are reasonable.

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249 See Lally, *Cost of capital for regulated utilities*, February 2004, p. 75 (footnote 74); Lally, *Comments on submissions relating to the QCA's proposed WACC for the SEQ water utilities*, 31 March 2011, pp. 2, 17: Lally, *Cost of equity and the MRP*, July 2012, p. 9.

250 That is, if the cost of debt graphed above (of 7.01 per cent) reflects a promised cost of debt, the expected cost of debt would be even lower.

251 This advice is discussed in appendix B.1.1. Source document is RBA, *Letter regarding the CGS market*, July 2012.

252 RBA, *Letter regarding the CGS market*, July 2012, p. 1–2.

C Real cost escalation

Real cost escalation is a method for accounting for expected changes in the costs of key factor inputs. Due to market forces, these costs may not increase at the same rate as inflation.

Draft decision

The AER's draft decision is not to approve APA GasNet's proposed labour cost escalators. The AER considers that applying APA GasNet's proposed escalators will not result in forecast opex and capex arrived at on a reasonable basis.[253] Nor do they provide the best possible forecasts of opex and capex in the circumstances.[254]

The AER instead considers escalating labour by forecast annual increases in the unadjusted Labour Price Index (LPI) will result in the best possible forecasts of opex and capex in the circumstances.[255]

The AER engaged Deloitte Access Economics (DAE) to develop forecasts of labour cost changes.[256] The AER has determined the appropriate labour cost and materials escalators set out in table C.1.

Table C.1 AER determined real cost escalators (per cent)

	2012	2013	2014	2015	2016	2017
Internal labour - specialist	1.7	1.1	1.1	1.2	0.9	1.1
Internal labour - general	1.7	1.1	1.1	1.2	0.9	1.1
Contractors	1.3	0.6	0.8	1.0	0.4	0.9

Source: AER analysis, Deloitte Access Economics, *Forecast growth in labour costs in Victoria: Report prepared for the AER*, 28 May 2012, p. 67.

APA GasNet's proposal

APA GasNet proposed that real cost escalations be applied to its opex and capex forecasts in order to forecast real labour cost increases for both internal and contract labour. APA GasNet engaged BIS Shrapnel to forecast real changes in labour costs for the 2013–17 access arrangement period. APA GasNet proposed three escalators:

- forecast growth in real adjusted average weekly ordinary time earnings (AWOTE) for the electricity, gas and water (EGW) industry for gas network related labour.

253 NGR, r. 74(2)(a).
254 NGR, r. 74(2)(b).
255 NGR, r. 74(2)(b).
256 Deloitte Access Economics, *Forecast growth in labour costs in Victoria: Report prepared for the AER*, 28 May 2012.

- forecast growth in real adjusted productivity weighted index AWOTE for professional services general labour.[257]
- forecast growth in real adjusted productivity weighted index AWOTE construction labour for outsourced labour.[258]

Table C.2 APA GasNet proposed real labour cost escalators (per cent)

	2012	2013	2014	2015	2016	2017
EGW labour	4.3	–0.2	7.4	5.4	1.3	0.1
General labour	4.0	0.6	7.3	4.8	1	0.6
Construction labour	7.1	4.5	2.1	1.1	0.2	2.1

Source: GasNet, RIN, Table 7.1.

APA GasNet has not claimed any network materials real cost escalation.

Assessment approach

The AER assessed APA GasNet's proposed real cost escalators against the forecasts and estimates requirements in rule 74 of the NGR:[259]

> **74 Forecasts and estimates**
>
> (1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.
>
> (2) A forecast or estimate:
>
> (a) must be arrived at on a reasonable basis; and
>
> (b) must represent the best forecast or estimate possible in the circumstances.

The AER has taken into consideration Professor Borland's report commissioned by Envestra, and BIS Shrapnel's report commissioned by APA GasNet. In forming its views the AER has also considered advice from DAE on labour cost escalators.

Reasons for draft decision

The AER's draft decision is not to approve APA GasNet's proposed labour and materials cost escalators. The AER considers that applying APA GasNet's proposed escalators will not result in forecast opex and capex that are arrived at on a reasonable basis, or provide the best possible forecasts of opex and capex in the circumstances.[260] This is because:

- forecast movements in labour costs for the electricity, gas, water and waste services (EGWWS) industry provide the best forecast of movements in all internal labour costs

257 APA GasNet, Access Arrangement Submission, March 2012, p. 177.
258 APA GasNet, Access Arrangement Submission, March 2012, p. 93.
259 NGR, r. 74.
260 NGR, r. 74(2).

possible in the circumstances, rather than the property and business services (PBS) industry for general labour and EGW industry for network labour

- the LPI provides a better measure of labour cost changes compared to AWOTE.
- real labour cost escalation should not be productivity adjusted due to issues in measuring and forecasting productivity

The following sections discuss these issues in detail.

Use of labour force industries

The AER does not approve APA GasNet's proposed use of the EGW industry in relation to network related labour, and the PBS industry in relation to general labour, to estimate labour cost escalations. The AER does not consider that they are the best possible forecasts or estimates in the circumstances.[261]

The AER considers that using forecast growth in the EGWWS industry to escalate both network related labour and general labour better reflects labour costs for all internal APA GasNet labour during the 2013–17 access arrangement period.

The Australian Bureau of Statistics (ABS) has previously advised:

> ... regardless of the type of job, if the job was selected from a business classified to the electricity, gas, water and waste services industry, the jobs pay movements contributes to this industry. [262]

The ABS takes into account the nature of the business, not the nature of the work undertaken, when allocating a job to an industry. The ABS labour price statistics for the EGWWS industry reflects both specialised gas distribution network related labour and general labour.

Since late 2009 the ABS has reported AWOTE and LPI data under the ANZSIC[263] 2006 industry classification, where waste services have been included with the EGW industries, producing an EGWWS industry data series. This replaces the ANZSIC 1993 classification which discontinues the publication of the EGW industry data series.

BIS Shrapnel stated the inclusion of the waste services sub-sector in the classification will lead to lower wage growth outcomes for the combined EGWWS industry, which will no longer accurately reflect the occupations in the EGW industry. Consequently BIS Shrapnel estimated the waste services component and excluded it from both its historical data and forecasts, thus deriving an EGW estimate.[264]

APA GasNet's proposed labour cost escalation rates are based on BIS Shrapnel forecasts for the EGW industry rather than the EGWWS industry used by the ABS.

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261 NGR, r. 74(2)(b).

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

263 The Australian and New Zealand Standard Industrial Classification (ANZSIC) provides a framework for organising data about businesses - by enabling grouping of business units carrying out similar productive activities.

264 BIS Shrapnel, Real cost escalation forecasts to 2017 - Australia and Victoria, March 2012, p. A-4.

BIS Shrapnel note that between 1998 and 2009 the LPI for the EGW industry grew by 4.3 per cent per annum as compared to 4.2 per cent for the EGWWS industry.[265]

The AER does not consider that BIS Shrapnel's reasons for excluding the waste service component (that it would result in a lower wage growth) are sufficient to adjust the EGWWS data. In the absence of any compelling evidence of a difference between the EGW and EGWWS industries, the AER considers it is not necessary to remove the forecast waste services component from EGWWS data. The AER considers removing the waste services component from the data introduces a potential source of forecasting error since it is necessary to estimate the waste services components. Further, there is likely to be forecasting error from applying the discontinued EGW industry data series which concluded in June 2009 when the ABS moved to the ANZSIC 2006 classification. This forecasting error will be magnified over time as the period between the last available EGW data (2009) and the forecast period increases.

For these reasons, the AER considers that BIS Shrapnel's use of EGW and PBS industries to escalate labour costs would not result in the best labour cost forecast or estimate possible in the circumstances.[266]

DAE has estimated labour costs using the ANZSIC 2006 classification for the EGWWS labour force industry to represent APA GasNet's internal labour force. The AER is of the view that applying forecasts based on the EGWWS industry rather than the EGW industry will result in the best forecast or estimate possible in the circumstances.

The AER has previously accepted the use of a single ABS labour force industry to represent the total workforce of a network service provider.[267]

The choice of labour price measure and use of productivity adjustments

The AER does not approve APA GasNet's proposed use of forecast AWOTE growth rates adjusted for forecast labour productivity for the 2013–17 access arrangement period. The AER does not consider that it permits a forecast to be made on a reasonable basis, and the best possible forecast in the circumstances.[268]

The AER considers that LPI forecasts, unadjusted for productivity effects, permits the best possible forecast of labour cost movements in the circumstances because:[269]

- productivity measures for the EGWWS industry exhibit estimation bias for the reasons outlined in recent Productivity Commission (PC) analysis[270]
- although productivity adjusted labour price movements provide the best estimate of labour cost movements, estimated productivity adjustments cannot be relied on due to the estimation bias in productivity measures

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265 BIS Shrapnel, Real cost escalation forecasts to 2017 - Victoria and New South Wales, November 2011, p. A-5.
266 NGR, r. 74(2)(b).
267 See AER, Final decision: Powerlink Transmission determination 2012-13 to 2016-17, April 2012, p. 60.
268 NGR, r. 74(2).
269 NGR, r. 74(2)(b).
270 Productivity Commission, Productivity in electricity, gas and water: measurement and interpretation, March 2012.

- the LPI contains less productivity effects than the AWOTE, where the AWOTE includes all productivity effects;

- although the AER considers that LPI forecasts, unadjusted for productivity effects, provide the best possible forecast of labour cost movements, the AER recognises that this will over compensate businesses to the extent that worker productivity gains over the forecast period are positive.

Each of these issues is considered in the sections below.

Labour productivity adjustments

Labour price changes are driven by both productivity effects and other effects. Productivity effects drive labour price changes since more productive labour receives higher wages.[271] Other effects include CPI increases and any price changes driven by labour market supply/demand imbalances.

It is important to make the distinction between labour prices and labour costs. DAE stated:

> ... labour costs will rise at a different rate [than labour prices] due to the effects of labour productivity growth. Effectively, labour productivity measures the number of units of output an individual employee can produce in a given time period. The more units of output each worker can produce, the fewer workers are required to create a given level of industry output. If productivity is rising, the total cost of labour (the price of each employee multiplied by the number of employees) will rise less rapidly than the individual employee's price.[272]

Broadly labour price changes can be described by three effects:

1. Composition productivity effects reflect increases in workforce productivity due to changes in the skill composition of the workforce. For example, an increase share of high skill workers will increase average workforce productivity and average wage rates per worker. However, because average workforce productivity has increased, fewer workers are required to produce the same amount of output, and any increase in labour costs will be less than the increase in the average labour price.

2. Worker productivity effects are increases in workforce productivity due to increases in the productivity of individual workers. For example, workers may become more productive from working with better capital equipment. Again, because average workforce productivity has increased fewer workers are required and any increase in labour costs will be less than the increase in the average labour price.

3. Other effects unrelated to productivity. For example, wage increases due to inflation or labour supply or demand imbalances. Because these effects are unrelated to productivity the same amount of labour is required to produce a given amount of output and the change in labour price results in a corresponding change in labour costs.

Conceptually at least, either the AWOTE or LPI labour price measures can quantify the change in labour costs. However, it is important to use matching labour price and productivity measures.[273] The ABS publishes a number of productivity measures, including labour, capital

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

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

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

and multifactor measures. The labour productivity measures are published annually for the market sector as a whole, as well as at the industry division level (for example, the electricity, gas and water industry). These measures indicate value added per hour worked. This conventional measure of labour productivity includes all productivity effects: composition productivity, worker productivity effects and other effects and as AWOTE includes all of these effects; it is the appropriate labour productivity measure for adjusting AWOTE.

A quality adjusted measure of labour productivity which includes worker productivity effects and other effects is the appropriate measure to adjust the LPI. The ABS recently developed quality adjusted measures of labour input and labour productivity. It released estimates for 1982–83 to 1999–2000 in 2005, and has since published yearly statistics from 1994–95. [274] The measure of labour captures the change in the aggregate quality of labour due to compositional changes such as higher education, or longer work experience, so the effect is not ascribed to productivity. Generally, the quality adjusted labour productivity index increases at a slower rate than the conventional labour productivity index, because the conventional index includes compositional productivity effects that may reflect increased skill composition of the workforce. An increase in the skill composition of the workforce, which may manifest itself in an increase in the labour price, does not necessarily suggest a simultaneous increase in the labour cost. This is because an increase in the skill level may mean fewer workers such that labour costs may fall.

The AER considers that APA GasNet should not be compensated for labour price changes driven by labour productivity effects. This is because labour price changes do not equate to labour cost changes. To the extent labour prices compensate workers for increased productivity, those price increases do not increase labour costs, since fewer workers are required to produce the same output.

Further, the AER has previously stated that to the extent that labour prices are rising due to increased labour productivity (due to either compositional productivity or worker productivity), the increase in labour costs will be less than the increase in the labour price. [275] To determine the impact of labour price increases on the total labour cost to produce a constant level of output, the price impacts of labour productivity effects should be removed from the labour price measure used.[276] However, the PC has noted four broad issues which impact measurement of marginal factor productivity (MFP) growth in EGW industries:

1. cyclical investment—the lumpy nature of capital in relation to measured output[277]
2. output measurement—difficulty in measuring output which can lead to unanticipated changes in MFP[278]
3. shifts to higher cost technologies—investments as a result of climate-related issues increasing the cost per unit of output[279]

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

275 See AER, Draft Decision: Powerlink Transmission determination 2012–13 to 2016–17, November 2011, p. 57.

276 AER, Draft Decision: Powerlink Transmission determination 2012–13 to 2016–17, November 2011, p. 56.

277 Productivity Commission, Productivity in electricity, gas and water: measurement and interpretation, March 2012, p. 122.

278 Productivity Commission, Productivity in electricity, gas and water: measurement and interpretation, March 2012, p. 126.

4. unmeasured quality improvements—changes in government regulations mandating improvements in the network that are not directly measured, such as mandatory underground electricity cabling. [280]

The AER considers that the estimation issues identified by the PC contribute to the uncertainty in forecasting productivity adjustments.

Productivity adjustments may also double-count other effects such as scale adjustments. Further, accurately forecasting labour productivity in the medium to long term is extremely difficult, leading to high risk of forecasting error. [281]

APA GasNet has applied a productivity adjusted AWOTE estimated by BIS Shrapnel. BIS Shrapnel forecasts weak productivity growth over the next six years due to constrained demand and output growth.[282] The AER considers that BIS Shrapnel's productivity forecasts do not take into account the factors described by the PC listed above.

Envestra sought advice from Professor Jeff Borland on whether the AWOTE or the LPI should be used for the purposes of real labour cost escalation for the 2013–17 access arrangement period.

Professor Borland stated that the productivity adjusted LPI underestimates changes to labour costs by an amount equal to the change in the skill composition of the workforce. [283] The AER agrees with this view if the conventional labour productivity measure is used to adjust the LPI.

In response to Professor Borland, DAE stated its forecasts of LPI and productivity implicitly assume a zero value for composition productivity. If the compositional productivity adjustment is different from zero, this result would be deducted from both LPI growth and productivity growth resulting in a net effect of zero.[284]

Professor Borland further notes in his empirical analysis that, over the long run, changes in labour costs is equal to changes in other productivity effects such as CPI.[285]

The AER considers that in theory productivity adjustments should be applied to real cost escalations if productivity adjustments are not undertaken elsewhere in opex and capex forecasts.

However, the AER notes the high degree of difficulty in estimating both quality adjusted labour productivity and conventional labour productivity as evidenced by the conflicting productivity estimates from BIS Shrapnel and DAE and the analysis conducted by the PC.

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279 Productivity Commission, Productivity in electricity, gas and water: measurement and interpretation, March 2012, pp. 128-129.

280 Productivity Commission, Productivity in electricity, gas and water: measurement and interpretation, March 2012, pp. 129-130.

281 AER, Draft decision - Access arrangement proposal for the Roma to Brisbane Pipeline 2012–13 to 2016–2017, April 2012, p. 200.

282 BIS Shrapnel, Real cost escalation forecasts to 2017 - Australia and Victoria, March 2012, p. 48.

283 Professor Jeff Borland, Labour cost escalation: Choosing between AWOTE and LPI - Report for Envestra Limited, March 2012, p. 6.

284 Deloitte Access Economics, Response to issues raised in the Victorian Gas Access Review, 29 May 2012, p. 7.

285 Professor Jeff Borland, Labour cost escalation: Choosing between AWOTE and LPI - Report for Envestra Limited, March 2012, p. 6.

Thus, while the AER expects worker productivity to improve over the long run, due to estimation difficulties, it has not sought to address this effect, at this stage, in APA GasNet's forecasts of labour costs.

Choice of labour price measure

Given the difficulty in measuring and forecasting labour productivity movements, the AER considers that productivity adjustments should not be applied to APA GasNet's labour cost escalations. The AER notes that currently unadjusted labour forecasts of the AWOTE and LPI are above inflation. This approach will allow APA GasNet to benefit from changes in labour productivity effects. In light of the difficulties in estimating productivity, the AER considers an unadjusted LPI is the best forecast in the circumstances[286] although this figure is upwardly biased by including labour productivity improvements.

APA GasNet proposed the use of forecast movements in productivity adjusted AWOTE, provided by BIS Shrapnel, to escalate its labour costs for anticipated real labour price increases.

AWOTE measures average employee earnings from working the standard number of hours per week. It is not strictly a price index (that measures the pure price effect) because the composition of labour is not held constant. It captures composition productivity effects, worker productivity effects and other effects. In contrast the LPI is a Laspeyres type price index. As a Laspeyres type price index the LPI measures the change in labour costs with the quantity and quality of work performed held constant. [287] It measures the pure price effect, showing how much the same quantity of labour costs in the current period, relative to the base period. The weights used are for the base period and are updated annually to represent job distribution.[288]

Conceptually at least, either labour price measure can quantify the change in labour costs, provided a correctly matched productivity measure is used.[289]

BIS Shrapnel considers the LPI measures underlying wage inflation but does not measure variations in the quality or quantity of work performed. The AWOTE measures both the change in the cost of labour and skill level changes within an industry. For this reason BIS Shrapnel prefers the use of AWOTE over the LPI.[290]

DAE noted that there are drawbacks to both the LPI and AWOTE measures. However it considered LPI to be a better measure than AWOTE, because compositional changes such as the pace of recruitment and retirement and the changed relativities in the employment of men and women can distort AWOTE as a proxy for changes in the price of labour. [291]

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286 NGR, r. 74(2)(b).

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

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

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

290 BIS Shrapnel, Real cost escalation forecasts to 2017 - Victoria and New South Wales, November 2011, p. 25.

291 Deloitte Access Economics, Response to issues raised in the Victorian Gas Access Review, 29 May 2012, p. 2.

DAE further notes the advantages of the LPI over the AWOTE as a measure of labour price changes will increase as the ABS commences publishing the AWOTE on a six monthly basis and ceases publishing all AWOTE by state by industry information. [292]

However, the AER notes that using the LPI has its own difficulties because of the limited availability of quality adjusted labour productivity index data. The ABS publishes unadjusted labour productivity for the EGWWS industry but its quality adjusted labour productivity index is available only at the overall market sector level.

The ABS also considers the LPI to be their preferred indicator of changes in the price of labour because average weekly earnings (AWE) estimates are affected by changes in both the price of labour and changes in the composition of the labour market. [293]

The AER considers the problems with using AWOTE are greater than those with using the LPI. This is because the higher volatility of the AWOTE, and the inclusion of the composition productivity effects, makes AWOTE unreliable for forecasting labour costs for the utilities industry in comparison with the more stable LPI time series (see figure C.1).

The LPI unadjusted for labour productivity, which includes worker productivity effects, will more closely represent the true change in labour costs than the unadjusted AWOTE which includes both worker and composition productivity effects.

The AER considers that any labour cost increases associated with compositional change should be offset by productivity benefits. To estimate the efficient labour cost, it is appropriate to hold the labour force composition stable over the forecast period and allow APA GasNet to retain any efficiency benefits of workforce compositional change.

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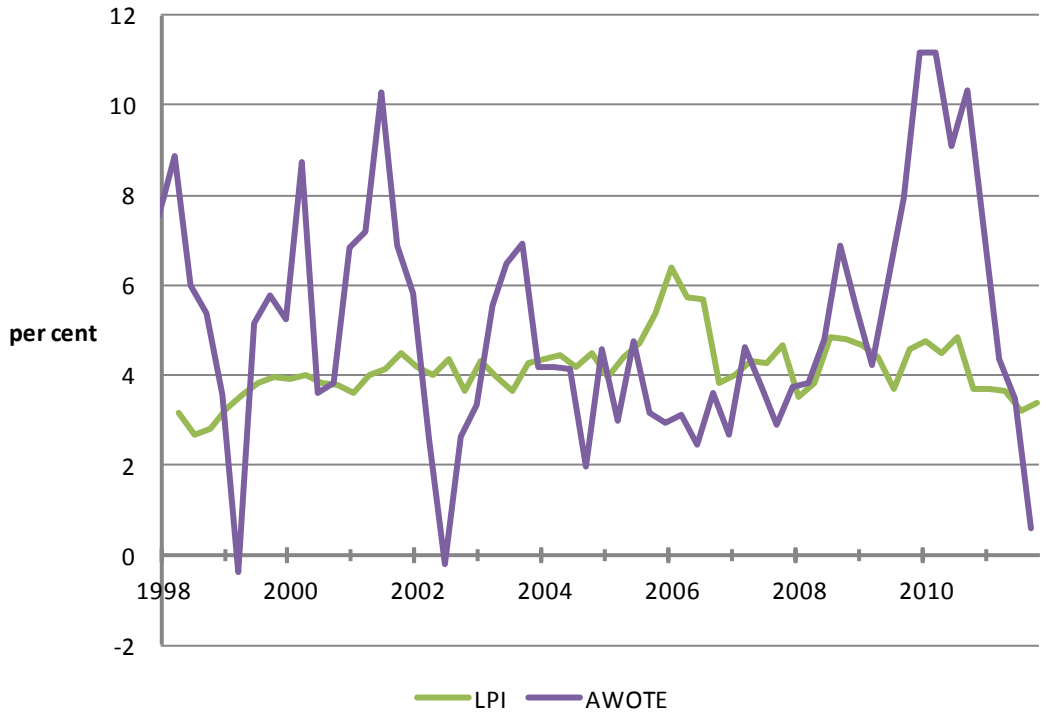
[292] Deloitte Access Economics, Response to issues raised in the Victorian Gas Access Review, 29 May 2012, p. 2.

[293] ABS, Labour Price Index: concepts, sources and methods, Catalogue number 6351.0.55.001, 2004, p. 43.

Figure C.1 Annual growth in LPI and AWOTE, EGWWS industry, Australia (per cent)



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

The AER notes that the inclusion of labour productivity effects will provide an upwardly biased forecast of labour cost movements if APA GasNet has positive labour productivity over the forecast period.

Choice of LPI forecasts

BIS Shrapnel estimated APA GasNet's forecast movements in both the LPI and AWOTE. DAE analysis has shown BIS Shrapnel's forecasts of LPI have consistently been higher than the actual LPI and DAEs forecasts have been too low. [294] BIS Shrapnel's LPI forecasts, unadjusted for productivity, are higher than those forecast by DAE, consistent with this analysis (Figure C.2)

APA GasNet has proposed that if the AER were to reject the use of BIS Shrapnel's forecast AWOTE then the AER should apply BIS Shrapnel's LPI forecasts. [295]

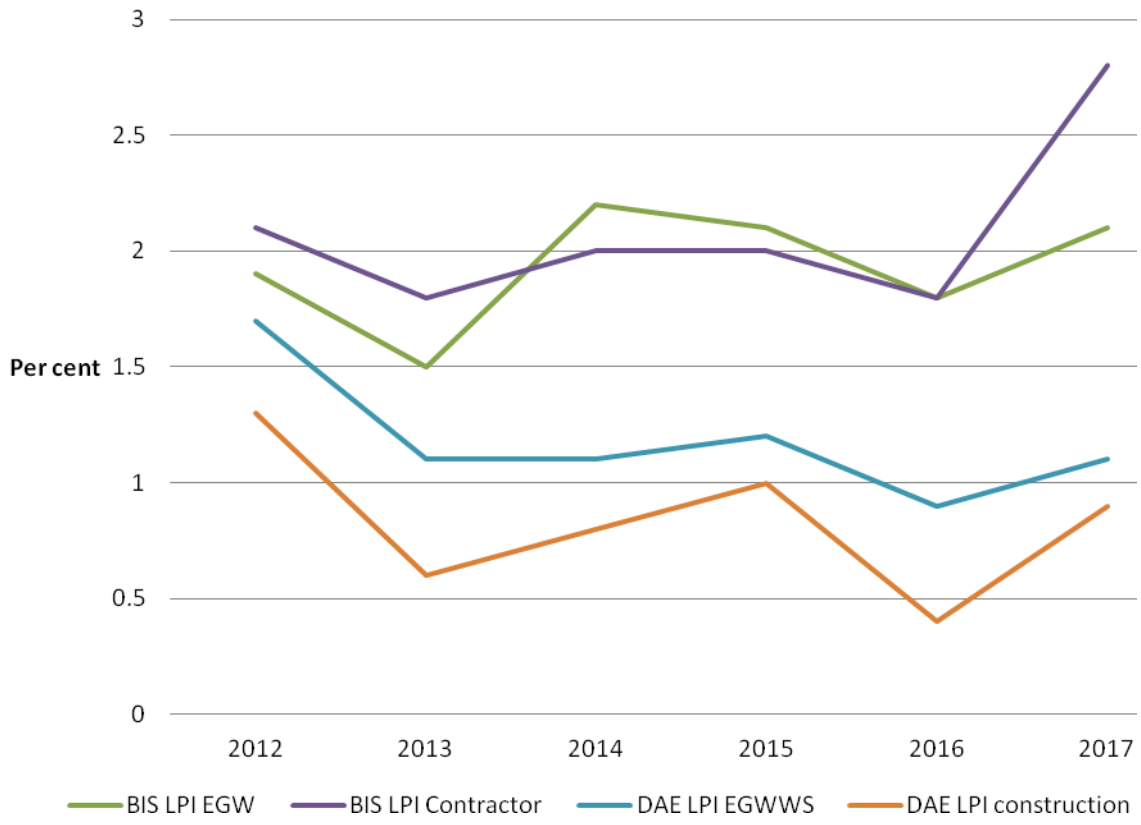
The AER considers on balance the downward bias in the difference between DAEs forecast LPI and actual LPI is less than the magnitude of DAEs forecast of quality adjusted labour productivity. That is, productivity adjustments are likely to outweigh any potential downward

[294] Deloitte Access Economics, Responses to issues raised in various submissions to the Victorian Gas Access Review, 29 May 2012, p. 25.

[295] NGR, r. 74(2)(b).

bias in DAEs forecasts Therefore the AER considers the LPI estimated by DAE represents the best forecast possible in the circumstances.[296]

Figure C.2 Real LPI forecasts (per cent)



Source: BIS Shrapnel, Real Cost Escalation Forecasts to 2017—Australia and Victoria, March 2012; Deloitte Access Economics, Forecast growth in labour costs in Victoria, 28 May 2012.

The AER undertook its own analysis and compared both BIS Shrapnel's and DAEs forecasts of LPI movements for the Australian economy (Table C.3). For the forecast series commencing 2006 to 2011 included in the analysis, the average of DAEs and BIS Shrapnel's forecasts had the lowest mean absolute error on three occasions, DAEs forecasts on two and BIS Shrapnel's once. This result is consistent with a significant body of literature concluding forecast accuracy can be improved by combining multiple individual forecasts.[297] It is also consistent with DAEs finding that its forecasts were too pessimistic but BIS Shrapnel's were too optimistic. The AER did not have the necessary data to undertake the same analysis for Victoria

Table C.3 Comparison of past LPI forecast

Forecast	2006-07	2007-08	2008-09	2009-10	2010-11	Mean absolute error

[296] NGR, r. 74(2)(b).

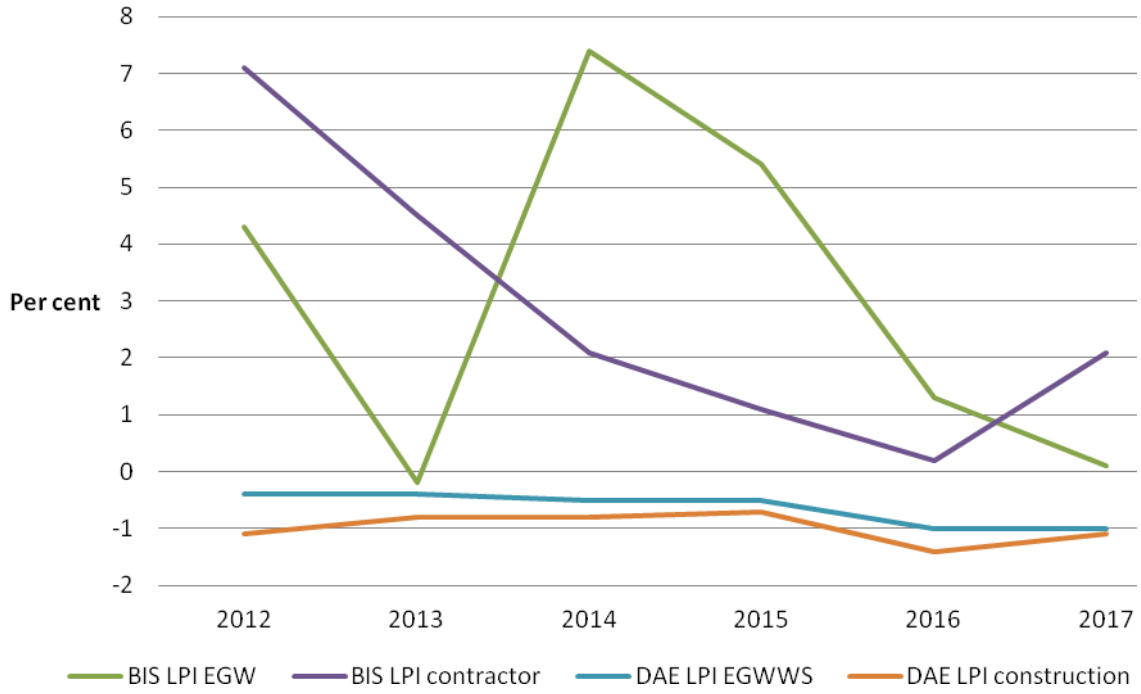
[297] Robert T. Clemen, 'Combining forecasts: A review and annotated bibliography', International Journal of Forecasting, volume 5, issue 4, 1989, pp, 559-583.

						Utilities
Actual	5.0	4.1	4.5	4.3	4.2	
BIS Shrapnel (March 2007)	5.8	5.8	5.2	4.5	4.7	0.78
DAE (April 2007)	5.6	5.7	5.1	3.6	3.9	0.76
BIS Shrapnel (April 2009)			4.8	4.7	4.4	0.30
DAE (September 2009)			4.5	3.5	3.4	0.53
BIS Shrapnel (December 2009)				4.3	4.2	0.00
DAE (March 2010)				4.0	3.9	0.30
						All industries
Actual	3.9	4.1	4.1	3.1	3.8	
BIS Shrapnel (March 2007)	4.2	4.5	3.8	3.7	4.2	0.40
DAE (April 2007)	4.1	4.6	4.4	4.0	4.3	0.48
BIS Shrapnel (April 2009)			4.1	3.3	3.1	0.30
DAE (September 2009)			4.1	3.5	3.9	0.17
BIS Shrapnel (December 2009)				3.1	3.3	0.25
DAE (March 2010)				3.2	3.7	0.10

Source: AER analysis; BIS Shrapnel, Labour cost escalation forecasts to 2016–17—Australia and Queensland, January 2012, table 6.1.

The AER notes BIS Shrapnel's forecast real productivity adjusted LPI exhibits a high level of volatility. The AER considers BIS Shrapnel's labour productivity adjusted forecasts will overstate labour cost movements. These forecasts exhibit a strong increase in 2014 which is driven by BIS Shrapnel's forecast steep decline in labour productivity (Figure C.3). Given the issues raised by the Productivity Commission regarding measured productivity in the EGWWS industry the AER is not satisfied BIS Shrapnel's forecast real productivity adjusted LPI will accurately reflect APA GasNet's labour costs in the 2013–17 access arrangement period.

Figure C.3 Real productivity adjusted LPI forecasts (per cent)



Source: BIS Shrapnel, Real Cost Escalation Forecasts to 2017—Australia and Victoria, March 2012; Deloitte Access Economics, Forecast growth in labour costs in Victoria, 28 May 2012.

Revisions

The AER requires the following revisions to make the Access arrangement proposal acceptable:

Revision C.1: Opex and capex forecasts should be amended to reflect the labour cost forecasts set out in Table C.1.