Draft Decision

Envestra Ltd

Access arrangement proposal for the Qld gas network

1 July 2011 – 30 June 2016

February 2011

AUSTRALIAN ENERGY REGULATOR

Request for submissions

This document sets out the Australian Energy Regulator's (AER) draft decision for Envestra Ltd's (Envestra) access arrangement proposal for the period 1 July 2011 to 30 June 2016.

The AER will hold a forum on its draft decision for Envestra on 1 March 2011 in Brisbane. At this forum the AER will outline the reasons for its draft decision and provide an opportunity for questions or comments from interested parties.

This draft decision requires Envestra to revise its access arrangement proposal. Envestra must submit a revised access arrangement proposal responding to the AER's draft decision by 23 March 2011.

Interested parties are invited to make written submissions on issues regarding the draft decision, consultants' reports and revised access arrangement proposal to the AER by 21 April 2011. The AER will consider all information it receives in the access arrangement review process in accordance with the ACCC/AER information policy. The policy is available at www.aer.gov.au.

Submissions can be sent electronically to qldsagas@aer.gov.au.

Alternatively, submissions can be mailed to:

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

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

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

All non-confidential submissions will be placed on the AER website. Copies of Envestra's access arrangement proposal, relevant consultant reports and other relevant material are available on the AER's website.

Inquiries about this draft decision or how to make submissions can be made by email to qldsagas@aer.gov.au.

Contents

Draft decision

The AER does not propose to approve Envestra's access arrangement proposal as it is not satisfied that it meets the requirements specified in the NGR.[1] The draft decision sets out the reasons for this decision.[2]

This decision also outlines the amendments (or nature of amendments)[3] required to be made to the access arrangement proposal[4] or access arrangement information[5] for the AER to approve the access arrangement proposal.

Elements of the access arrangement proposal that do not require amendment are consistent with the national gas objective.[6]

1 NGR, r. 41 and r. 100.
2 NGR, r. 59(4).
3 NGR, r. 43(3) and r. 59(2).
4 Envestra, *Access arrangement for the Queensland gas distribution system*, 1 October 2010.
5 Envestra, *Qld access arrangement information*, 1 October 2010.
6 NGR, r. 100.

Shortened forms

Shortened form	Extended form
access arrangement information	Envestra, *Queensland access arrangement information*, 1 October 2010
access arrangement period	1 July 2011 to 30 June 2016
access arrangement proposal	Envestra, *Access arrangement for the Queensland gas distribution system*, 1 October 2010
AER	Australian Energy Regulator
Capex	capital expenditure
Code	National Third Party Access Code for Natural Gas Pipeline Systems
CPI	consumer price index
earlier access arrangement	Access arrangement for 1 July 2006 to 30 June 2011 inclusive
earlier access arrangement period	1 July 2006 to 30 June 2011
NGL	National Gas Law
NGR	National Gas Rules
Opex	operating expenditure
QCA	Queensland Competition Authority

Overview

Envestra owns and operates gas distribution pipelines in Queensland that supply natural gas to customers in and around Brisbane and a number of regional centres including Ipswich, Rockhampton and Gladstone. In total around 84 000 residential, 3000 small business and 70 large commercial and industrial customers are serviced by the network. The network is a natural monopoly and is regulated by the AER to ensure that Envestra does not charge excessive prices or impose unduly onerous terms and conditions on customers.

Under the regulatory framework— which is set out in legislation— Envestra first lodges with the AER a proposed access arrangement that sets out its proposed tariffs and terms and conditions. The AER then reviews the proposal and decides whether it is acceptable, or whether amendments are required to make the proposal acceptable in accordance with the National Gas Rules (NGR) and National Gas Law (NGL).

Envestra's proposal includes a significant level of capital expenditure on mains replacement to address the safety risk, inadequate capacity and deteriorating condition of the distribution network. The primary safety concern is the leakage of gas from the old cast iron and unprotected steel pipes which make up just under one fifth of Envestra's network.

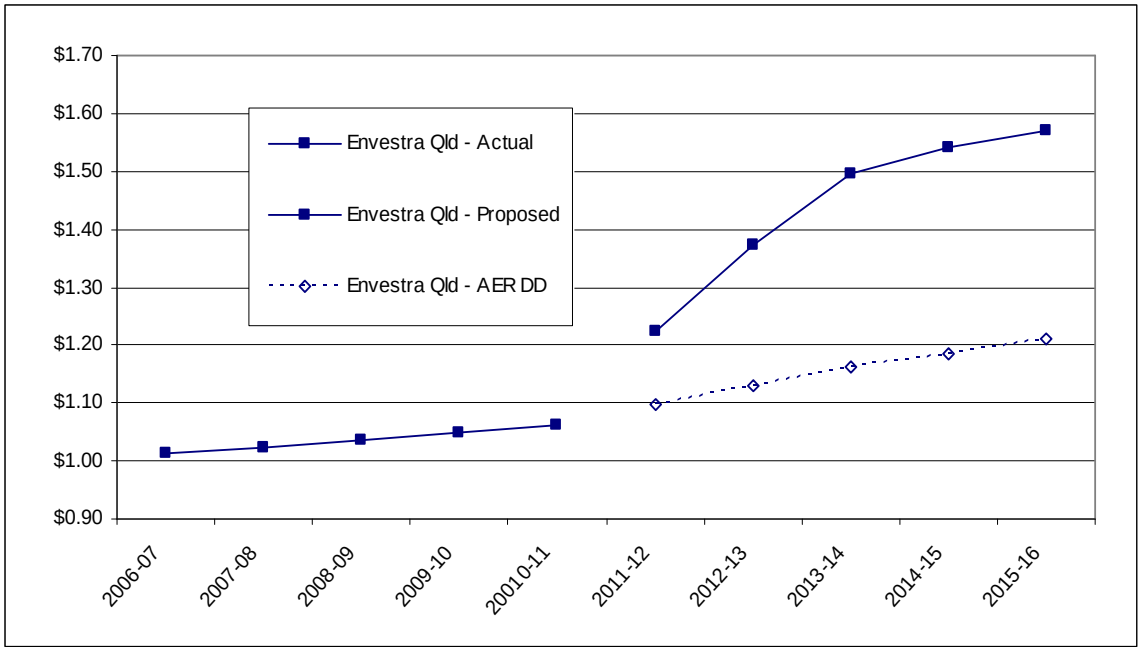
Concerns over the rising level of leaking gas and the deteriorating state of the network are not new to this access arrangement proposal. Envestra was funded in the earlier access arrangement period to undertake mains replacement of 250 km of the network in Queensland. It is expected that Envestra will only have replaced approximately 106km of mains by the end of the period. Envestra made a commercial decision during the earlier access arrangement period to minimise expenditure due to the prevailing financial conditions.

Overall, the AER has come to the view that Envestra's access arrangement proposal is not acceptable because the proposed tariffs are too high and the terms and conditions are too much in favour of Envestra. As a result, the AER is requiring Envestra to lower its proposed prices and amend its terms and conditions. However, the AER is of the view that some price increases are warranted so that Envestra can provide a reliable and safe service. The main elements of the AER's draft decision are set out below. More detail can be found in the relevant chapters. The draft decision should be read in conjunction with Envestra's access arrangement proposal and the AER's consultants' reports, which are available on the AER's website.

Proposed tariffs

Envestra's proposed tariffs (indexed) are shown in figure 1 along with the tariffs that the AER has calculated in this draft decision. The tariffs are calculated based on forecasts of required capital expenditure for new pipeline assets as the network grows, the replacement of existing assets as needed, the costs of capital and the cost of operating Envestra's business. In addition, the tariffs reflect forecasts of demand on the network over the next five years. This draft decision sets out the AER's considerations and own forecast of each of these cost components.

Figure 1: Real price index – haulage tariffs (index price starts at $1 for 2005–06)



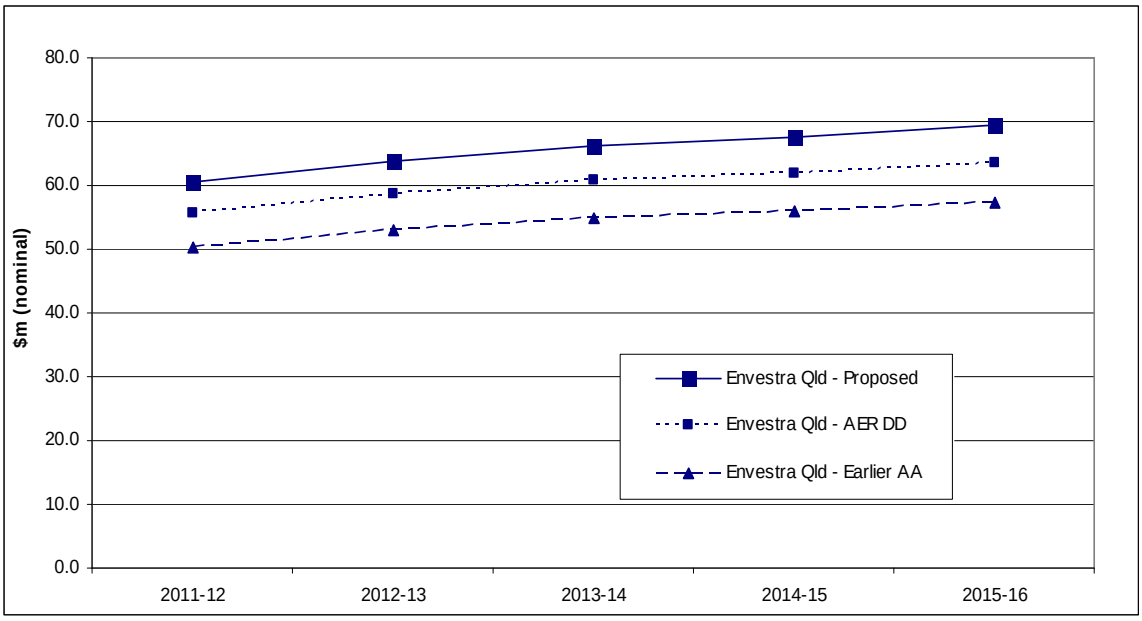
Source: AER analysis

The tariff increases proposed by Envestra for the access arrangement period are clearly higher than applied over the earlier access arrangement period. According to Envestra these increases are driven by several factors, with the main causes being higher financing costs and the need to urgently replace the majority of cast iron and unprotected steel pipelines to reduce gas leakages. Envestra has also revised its remaining asset lives, leading to higher depreciation. As well, Envestra has proposed increases in operating costs of around 15 per cent compared to costs over the current period due to higher labour costs and other factors. These issues are discussed in more detail below and in the relevant chapters of this draft decision.

Cost of capital

The higher cost of capital proposed by Envestra of 10.6 per cent, compared with its cost of capital in the earlier access arrangement period of 8.75 per cent, increases the revenue requirement estimated by Envestra by 17 per cent over the access arrangement period. The AER does not accept the cost of capital proposed by Envestra and has instead estimated it to be 9.96 per cent. This estimate would account for an increase in the revenue requirement of 11 per cent over the access arrangement period. The higher cost of capital will be the major driver of real tariff increases over the access arrangement period. Figure 2 shows Envestra's revenue (including ancillary services revenues) in the access arrangement period under a number of cost of capital scenarios.

Figure 2: Envestra's forecast revenue under different cost of capital scenarios



Source: AER analysis

The AER's estimated cost of capital has been calculated in a different manner to that calculated by Envestra. The parameters used to calculate the cost of capital by Envestra and the AER are shown in table 1.

Table 1: Envestra's proposed and AER's allowed cost of capital parameters

Parameters	Envestra proposal	AER draft decision
Nominal risk free rate	5.30	5.68
Inflation forecast	2.57	2.52
Real risk free rate	2.66	3.08
Cost of debt	8.69	9.61
Debt risk premium	3.39	3.93
Cost of equity	13.02	10.48
Equity beta	0.8-1.1	0.8
Market risk premium	6.5-8.0	6.0
Gearing	55	60
Nominal cost of capital	**10.64**	**9.96**

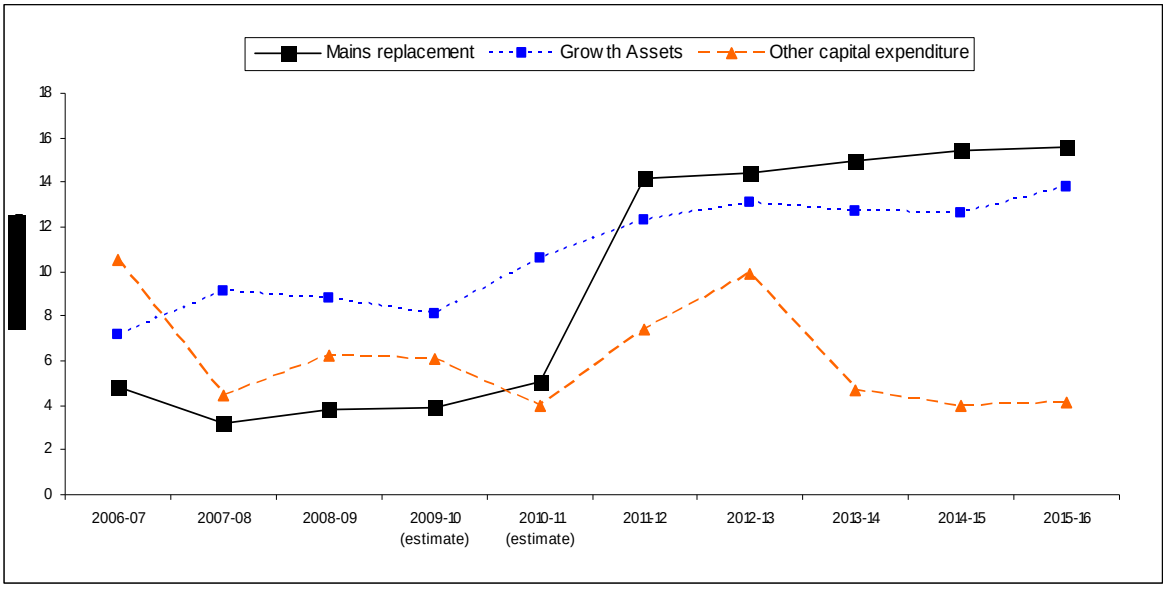
The AER considers that the parameters estimated by Envestra do not meet the requirements of the NGR. In addition, the AER does not consider the proposed approach of calculating the cost of equity meets the requirements of the NGR.

Envestra did not specify a complying averaging period for calculation of the risk free rate. The AER has set out criteria for setting this period and defined a period it considers meets these criteria in confidential appendix A.

Capital expenditure

Envestra has forecast capital expenditure of $173 million over the access arrangement period, representing a real increase of 111 per cent over the earlier access arrangement period. The major components of the forecast total expenditure are mains replacement (44 per cent) and network growth (38 per cent).

Figure 3: Envestra's forecast capex by purpose – 2006–07 to 2015–16

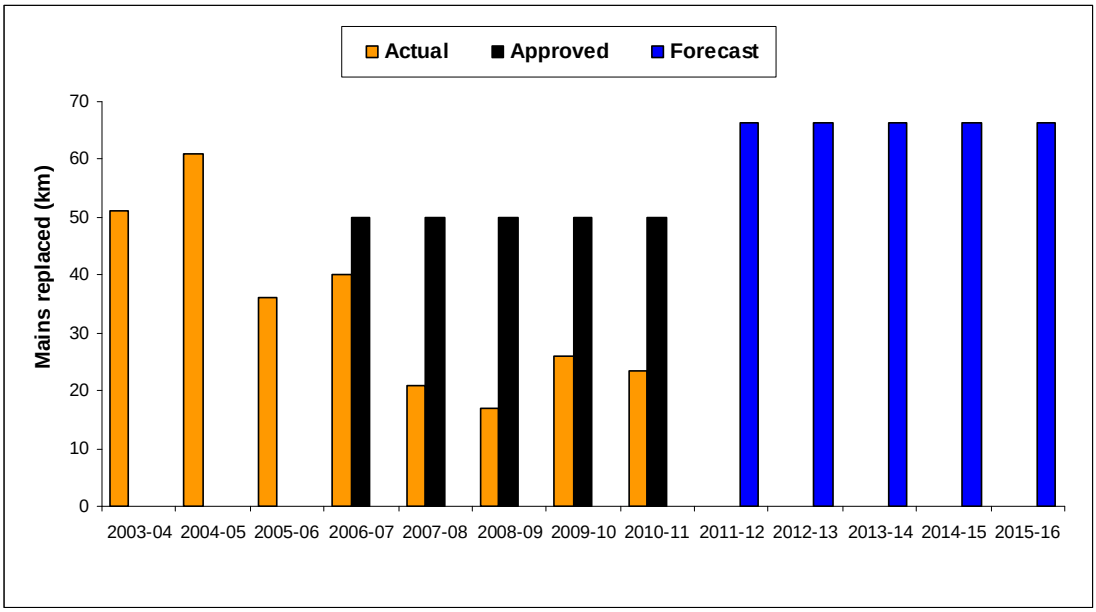


Mains replacement

Envestra has forecast $76 million for mains replacement over the access arrangement period compared with expenditures of $20 million over the current access arrangement period, an increase of around 280 per cent. This sharp increase is justified, according to Envestra, by the need to urgently replace the vast majority of its cast iron and unprotected steel mains over the access arrangement period. Wilson Cook was engaged by the AER to provide expert technical advice on Envestra's expenditure proposals. Wilson Cook recommended that the proposed mains replacement program for the Ipswich network is prudent and efficient, but that the program in Brisbane should be halved.

The AER has considered Envestra's proposed mains replacement in the context of the NGR, which requires that the AER accept this program of expenditure where it is prudent and efficient. The AER has been mindful of the cost impact on customers and also of the potential effects on safety and reliability of supply associated with high levels of gas leakage, such that part of Envestra's network to the south of Brisbane around Ipswich.

Figure 4: Envestra's mains replacement rates (km)



The AER is also mindful that despite the evidence in support of the mains replacement program, there are risks that Envestra may choose for commercial or other reasons not to pursue the program as envisaged even if the AER accepts the associated forecast costs. However, if Envestra does not proceed with the program as proposed, it will be possible to recover a portion of the allowance as the AER has required Envestra to roll forward its capital base at the next reset using forecast depreciation. This would recover a significant proportion of any capex under expenditure.

On balance, given the evidence provided to support the proposed mains replacement program, the AER considers that the program should be reduced to a prudent and efficient level.

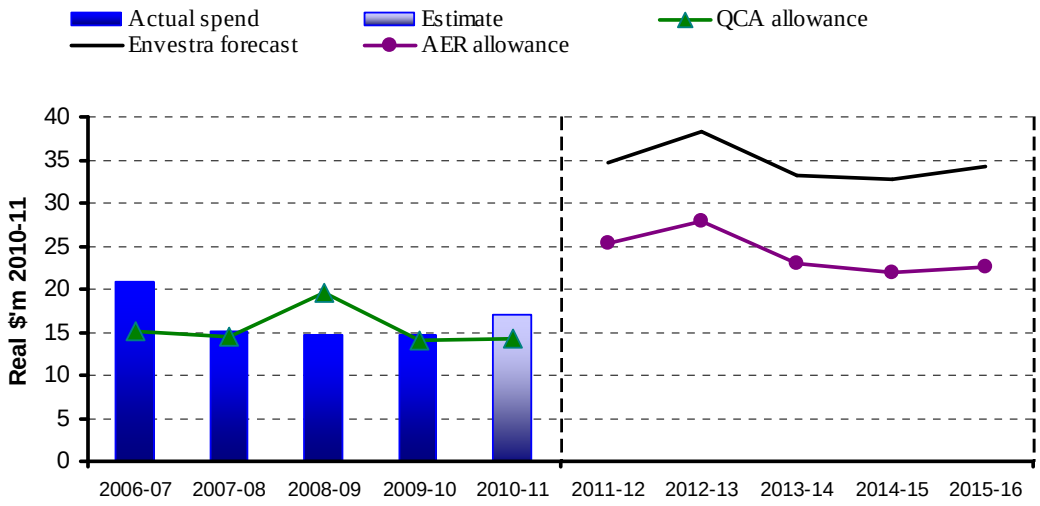
Growth capital expenditure

The AER has accepted the forecast growth capex proposed by Envestra. The forecasts reflect anticipated expansion of the network to accommodate an increasing number of connections.

However, Envestra included a 10 per cent contingency with respect to its forecast growth capital expenditure. This amount was included to allow for any potential cost overruns that may occur from time to time. The AER does not accept that a general allowance for contingencies is required as the forecasts have been prepared based on historical expenditure trends and anticipated increases in unit costs which would smooth out estimation errors over time. Similarly, the AER does not accept the need for Envestra's proposed 20 per cent contingency for railway crossings capital expenditure. Consequently, the AER has removed the contingencies from Envestra's forecast capital expenditures.

The adjustment made by the AER to Envestra's forecast capex results in a real increase in expenditure of 47 per cent over the access arrangement period, compared to the 111 per cent increase forecast by Envestra, as shown in figure 5.

Figure 5: Total capex - Envestra proposed and AER allowed



Operating expenditure

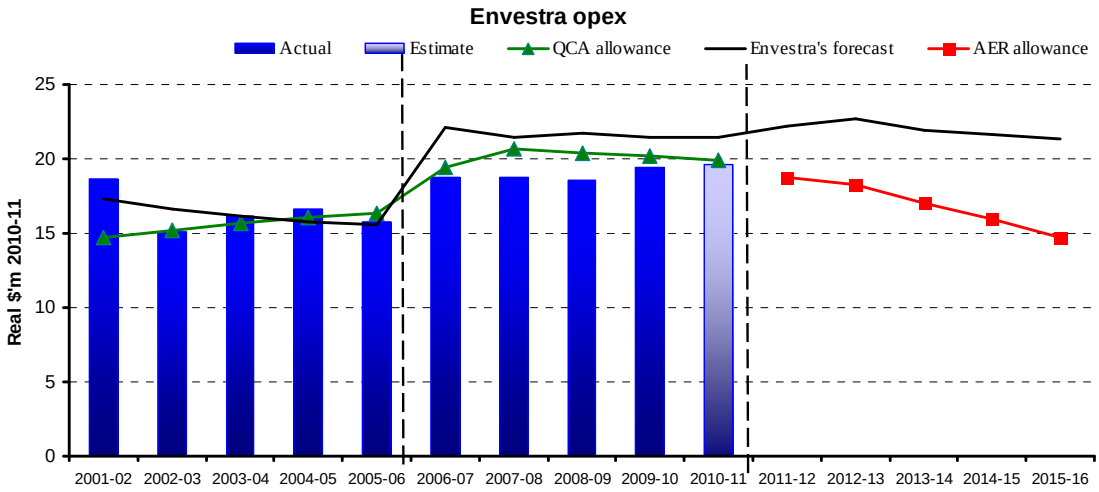
Envestra has forecast operating expenditure of $110 million over the access arrangement period, representing a real increase of 16 per cent over the earlier access arrangement period. According to Envestra, the higher expenditure stems from the rising cost of gas needed to replace unaccounted for gas, increases in real material and labour costs a sharp increase in network development expenditure and the need for various once off costs and step changes for circumstances that are not reflected in its base year costs.

The AER does not consider Envestra's forecast operating costs are prudent and efficient and the sustainable cost of managing its network, as the NGR requires. The AER:

- has estimated real labour and material cost escalators that are lower than those forecast by Envestra, based on its own analysis and advice from Access Economics
- considers that the quantity of gas leakages estimated by Envestra is incorrect and does not fully account for the impact of its mains replacement program reducing gas leakage over the forecast period
- considers that the gas price used to forecast unaccounted for gas costs has not been adequately substantiated
- does not consider that the actual level of expenditure is an efficient base for forecasting opex and requires that the base year be amended, via an annual efficiency adjustment to forecast opex
- has either reduced expenditures for or not accepted a number of Envestra's non base year costs on the basis that these have not been demonstrated to be consistent with the NGR.

The adjustment made by the AER to Envestra's forecast operating costs results in a real decrease of 11 per cent on actual expenditure over the earlier access arrangement period, compared to the 16 per cent increase forecast by Envestra. The lower levels of opex accepted by the AER are shown in figure 6.

Figure 6: Total opex - Envestra proposed and AER allowed

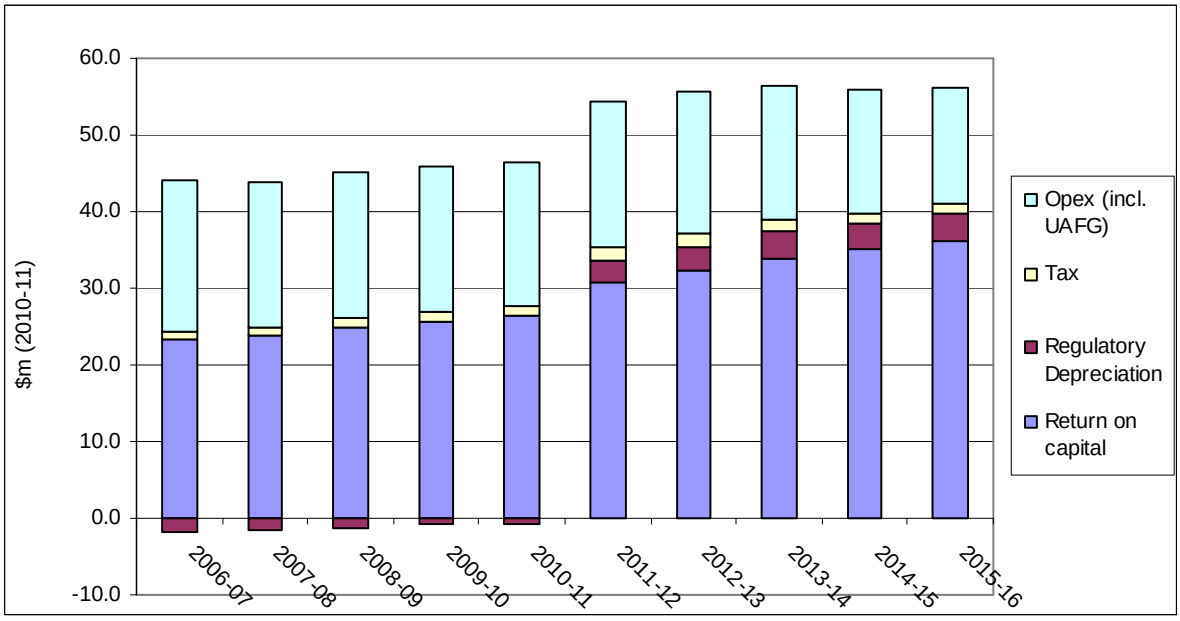


Revenue requirement

Once the capital base on 1 July 2011 has been determined, the revenue requirement for the access arrangement period can be calculated. The AER identified that Envestra had incorrectly rolled forward its capital base to 1 July 2011 as it had used actual depreciation instead of forecast depreciation. The AER also found Envestra used inflation rates to roll forward the capital base that were inconsistent with the control mechanism. Actual inflation for 2005-06 was also higher than the QCA had forecast. After adjusting for these issues, the AER has determined the capital base to be $316.5 million on 1 July 2011. This is 1.9 per cent higher than Envestra's proposed capital base of $310.5 million.

The AER has calculated Envestra's revenue requirement (including ancillary services revenues) over the access arrangement period to be $300 million (nominal), a real increase of 28 per cent over the earlier access arrangement period. This compares to Envestra's forecast revenue requirement of $362 million (nominal), a real increase of 54 per cent. The forecast revenue requirement is shown in figure 7.

Figure 7: AER's approved revenue requirement for Envestra (including ancillary services)



The AER has accepted adjustments to the remaining lives of existing assets that Envestra considered should be shortened to better reflect their effective useful lives. The impact of the shortened asset lives is indicated in figure 7 by regulatory depreciation during the access arrangement period being greater than in the earlier access arrangement period. Regulatory depreciation is the sum of straight-line depreciation and the negative depreciation associated with indexation of the capital base. In the earlier access arrangement period the indexation effect dominated and regulatory depreciation overall was therefore negative.

The AER recalculated the forecast tax allowance for the access arrangement period due to the various changes affecting overall revenues.

Other issues

Envestra proposed an incentive mechanism that did not apply in the earlier access arrangement. The proposed mechanism applied only to operating costs, and did not allow for any negative carry over amounts. While the AER accepts the incentive mechanism in principle, it has not accepted the mechanism as proposed. In order to be accepted, the AER requires that the mechanism operate symmetrically and include certain reporting requirements to ensure that any efficiencies made can be verified.

The AER accepts the network management fee paid by Envestra to APA Group, the network operator. This is due to the absence of an incentive mechanism in Envestra's earlier access arrangement that would have provided Envestra with an opportunity to retain the benefits of efficiencies derived from its outsourcing for a period of time.

Envestra proposed a number of specific events that should qualify for cost pass through and considered that if these events were to occur, a materiality threshold of $100 000 should apply. The AER has not accepted Envestra's approach to cost pass through and has proposed an alternative it considers is more in line with the

requirements of the NGR. In particular, the AER has identified certain events that could be considered for pass through subject to a materiality threshold of 1 per cent of revenue per event.

The AER considered that Envestra did not adequately justify the inputs in its residential demand forecasts. The AER requires Envestra to amend its assumed forecasts of residential consumption per customer and accordingly to adopt the demand forecasts set out in the draft decision. The AER's draft decision provides for forecast residential demand which is, on average, 5 per cent higher than Envestra's proposal.

Terms and conditions

Envestra's access arrangement sets out the proposed terms and conditions that are not directly related to the nature or level of tariffs paid by users. Some of the terms and conditions vary from those included in the earlier access arrangement. The AER has not accepted a number of the terms and conditions of Envestra's access arrangement proposal and requires them to be amended. The AER considers that amended provisions for these terms and conditions better promote the national gas objective in s. 23 of the NGL, which the AER considers requires it to balance the interests of the service provider and users.

Background

The AER is responsible for the economic regulation of covered natural gas distribution pipelines in all states and territories (except WA). The AER's functions and powers are set out in the NGL and the NGR. The NGL and NGR came into effect on 1 July 2008. Prior to this, the National Third Party Access Code for Natural Gas Pipeline Systems provided the relevant regulatory framework for gas distribution pipelines.

On 1 October 2010, Envestra submitted an access arrangement proposal for its Queensland gas distribution network for the period 1 July 2011 to 30 June 2016. In accordance with the NGR, the AER published Envestra's access arrangement proposal on 21 October 2010. Interested parties were invited to make submissions on the proposal and four submissions were received. Envestra also presented its access arrangement proposal at a public forum held in Brisbane on 28 October 2010.

1 Introduction

1.1 Background

Envestra Ltd (Envestra) is a publicly listed company formed in 1997 when it acquired natural gas distribution networks in South Australia, Queensland and the Northern Territory.[7]

Envestra has contracted out the operation of its Queensland gas distribution network to the APA Group under an operating and management agreement (OMA).[8]

1.2 Envestra's network

Envestra's Queensland network comprises 2375 km of pipeline delivering gas to approximately 84 000 customers in the main centres of Brisbane (north of the Brisbane River), Ipswich, Rockhampton and Gladstone. The assets used to service Brisbane constitute the major part (76 per cent) of the network.[9]

1.3 Regulatory requirements

The Australian Energy Regulator (AER) is responsible for the economic regulation of covered natural gas distribution pipelines in all states and territories (except WA). Envestra's Queensland gas distribution network is a covered pipeline.[10] The AER's functions and powers are set out in the National Gas Law (NGL) and the National Gas Rules (NGR).

1.3.1 National Gas Law

The NGL states that when 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 achievement of the national gas objective. The national gas objective is:[11]

> ... 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.

The AER must take into account the revenue and pricing principles when exercising its discretion in approving or making those parts of an access arrangement relating to a reference tariff. The AER may also take the revenue and pricing principles into consideration in its performance or exercise of any other economic regulatory function or power where it considers this appropriate.[12]

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7 Envestra, *Qld access arrangement information*, October 2010, p. 46.
8 Envestra, *Qld access arrangement information*, October 2010, p. 44.
9 Envestra, *Qld access arrangement information*, October 2010, pp. 8–9 and 189.
10 AEMC, *List of natural gas pipelines*, viewed 9 December 2010, <http://www.aemc.gov.au/Gas/Scheme-Register/Pipeline-list-summary.html>.
11 NGL, s. 23.
12 NGL, s. 28. The revenue and pricing principles are set out in NGL, s. 24.

1.3.2 National Gas Rules

The NGR sets out the provisions the AER must apply in exercising its regulatory functions and powers, including prescribing the AER's discretion in making the draft decision on Envestra's access arrangement proposal.

In assessing Envestra's access arrangement proposal, the AER:

- has no discretion in respect of r. 50(2) (review submission and revision commencement dates)
- has limited discretion in respect of r. 79 (capital expenditure criteria), r. 89 (depreciation criteria), r. 91 (operating expenditure criteria) and r. 94 (tariffs)
- has full discretion in all other cases.

Envestra's access arrangement for 1 July 2006 to 30 June 2011 inclusive is a transitional access arrangement in accordance with schedule 1 of the NGR. The transitional arrangements set out in clause 5 of schedule 1 of the NGR apply to the review of Envestra's access arrangement proposal for the period 1 July 2011 to 30 June 2016.

1.4 Structure of draft decision

The AER's consideration of Envestra's access arrangement proposal and accompanying access arrangement information is set out as follows:

- Introductory chapters outline the regulatory environment, network description and pipeline services.
- Part A outlines the key components of the total revenue building blocks including the capital base, depreciation, the rate of return, taxation, the incentive mechanism, operating expenditure and a summary of total revenue.
- Part B outlines the demand forecasts, reference tariffs and tariff variation mechanisms.
- Part C outlines the non-tariff components of the access arrangement proposal.

1.5 Next steps

The AER has scheduled a forum on the draft decision for 1 March 2011 in Brisbane. The AER will use this forum to explain the draft decision to interested parties and to obtain comments from interested parties.

Envestra may submit a revised access arrangement proposal and updated access arrangement information to the AER by 23 March 2011. Submissions on the AER's draft decision and Envestra's revised access arrangement proposal from interested parties are due by 21 April 2011.

The AER expects to make a final decision in late May or early June 2011.

2 Pipeline services

Envestra's access arrangement describes the type and nature of services to be provided. This includes those services likely to be sought by a significant part of the market (reference services) and non-reference services.

The AER is satisfied that Envestra has identified the pipeline to which the access arrangement relates and described the proposed pipeline services in accordance with the requirements of the NGR. Further discussion of the specified reference services and tariffs proposed by Envestra is provided in chapter 11 of this draft decision.

2.1 Introduction

This chapter considers the pipeline services set out in Envestra's access arrangement proposal.

2.2 Regulatory requirements

Rule 48(1) of the NGR provides that a full access arrangement must specify certain information for pipeline services, including reference services. Pipeline services include haulage services, interconnection services and ancillary services.[13] Reference services are defined as pipeline services that are likely to be sought by a significant part of the market.[14] An access arrangement must:

- identify the pipeline to which the access arrangement relates and a website at which a description of the pipeline can be inspected[15]
- describe the pipeline services the service provider proposes to offer to provide by means of the pipeline[16]
- specify the reference services, and the reference tariff for each reference service.[17]

Rule 109(1) of the NGR provides that a pipeline service provider must not make it a condition of the provision of a service that the prospective user also accept another non-gratuitous service, unless the bundling of services is reasonably necessary.

2.3 Access arrangement proposal

Envestra has proposed to offer three haulage reference services, three ancillary reference services, and non-reference negotiated services in the access arrangement period.[18] The proposed services have been amended from the earlier access arrangement period as follows:[19]

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13 NGL, s. 2.
14 NGR, r. 101(2).
15 NGR, r. 48(1)(a).
16 NGR, r. 48(1)(b).
17 NGR, r. 48(1)(c) and r. 48(1)(d).
18 Envestra, *Qld access arrangement proposal*, October 2010, p. 5.
19 Envestra, *Qld access arrangement information*, October 2010, pp. 41–42.

- the definition of the demand haulage service includes customers with a daily demand of 50 GJ in addition to customers with an annual demand of 10 TJ per year
- the existing volume haulage service has been split into a domestic haulage service and commercial haulage service
- two additional ancillary reference services have been proposed for disconnection and reconnection services.

The pipeline services proposed by Envestra are set out in table 1 below.

Table 1: Envestra's proposed pipeline services

Type of service	Title	Description
Haulage reference services	Domestic haulage service	Delivery of gas through an existing domestic delivery point
	Demand haulage service	Delivery of gas to existing delivery points with an annual consumption that exceeds 10TJ or a daily consumption exceeding 50GJ
	Commercial haulage service	Delivery of gas to all delivery points which are not domestic or demand delivery points
Ancillary reference services	Special meter reading	A meter reading and provision of the associated meter reading data, where this is in addition to the scheduled meter readings which form part of the haulage reference service
	Disconnection	The installation of locks or plugs at the metering installation of a domestic or commercial delivery point to prevent the withdrawal of gas
	Reconnection	Action to restore the ability to withdraw gas at a delivery point
Non-reference services	Negotiated services	All services requested by users or potential users of the network which are different from the reference services

Source: Envestra, *Qld access arrangement proposal*, October 2010, pp. 5–7; and Envestra, *Qld access arrangement information*, October 2010, pp. 41–42.

2.4 Submissions

The AER received submissions from AGL and Origin about the definitions of the specified haulage reference services.[20] The issues raised in these submissions are considered in chapter 11 of this draft decision.

[20] AGL, *Envestra's Qld access arrangement proposal*, November 2010; Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010.

2.5 AER's consideration

Envestra has correctly identified the pipeline to which the access arrangement relates. Envestra has included a reference to a website at which a description of the pipeline can be inspected.[21] The AER therefore considers that Envestra's access arrangement proposal meets the requirements of r. 48(1)(a) of the NGR.

Envestra has described the services which it proposes to offer to provide by means of the pipeline in section two of its proposed access arrangement, and section four of its access arrangement information.[22] The AER therefore considers that Envestra's access arrangement proposal meets the requirements of r. 48(1)(b) of the NGR.

The AER is satisfied that the haulage reference services and ancillary reference services proposed by Envestra are likely to be sought by a significant part of the market, as they were in the earlier access arrangement period. The issue of the appropriate specification of reference services and tariffs is further considered in chapter 11 of this draft decision.

The AER has no information before it to suggest that the proposed non-reference negotiated services are likely to be sought by a significant part of the market. The AER therefore considers that Envestra's access arrangement proposal is consistent with the requirements r. 101(2) of the NGR.

Consistent with the earlier access arrangement, Envestra has proposed that meter reading data will be provided as part of each haulage reference service.[23] However, to the extent practicable and reasonable:[24]

- users and prospective users may obtain a service which includes only those elements that the user wishes to be included in the service
- Envestra will provide a separate tariff for an element of a service if requested to do so.

The AER therefore considers that Envestra's access arrangement proposal meets the requirements of r. 109(1) of the NGR.

2.6 Conclusion

Based on Envestra's access arrangement proposal and access arrangement information, the AER is satisfied that Envestra has identified the pipeline to which the access arrangement relates and described the proposed pipeline services in accordance with the requirements of the NGR.

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21 Envestra, *Qld access arrangement proposal*, October 2010, p. 4.
22 Envestra, *Qld access arrangement proposal*, October 2010, pp. 5–7; and Envestra, *Qld access arrangement information*, October 2010, pp. 41–43.
23 Envestra, *Qld access arrangement proposal*, October 2010, p. 6.
24 Envestra, *Qld access arrangement proposal*, October 2010, p. 5.

Part A – Total revenue (building block components)

3 Capital base

Envestra proposed an opening capital base on 1 July 2011 of $311 million ($ nominal). The AER considers that most elements of Envestra's proposed opening capital base are in accordance with the NGR. However, the AER requires Envestra to make changes to the inflation figures contained in its proposal and the amounts calculated for depreciation, and consequently accepts an opening capital base value of $316 million ($ nominal).

Envestra has forecast $173 million ($2010–11) in capex over the access arrangement period. The AER accepts that most of this forecast capex complies with the NGR. However, the AER considers amounts in relation to contingency allowances, overheads and real cost escalation are not reasonable. The AER considers that Envestra must amend its forecast of capex over the access arrangement period to $121 million ($2010–11), a reduction of 30 per cent to that proposed by Envestra.

Envestra proposed to spend significant amounts on growth assets and mains replacement. The mains replacement expenditure and growth assets expenditure comprised, respectively, 44 and 38 per cent of the proposed capex. The AER does not consider that large parts of the mains replacement expenditure are justified because Envestra has not sufficiently demonstrated the proposed high risks associated with the Brisbane network. The AER accepts that much of the proposed growth capex is justified. However, the AER has adjusted the forecast costs to reflect its view of the efficient costs for contingency amounts, overhead costs and real cost escalation. Adjustments have been made to mains replacement capex for the same reasons. The AER accepts a forecast cost of $38 million ($2010–11) for mains replacement and $56.5 million ($2010–11) for growth assets over the access arrangement period.

The AER considers that most of the remaining amounts of forecast capex comply with the NGR. However, as with Envestra's mains replacement program and growth assets, the AER considers adjustments should be made for contingency allowances, overheads and real cost escalation. In addition, the AER has not accepted the forecast expenditure for a number of specific projects proposed by Envestra has been adequately justified.

The AER has calculated a closing capital base on 30 June 2016 of $433 million ($ nominal).

3.1 Introduction

This chapter sets out the AER's consideration and analysis of the capital base and forecast capex proposed by Envestra for the access arrangement period.

3.2 Regulatory requirements

In assessing Envestra's opening capital base, the AER is required to consider the transitional provisions of the NGR (clause 3(2) of schedule 1 of the NGR). This relates to actual or forecast capex (new facilities investment) under s. 8.21 of the Code.

In relation to the opening and projected capital base, the NGR requires Envestra to demonstrate:

- capex (by asset class) over the earlier access arrangement period (72(1)(a)(i) of the NGR)
- how the capital base is arrived at including a demonstration of how it is increased or diminished over the previous access arrangement period (72(1)(b) of the NGR)
- the opening capital base is derived in accordance with r. 77(2). Rule 77(2) specifies the components that contribute to the derivation of the opening capital base including conforming capex, depreciation and redundant and disposed of assets
- a forecast of conforming capex (r. 72(1)(c)(i) of the NGR) and depreciation over the access arrangement period, including a demonstration of how it is derived (r. 72(1)(c)(ii) of the NGR)
- the projected capital base is derived using the formula (opening capital base plus forecast conforming capex less forecast depreciation and disposed pipeline assets) in r. 78 of the NGR
- forecast capex is such as would be incurred by a prudent service provider (r. 79(1)(a) of the NGR)
- forecast capex is justifiable on a ground stated in r. 79(2) of the NGR. Such as, where the overall economic value is positive, or that either the expenditure is necessary to maintain and improve the safety of services or to comply with a regulatory obligation or meet levels of demand for services existing at the time the capex is incurred.

Rule 90 of the NGR requires that the access arrangement must contain provisions governing the calculation of depreciation for establishing the opening capital base for the next access arrangement period. The provisions must resolve whether depreciation of the capital base is to be based on forecast or actual capex.

Rule 85(1) of the NGR allows an access arrangement to include a capital redundancy mechanism. The AER may also require such a mechanism in the access arrangement.

The NGR also requires Envestra to show the key expenditure performance indicators to be used to support the expenditure to be incurred over the access arrangement period (r. 72(1)(f) of the NGR).

3.3 Access arrangement proposal

3.3.1 Opening capital base

Envestra has proposed an opening capital base of $311 million ($ nominal). The calculation of this opening capital base is shown in table 3.1.

Table 3.1: Envestra's opening capital base ($m, nominal)

	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12
Opening capital base	227.8	246.1	265.6	277.0	293.2	310.5
Add gross capital expenditure[a]	20.0	15.4	17.7	16.8	19.4	
Add indexation	4.9	11.4	4.0	8.7	7.5	
Less depreciation	5.1	5.9	6.4	6.8	7.2	
Less capital contributions	1.6	1.3	3.9	2.6	2.3	
Less redundant assets	0.0-	0.0	0.0	0.0	0.0	
Less disposals	0.0-	0.0	0.0	0.0	0.0	
Closing capital base	246.1	265.6	277.0	293.2	310.5	

Source: Envestra, *Qld access arrangement information*, October 2010, pp. 108 and 111.
(a) Includes capital contributions.

3.3.1.1 Capital expenditure in the earlier access arrangement period

Envestra has included actual capex of $82 million ($2010–11) incurred in the earlier access arrangement period, in the opening capital base for the access arrangement period. Table 3.2 sets out the actual capex incurred in the earlier access arrangement period.[1]

Table 3.2: Forecast and actual/estimated capital expenditure for 2006–11 ($m, 2010–11)[a]

	2006–07	2007–08	2008–09	2009–10	2010–11	Total
Forecast (QCA approved)	23.6	16.3	14.6	14.2	14.4	83.1
Actual	20.6	15.4	14.5	14.6[b]	17.0[b]	82.1
Difference	3.0	0.9	0.1	-0.4	-2.7	0.9

Source: Envestra, *Qld access arrangement information*, October 2010, pp.34–35; and Envestra, Email response to *AER.EN.14*, revised table 3.5, 13 December 2010.
(a) The AER has converted 2009–10 real dollars to 2010–11 real dollars.
(b) This figure is estimated.

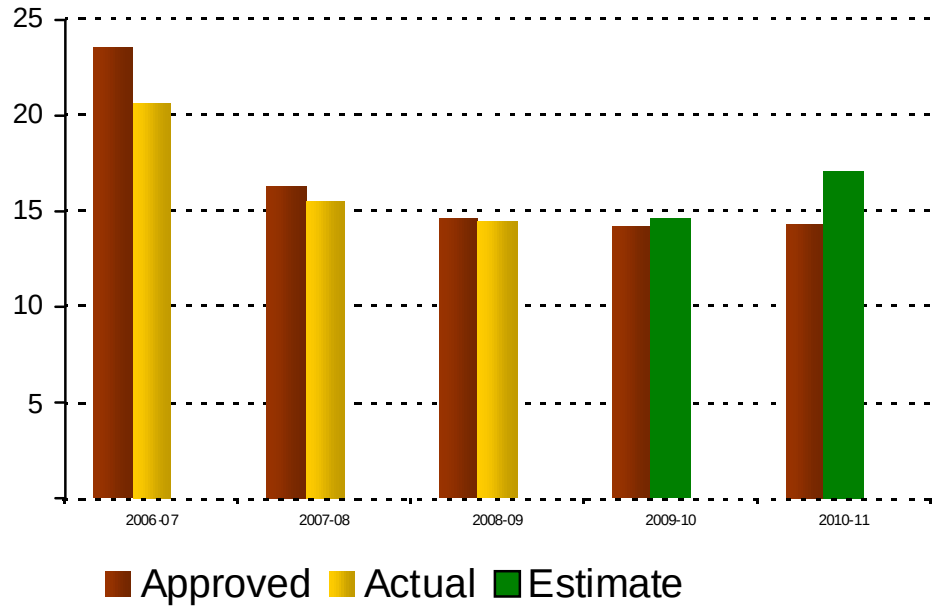
Envestra has submitted an audit report to support its submission that expenditure on past capex projects in the earlier access arrangement period was prudent and efficient.[2] The audit report concluded that, overall, Envestra's capital project processes in the earlier access arrangement period had a reasonable level of rigour.[3]

1 Envestra, *Qld access arrangement information*, October 2010, p. 111.
2 Envestra, *Qld access arrangement information*, October 2010, attachment 8-1.
3 Envestra, *Qld access arrangement information*, October 2010, attachment 8-1, p. 3.

Envestra also submitted a benchmarking report by Marksman Consulting Services (Marksman) to support its capex for the earlier access arrangement period.[4] The benchmarking report concluded that over a range of indicators, Envestra's levels of capex in the earlier access arrangement period are reasonable from a cost perspective only.[5]

Envestra's proposed capex for the earlier access arrangement period, including approved pass throughs, was $0.9 million ($2010–11) or 1.2 per cent less than that approved by the QCA (see figure 3.1).[6]

Figure 3.1: Approved and actual/estimated capital expenditure 2006-7 to 2010–11 ($m, real, 2010–11)



Source: Envestra, Email response to *AER.EN.14*, revised tables 3.5 and 3.6 *Qld access arrangement information*, 13 December 2010.

Table 3.3 shows Envestra's approved and incurred capex for the major capex categories for the earlier access arrangement period. During this period there was significant under-expenditure in stay-in-business capex but significant over-expenditure in the growth and major projects capex categories. The underspend in mains renewal was $6.6 million ($2010–11) and IT systems $4.6 million ($2010–11), or 23 per cent and 66 per cent respectively, less than the amount approved by the QCA. Envestra submitted that mains renewal capex was temporarily curtailed from 2007–08 to 2009–10 due to increased funding costs and the need to curtail capex due to the Global Financial Crisis (GFC), and that the length of mains able to be renewed was further impacted because the mains renewal unit rate approved by the QCA was lower than necessary to undertake the work.[7] Growth capex was $9.1 million ($2010–11) or 27 per cent greater than the amount approved by the QCA. Envestra submitted

4 Envestra, *Qld access arrangement information*, October 2010, attachment 5-8.
5 Envestra, *Qld access arrangement information*, October 2010, attachment 5-8, p. 1.
6 Envestra, *Qld access arrangement information*, October 2010, p. 35.
7 Envestra, *Qld access arrangement information*, October 2010, pp. 37–38.

that expenditure on growth capex was greater than what was approved because of the continued population growth in south-east Queensland and the Queensland government's promotion of natural gas.[8]

Table 3.3: Envestra allowed and incurred capital expenditure for the earlier access arrangement period ($m, 2010–11)[a]

		2006–07	2007–08	2008–09	2009–10	2010–11	Total
Stay-in-business	Allowed	8.2	7.7	13.5	7.5	7.6	44.6
	Incurred	7.3	4.2	5.9	6.8	6.6	30.9
	Variance (%)	-10.3	-44.9	-56.5	-9.5	-12.8	-30.6
Growth	Allowed	7.0	6.8	6.2	6.7	6.7	33.5
	Incurred	7.0	8.9	8.6	7.8	10.4	42.6
	Variance (%)	0.0	30.0	37.9	16.5	54.0	27.3
Full Retail Competition	Allowed	8.4	1.8	-5.2	0.0	0.0	5.1
	Incurred	6.3	2.3	0.0	0.0	0.0	8.6
	Variance (%)	-25.2	29.7	-100.0	0.0	0.0	70.6
Total capital expenditure	**Allowed**	23.6	16.3	14.6	14.2	14.4	83.1
	Incurred	20.6	15.4	14.5	14.6	17.0	82.1
	Variance (%)	-12.5	-5.5	-1.0	2.7	18.6	-1.1

Source: Envestra, *Qld access arrangement information*, October 2010, Email response to *AER.EN.14*, revised tables 3.5 and 3.6, 13 December 2010.
(a) The AER has converted 2009–10 real dollars to 2010–11 real dollars.

3.3.1.2 Adjustment to the capital base for inflation in the earlier access arrangement period

Envestra has proposed that the adjustment to the capital base for inflation in the earlier access arrangement period, be estimated by applying the year-on-year change in the CPI for the June quarter.[9] For 2010–11, Envestra has proposed a forecast annual inflation rate of 2.57 per cent.[10] Envestra's proposed inflation rates for adjusting the capital base are shown in table 3.4.

8 Envestra, *Qld access arrangement information*, October 2010, p. 39.
9 Envestra, *Qld access arrangement information*, October 2010, p. 111.
10 Envestra, *Qld access arrangement information*, October 2010, appendix 1-3 (confidential).

Table 3.4: Inflation rates for adjusting the capital base (per cent)

	2006–07	2007–08	2008–09	2009–10	2010–11
Inflation rates	2.07	4.51	1.46	3.05	2.50

Source: Envestra, *Qld access arrangement information*, October 2010, p. 111.

3.3.1.3 Depreciation in the earlier access arrangement period

Envestra stated that it proposed to roll forward its capital base to 1 July 2011 using the forecast depreciation amounts (adjusted for actual inflation) that were approved by the QCA at the earlier access arrangement review.[11] However, Envestra has used actual depreciation to roll forward the capital base.[1213] Envestra stated that neither its Queensland or South Australian access arrangements require forecast depreciation be used to roll forward the capital base to 1 July 2011.[14] Table 3.5 sets out the actual depreciation amounts for the earlier access arrangement period as proposed by Envestra.

Table 3.5: Envestra's proposed depreciation for the earlier access arrangement period ($m, nominal)

	2006–07	2007–08	2008–09	2009–10	2010–11
Straight-line depreciation[a]	5.1	5.9	6.4	6.8	7.2

Source: Envestra, *Qld access arrangement information*, October 2010, p. 108.
(a) These depreciation figures do not include the negative depreciation adjustment associated with the inflation of the capital base.

3.3.2 Projected capital base

Envestra has proposed a projected closing capital base of $491 million ($ nominal) for the access arrangement period. The calculation of the projected capital base is shown in table 3.6.

11 Envestra, *Qld access arrangement information*, October 2010, p. 108.
12 Envestra, RFM in email to the AER, *AER.EN.3 - Depreciation modelling error*, 25 October 2010.
13 Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.
14 Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

Table 3.6: Envestra's projected capital base ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Opening capital base	310.5	345.8	385.3	419.8	454.2
Plus conforming capital expenditure[a]	37.1	42.0	37.4	37.8	40.6
Less depreciation	9.8	11.3	12.8	14.3	15.6
Inflation adjustment	7.9	8.9	9.9	10.8	11.7
Closing capital base	345.8	385.3	419.8	454.2	490.8

Source: Envestra, *Qld access arrangement information*, October 2010, p. 117.
(a) These are end of year values.

3.3.2.1 Forecast capital expenditure for the access arrangement period

Envestra has proposed forecast capex of $173 million ($2010–11) for the access arrangement period. The proposed forecast capex is set out in table 3.7.

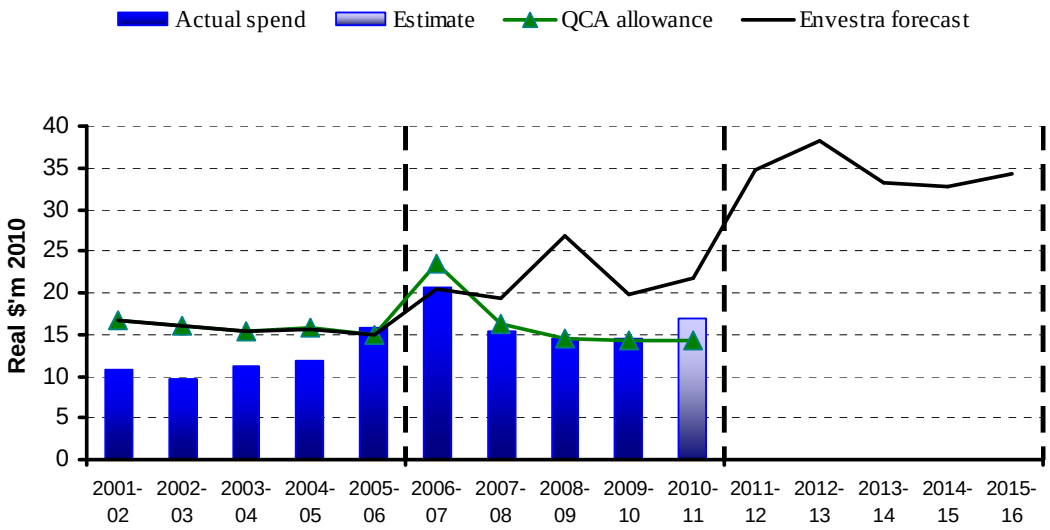
Table 3.7: Proposed forecast capital expenditure for the access arrangement period ($m, 2010–11)[a]

	2011–12	2012–13	2013–14	2014–15	2014–15	Total
Mains replacement	14.6	14.8	15.4	15.8	16.0	76.4
Meter replacement	1.3	1.3	1.4	1.4	1.4	7.0
Augmentation	0.6	4.4	0.1	0.3	0.4	5.7
Telemetry	0.5	0.3	0.3	0.4	0.3	1.9
Regulators and valves	0.5	0.4	0.4	0.3	0.3	1.9
IT	2.7	1.4	1.0	0.1	0.1	5.3
Growth assets	12.6	13.4	13.0	12.9	14.1	66.1
Other distributions system	1.7	1.8	1.4	1.4	1.5	7.9
Other non-distribution system	0.2	0.3	0.2	0.2	0.2	1.0
Total	34.8	38.3	33.2	32.8	34.3	173.4

Source: Envestra, *Qld access arrangement information*, October 2010, p. 87.
(a) The AER has converted 2009–10 real dollars to 2010–11 real dollars.

Figure 3.2 below shows Envestra's capex from the earlier access arrangement period and the proposed capex for the access arrangement period. There is a 71 per cent increase in capex for the access arrangement period, due largely to Envestra's proposed expansion of its mains replacement program.

Figure 3.2: Envestra's actual and forecast capital expenditure ($2010–11)



Source: Envestra, *Qld access arrangement information*, October 2010, pp. 87, 106–107.
QCA, *Proposed Access Arrangements for Gas Distribution Networks - Allgas Energy Limited and Envestra Limited: Final Decision*, October 2001, pp. 176 and 186 .
QCA, *Revised Access Arrangement for Gas Distribution Networks: Envestra: Draft Decision*, May 2006, pp. 57, 69 and 85.

Envestra engaged a consultant, Zincara Pty Ltd to review its forecast capex for the access arrangement period.[15] Zincara noted that Envestra's capex activities and projects were what would be expected of a prudent owner/operator and that its costs were efficient. [16]

3.3.2.2 Adjustment of the capital base for inflation in the access arrangement period

Envestra has proposed an actual percentage change in the consumer price index (CPI) for the purposes of rolling forward the regulatory asset base.[17] It has proposed a forecast annual inflation rate of 2.57 per cent.[18]

3.3.2.3 Forecast depreciation allowance in the access arrangement period

Envestra's proposed allowance for depreciation in the access arrangement period is discussed in chapter 4 of this draft decision.

3.4 Consultant review

The AER engaged Wilson Cook & Co Limited (Wilson Cook), engineering and management consultants, to review Envestra's proposed capex.[19] The review

15 Envestra, *Qld access arrangement information*, October 2010, p. 90 and appendix 6-6.
16 Envestra, *Qld access arrangement information*, October 2010, appendix 6-6.
17 Envestra, *Qld access arrangement information*, October 2010, p. 111 and Envestra, *Qld access arrangement proposal*, October 2010, p. 18.
18 Envestra, *Qld access arrangement information*, October 2010, appendix 1-3 (confidential).
19 Wilson Cook, *Review of expenditure of Queensland & South Australian gas distributors: Envestra Ltd (Queensland)* December 2010.

examined capex for the earlier access arrangement period, as well as Envestra's forecast capex for the access arrangement period.

For the earlier access arrangement period, Wilson Cook concluded that the full amount of actual capex (including an estimate for 2010–11), may be accepted as being prudent and efficient.[20] Wilson Cook noted the following:[21]

- Envestra's asset management plan and associated supporting documentation was suitable, in a general sense, for the prudent management of its assets
- given the prevailing economic climate at the time, it was not surprising that new connections for large customers did not reach the levels forecast
- Envestra overspent growth capex, with the mains, services and meters components experiencing the greatest overspending
- variances in individual capex categories were significant, but Envestra appeared to have managed its expenditure carefully, making reductions in discretionary expenditure. Wilson Cook considered this was a reasonable and appropriate response when external factors (such as the global financial crisis) imposed financial pressures
- because the nature and timing of asset replacement varies between businesses, benchmarking of capex was not valid[22]
- the capital project audit report submitted by Envestra provided an independent opinion that the capital projects were prudent and efficient.[23]

For the access arrangement period, Wilson Cook concluded that most of Envestra's proposed forecast capex may be accepted as being prudent and efficient.[24] In particular it recommended:[25]

- the forecast expenditure on mains replacement in Ipswich was prudent and efficient but the planned replacement work in the Brisbane network should be halved and the expenditure should be adjusted to remove the 15 per cent contingency allowance. Wilson Cook recommended the application of a general contingency allowance was not justified (see discussion in section 3.6.2.4)
- the planned expenditure on growth assets was prudent in scope and timing but the expenditure should be adjusted to remove the 10 per cent contingency allowance
- the proposed augmentation expenditure was prudent in scope and timing, but should be adjusted to remove the 8 per cent contingency allowance included in these estimates with the exception of the Sandgate project and "recurrent-reactive"

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20 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 16.
21 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 9–17.
22 Envestra, *Qld access arrangement information*, October 2010, attachment 5-8 (confidential).
23 Envestra, *Qld access arrangement information*, October 2010, attachment 8-1 (confidential).
24 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 35.
25 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 9–17.

augmentation

- the proposed meter replacement expenditure was considered reasonable, but the expenditure should be adjusted to remove the 10 per cent contingency allowance

- removing the 20 per cent contingency allowance from sleeved railway crossings.[26]

3.5 Submissions

The following submissions regarding the capital base were received from interested parties:

- AGL Energy (AGL) submitted that despite new customers using less gas than existing customers, there is a large proposed capex program dedicated to growth assets.[27]

- Origin Energy (Origin):

  - noted that Envestra has increased its mains replacement program expenditure from the earlier access arrangement period[28]

  - queried whether connecting new customers is reasonable in an environment of rising unit costs for connections but declining average gas consumption.[29]

3.6 AER's consideration

The AER has undertaken an assessment of the capital expenditure in the earlier access arrangement period that Envestra has proposed to add to the opening capital base.[30] Whilst the AER is satisfied with the majority of the components of Envestra's opening capital base, the AER requires Envestra to amend the depreciation amounts used to roll forward its capital base to 1 July 2011. The AER has also undertaken an assessment of Envestra's proposed capex for the access arrangement period.[31] The AER assessed Envestra's projected mains replacement expenditure, growth assets capex and other capex activities. The AER's assessment of Envestra's proposed capex included a consideration of other cost factors that impact on Envestra's projected capital base including contingency allowances, overheads and cost escalators. Other elements that will affect Envestra's revenue in the access arrangement period such as capital contributions, disposals and depreciation were also reviewed by the AER.

3.6.1 Opening capital base

Two steps are required to calculate the opening capital base at 1 July 2011:

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26 Wilson Cook report – *Envestra (Qld)*, p. 27.
27 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 1.
28 Origin, *Envestra (QLD) and APT Allgas access arrangement proposals*, November 2010, p. 4.
29 Origin, *Envestra (QLD) and APT Allgas access arrangement proposals*, November, 2010, p. 1.
30 NGR, r. 77.
31 NGR, r. 72 and r. 79.

- first, the value of the capital base at 1 July 2006 is obtained from the previous access arrangement determination and a true-up is made for any difference between actual and estimated capex in 2005–06. Other adjustments may be necessary as circumstances require;
- second, the opening capital base at 1 July 2006 is rolled forward to 30 June 2011. This involves:
  - adding conforming capex over the earlier access arrangement period;
  - removing regulatory depreciation;
  - removing any redundant capital and disposals; and.
  - indexing the capital base and other components of the roll forward for actual inflation.

The following sections provide details on the issues that emerge during these steps.

While the AER is satisfied with the majority of Envestra's opening capital base, the AER does not agree with the adjustment Envestra has proposed to make for depreciation as it does not comply with the relevant requirements of the NGR and as such is not consistent with the national gas objective of the NGL. The AER requires Envestra to make the amendments set out in section 3.8 of this draft decision.

3.6.1.1 Opening capital base for the earlier access arrangement period

The AER accepts that Envestra updated the opening capital base as at 1 July 2006 correctly for the difference between actual and forecast capex. The AER also accepts the updated inflation adjustment for 2005-06.[32] The adjustments to the opening capital base as at 1 July 2006 are summarised in table 3.8.

Table 3.8: AER approved opening capital based as at 1 July 2006 ($m, nominal)

	As at 1 July 2006
QCA final decision (p.13)	228.4
Envestra's adjustment for actual capex	-0.5
Envestra's adjustment for actual inflation	2.7
AER approved opening capital base	230.5

3.6.1.2 Conforming capital expenditure in the earlier access arrangement period

The AER is required to consider whether the capex in the earlier access arrangement period is conforming. The relevant test is whether the expenditure was justified and would have been incurred by a prudent service provider acting efficiently, in

[32] This adjustment was made by the AER after a revised RFM submitted on 10 December 2010. Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services. The AER considers that the capex incurred by Envestra over the earlier access arrangement period was compliant. Therefore, a total of $82 million ($2010–11) has been added to the opening capital base at 1 July 2006.

In reaching this view, the AER has considered the following factors.

- Envestra's capex increased significantly in the earlier access arrangement period (see figure 3.2). Between 2006 and 2011 Envestra incurred $82 million ($2010–11) in capex, an increase of $21.2 million ($2010–11) and 25.8 per cent over the previous access arrangement period.[33] However, this expenditure was almost equal to the capex allowed by the QCA of $83 million ($2010–11), a difference of 1.1 per cent.

- Envestra has stated that its underspend in mains renewal of $6.6 million ($2010–11) was primarily because of the GFC, particularly between 2007–08 to 2009–10.[34] As Envestra was capital constrained during the GFC it has been cautious in expending capital. As a result of this caution, Envestra stated that it had to critically examine what items of capital expenditure had to be maintained in order to ensure the level of expenditure did not fall below that considered to be prudent. In particular, Envestra stated that it was unable to fully achieve the investments it forecast, thereby restricting customer benefits from network improvements and expansions in the short term.[35]

- most of Envestra's capex in the earlier access arrangement period relates to growth and stay-in-business capex (see figure 3.3).

    - Envestra has little discretion in respect of its growth capex because of the requirement to connect new customers and account for the impact that new customers will have on its network. New connections for large customers did not reach the forecast level because of prevailing economic conditions

    - a greater number of new customer connections than forecast indicates a lower than forecast average connection cost

    - Stay-in-business capex was curtailed in response to the GFC with the greatest underspend in the mains renewal and IT system categories. As well as the GFC, Envestra's mains replacement work was impacted by the unit rate of mains replacement being greater than the QCA allowance resulting in 30 per cent less mains renewal capex than the allowance.[36] The AER considers the scope of the mains replacement work completed by Envestra was appropriate.

- Envestra used competitively contracted labour for its mains replacement work and growth capex.

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33 QCA, *Revised Access Arrangement for Gas Distribution Networks: Envestra – Final Decision*, May 2006, p. 65.
34 Envestra, *Qld access arrangement information*, October 2010, pp. 37–38.
35 Envestra, *Qld access arrangement information*, October 2010, p. 16.
36 Envestra, *Qld access arrangement information*, October 2010, p. 38.

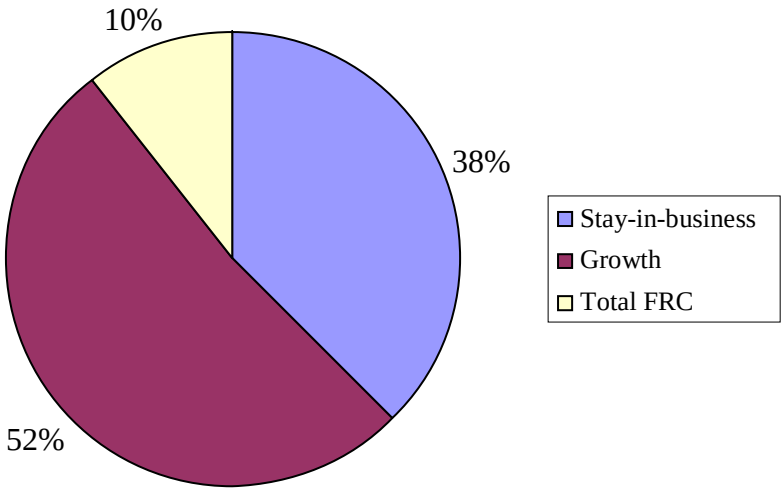
- Although Envestra overspent $3.5 million ($2010–11) on FRC IT costs, in 2008–09 the QCA considered that funds from the existing allowance for stay-in-business IT expenditure could be reallocated to meet FRC compliance expenditure. This re-allocation is, in part, reflected in the significant underspend in non-FRC-related IT during the earlier access arrangement period.

- Aside from mains and IT systems, the variances between the actual and allowed other stay-in-business expenditure categories were relatively minor.

- Growth capex showed an over expenditure of $9.1 million ($2010–11) or 27.3 per cent, due largely to population growth in south-east Queensland and promotion of natural gas by the Queensland government.[37]

- Wilson Cook agreed that the capex incurred in the earlier access arrangement was compliant.[38]

Figure 3.3: Capital expenditure by category over the earlier access arrangement period ($2010–11)



In its proposal, Envestra provided an estimate of 2010–11 capex. This estimate will be updated in its revised access arrangement proposal.

3.6.1.3 Depreciation used in the roll forward model

The calculation of the opening capital base requires depreciation to be removed from the capital base. The depreciation is typically either:

- forecast depreciation - as it was forecast at the time the earlier access arrangement was approved, or

[37] Envestra, *Qld access arrangement information*, October 2010, p. 39.
[38] Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 16.

- actual depreciation - recalculated to reflect the actual capex over the earlier access arrangement period.

Envestra's proposal contains a discrepancy in regard to its approach to the adjustment for depreciation. Envestra indicated in its proposal that forecast depreciation had been used to roll forward the capital base. However, Envestra had calculated its opening capital base using actual deprecation. The AER sought clarification and Envestra stated that it had incorrectly described its approach as forecast depreciation. Instead, Envestra stated that it proposed to apply actual depreciation.[39]

The AER does not agree with Envestra's revised position. The QCA (and ESCOSA with respect to Envestra's network in South Australia) was clear the Code required the opening capital base to be calculated using forecast depreciation (adjusted for actual inflation) from the previous access arrangement period.[40] For example, the QCA states:[41]

> The Code requires that the roll-forward of the capital base be made using forecast depreciation figures included in the 2001 Final Decision, adjusted for inflation, as these represent the actual funds returned to Envestra over the current access arrangement period. This approach is consistent with that proposed by Envestra.

Based on these regulatory decisions, at the commencement of the earlier access arrangement, all parties should have reasonably expected that the regulator would again roll forward the capital to 30 June 2011 using forecast depreciation. Section 24(4) of the NGL requires the AER to have regard to the capital base adopted by the previous regulator.

The AER considers that regard should also extend to the general approach adopted by the relevant regulator to roll forward the capital base. It would be consistent with the earlier access arrangement for the capital base to be adjusted using forecast depreciation. In addition, the AER prefers and will require forecast depreciation to be used at the next revision of the access arrangement (refer section 3.6.3). Consequently the AER considers it is appropriate to maintain the forecast depreciation approach through the transition of regulatory responsibilities from the QCA to the AER. Accordingly, the AER has recalculated Envestra's capital base as at 1 July 2011 using forecast depreciation from the earlier access arrangement period.

Based on this adjustment, the AER has determined the revised depreciation amounts for the earlier access arrangement period to be those shown, in nominal terms, in table 3.9. Compared to the depreciation amounts proposed by Envestra, the impact on Envestra's opening capital base of the AER's approved depreciation is an increase of $0.6 million ($ nominal).

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39 Envestra, Email to the AER, *FW: AER.EN.16 – remaining asset lives and roll forward*, 10 December 2010.

40 ESCOSA, *Proposed revisions to the access arrangement for the South Australian gas distribution system, Final decision*, June 2006, pp. 91–93.
QCA, *Final Decision, Revised Access Arrangement for Gas Distribution Networks: Envestra*, May 2006, pp. 66 and 72.

41 QCA, *Final Decision, Revised Access Arrangement for Gas Distribution Networks: Envestra*, May 2006, p. 72.

Table 3.9: AER approved depreciation for the earlier access arrangement period ($m, nominal)

	2006–07	2007–08	2008–09	2009–10	2010–11
Straight-line depreciation	4.9	5.5	6.3	7.1	7.7
Envestra proposed depreciation[a]	5.2	6.0	6.5	7.0	7.4

(a) RFM contained in Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

3.6.1.4 Adjustment to the capital base for inflation

The AER considers that Envestra's proposal to use the June to June CPI to adjust the capital base for inflation is not appropriate given that such an indexation approach is not consistent with the control mechanism. However, Envestra did revise the inflation rates it used when responding to the depreciation matter discussed above.[42] In this revision Envestra has updated the forecast inflation rate for 2005-06 for actual inflation and has also revised the actual inflation rates for 2006-07 to 2010–11 from June to June figures to March to March figures. This approach is now consistent with the control mechanism.

3.6.1.5 Capital redundancy policy

Envestra proposed to not remove any redundant assets from the capital base during the earlier access arrangement period.[43] Envestra stated that due to the low frequency and limited value of any redundant assets that might arise, their overall value is immaterial and it would not be efficient or productive to attempt to identify any such assets and remove them from the asset base.[44]

The AER considers there is no evidence of any significant number or value of redundant assets in Envestra's network and the cost of identifying any that may exist is unlikely to be justified.

The AER accepts that no adjustments for redundant assets are required to be made by Envestra to its opening capital base.

3.6.1.6 Summary on the opening capital base

The AER has considered the components of Envestra's proposed opening capital base. The AER requires an amendment to the opening capital base to account for adjustments in depreciation and inflation for the earlier access arrangement period. As a result, the AER does not consider that Envestra's proposed opening capital base is consistent with r. 77(2) of the NGR. The AER requires Envestra to make the amendments set out in amendment 3.1 in section 3.8 of this draft decision.

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42 Envestra provided a revised RFM with its response to question regarding its remaining asset lives and depreciation. Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

43 Envestra, *Qld access arrangement information*, October 2010, p. 109.

44 Envestra, *Qld access arrangement information*, October 2010, pp. 109–111.

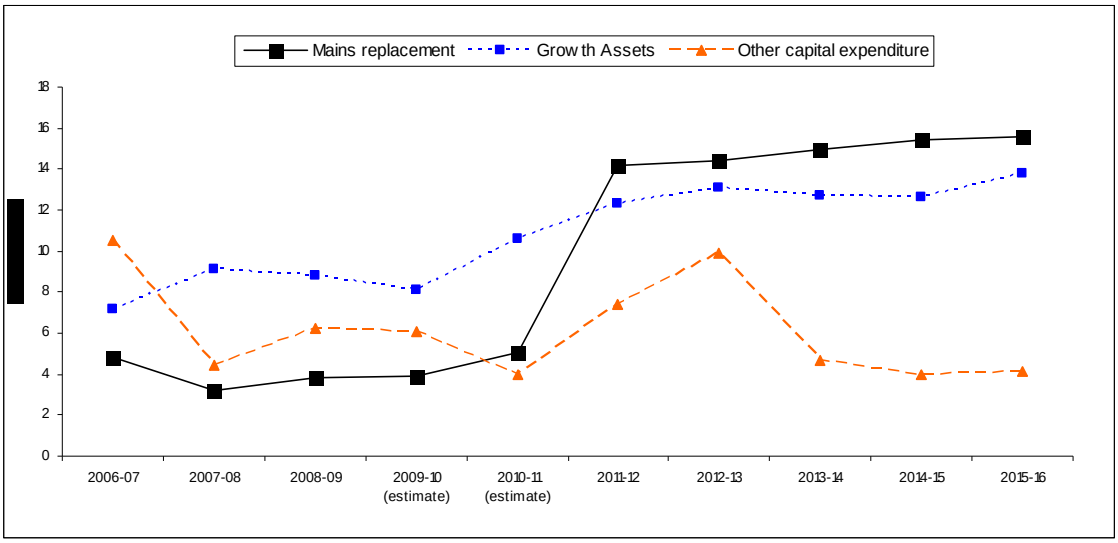
3.6.2 Projected capital base

The most prominent feature of Envestra's forecast capex proposal is the substantial increase over levels incurred in the earlier access arrangement period. In total, Envestra has proposed a 111 per cent increase in capex. If the proposed capex is undertaken, tariffs will increase substantially. Compared to Envestra's proposed capex, the AER approved capex increases the proposed tariffs by about 0.7 per cent per annum. If capex were to be maintained at the same level as over the earlier access arrangement period, the proposed tariffs would increase by a further 0.5 per cent per annum.

In view of the potentially large tariff impact on customers, the AER has examined Envestra's proposed capex program closely. The AER considers that it is important that Envestra's capex proposal is consistent with the requirements of the NGR and represents value for money for customers. In general, the AER has determined that the majority of Envestra's capex program is justified, with the most significant exception the proposed mains replacement work in Brisbane. The AER proposes to allow total capex of $121 million ($2010–11) compared to Envestra's proposal of $173 million ($2010–11).

The AER has investigated the reasons for the large increase in capex proposed by Envestra.[45] Figure 3.5 shows capex from the earlier access arrangement period and proposed capex separated into three major categories: mains replacement, growth assets and other. While there are increases in mains replacement and growth, the most notable increase is in Envestra's mains replacement program. Envestra has proposed expenditure of $76 million ($2010–11) on mains replacement which is 249 per cent higher than the $22 million ($2010–11) incurred in the earlier access arrangement period.[46] The AER's consideration of the three main elements of Envestra's capex program is provided below.

Figure 3.5: Envestra's forecast capital expenditure by purpose – 2006–07 to 2015–16



Source: Envestra *Qld* access *arrangement information*, October 2010, p. 87.

45 NGR, r. 78.
46 Envestra, *Qld access arrangement information*, October 2010, pp. 35 and 92.

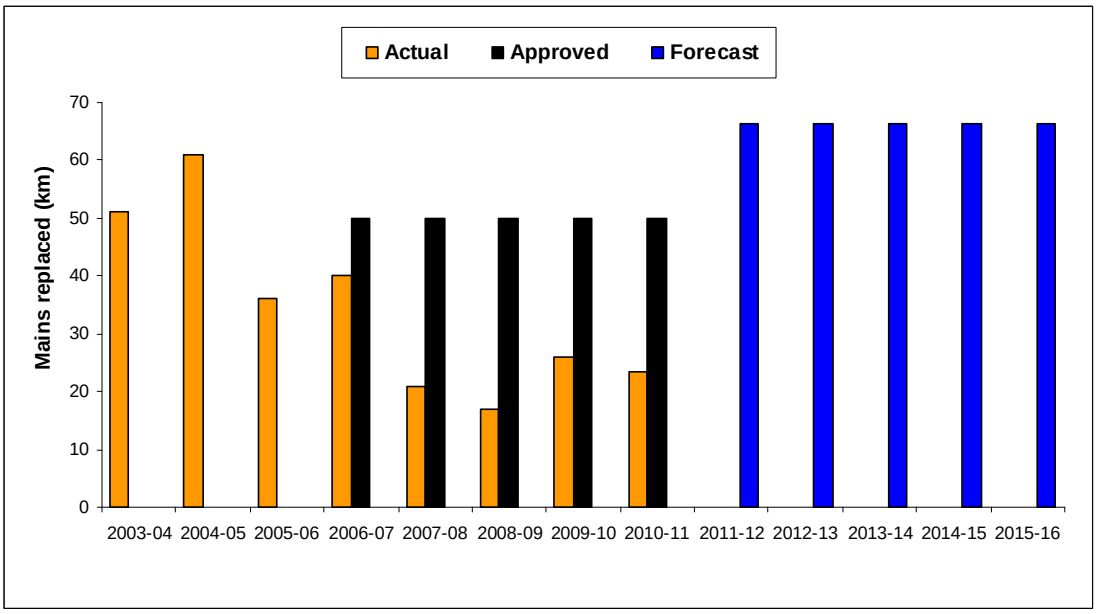
Envestra, email response to *AER.EN.14*, revised tables 3.5 and 3.6, 13 December 2010.

3.6.2.1 Mains replacement capital expenditure

Envestra has proposed to replace all remaining cast iron and unprotected steel mains within the Brisbane and Ipswich networks during the access arrangement period.[47] Envestra has proposed to replace 330.9 km of mains over the access arrangement period at a rate of 66.2 km for each year during the access arrangement period.[48]

The annual mains replacement rate of approximately 66.2 km per annum compares to 25.5 km per annum of actual mains replaced over the earlier access arrangement period.[49] Figure 3.3 illustrates Envestra's actual, approved and proposed forecast mains replacement length from 2003 to 2015.

Figure 3.3: Mains replacement–Envestra QLD



Source: Envestra, *Qld a*ccess arrangement information, October 2010, p. 94.
QCA, *Gas distribution service quality performance 1 July 2003 to 30 June 2004*, September 2004, p. 3.
QCA, *Gas distribution service quality performance 1 July 2004 to 30 June 2005*, September 2004, p. 4.
QCA, *Gas distribution service quality performance 1 July 2006 to 30 June 2007*, September 2004, p. 5.
QCA, *Final decision: Revised access arrangement for Gas Distribution Networks*; Envestra, May 2006, p.80.
ECG, *Envestra Pty Ltd: Capital and operating expenditure review for QCA*, May 2006, p. 93.
Envestra, Email to the AER, *FW: AER.EN.21 – Queensland mains replacement* 21 January 2011.

[47] Envestra, *Qld access arrangement information*, October 2010, attachment 7-4, p. 4.
[48] Envestra, *Qld access arrangement information*, October 2010, p. 94.
[49] Envestra, *Qld access arrangement information*, October 2010, p. 100.

Envestra indicated that mains need to be replaced to address the substantial leakages or unaccounted for gas (UAG) that stem from the older parts of its network.[50] Envestra also stated that the leakages pose safety concerns. Further, the old mains must be run at low pressures meaning certain gas appliances, such as instantaneous gas water heaters, can not be used by customers or are significantly less effective.

The AER identified three aspects of Envestra's mains replacement for more detailed consideration:

- whether the replacement is necessary
- whether the costs have been estimated appropriately
- whether it is necessary to undertake the replacement in the timeline proposed by Envestra.

These matters are considered in the following sections.

Prudence of mains replacement

The AER considers that Envestra has established a requirement for the replacement of its cast iron and unprotected steel mains for its Ipswich network to maintain and improve safety of services and to maintain the integrity of services in accordance with the NGR.[51] The AER, however, considers that Envestra has not demonstrated an unacceptably high risk was posed by continuing low level gas leakages associated with the Brisbane network. The AER has reached this conclusion for a number of reasons:

- Envestra's aged mains are restricted to operating at low pressures, and have limits to their capacity to provide high volumes of gas at peak periods, contributing to poor reliability. Occasionally water seeps into the mains, which operate at low pressure, resulting in blockages and loss of supply[52]
- the safety risk posed through the leakage of gas from Envestra's distribution network
- The declining and current negligible level of UAG reported for the Brisbane network.[53] Wilson Cook considered that, based on the current insignificant level of leakage measured on the Brisbane network, Envestra had not demonstrated that an unacceptable high risk was posed by continuing low level gas leakages associated with the Brisbane network.[54] Wilson Cook recommended that Envestra's planned replacement work in the Brisbane network be halved.[55]

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50 Envestra, *Qld access arrangement information*, October 2010, pp. 93–94.
51 NGR, r. 79(2)(c)(i).and NGR, r. 79(2)(c)(ii).
52 Envestra, *Qld access arrangement information*, October 2010, p. 93.
53 Envestra, *Qld access arrangement information*, October 2010, attachment 7–4, p. 14.
54 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 20–28.
55 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 27.

- The UAG levels in the Ipswich network are high at a reported 14 per cent and therefore the benefits from a mains replacement program are substantial.[56] This view is supported by Wilson Cook who considered that the economic benefits of the replacement program in Ipswich are substantial.[57]

The AER acknowledges there may be other benefits of reducing UAG that are not captured by the requirements of the NGR or NGL, in particular a reduction in green house gas emissions and odour.

Estimated cost

Envestra has proposed only a marginal increase in mains replacement unit rates from an average unit rate of [text removed c-i-c] per meter achieved in the earlier access arrangement period to an implied rate of [c-i-c] per meter.[58] Envestra submitted that its proposed unit rate reflects competitively tendered mains laying unit rates and actual material costs procured by competitive material tendering.[59] Wilson Cook reported that the work is contracted out, there has been a reported uplift in contracted rates for the type of work involved and that based on a detailed assessment of the unit rates, concluded that the unit rates proposed by Envestra are reasonable.

The AER considers that the unit rate proposed by Envestra is justified, with the exception of some contingency allowances (see section 3.6.2.4). After removing the 15 per cent contingency allowance, the AER has calculated a mains replacement unit rate of [c-i-c] per meter which it considers is appropriate.

Timing and scope of mains replacement

The rate of replacement is a business strategy and risk mitigation decision for Envestra. There is no specific obligation on Envestra to undertake the works at the rate it has proposed. Should Envestra not undertake the works as proposed (if they are approved and funded), then customers will contribute through higher tariffs to works that are not delivered.

Although there are not the regulatory obligations in relation to UAG that there are for Envestra in South Australia during the access arrangement period, the AER considers there are incentives for Envestra to replace its aging mains in Queensland:

- the constraints imposed through the GFC on stay in business capex will have been substantially relaxed by the end of the earlier access arrangement period[60]

- higher gas costs improve the business case for undertaking works to reduce gas leakages.

Wilson Cook considered that even though Envestra proposes to increase the replacement rate from 24 km in 2010–11 to 66 km in the first year of the access arrangement period, the proposed annual replacement length to be achieved in the

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56 Envestra, *Qld access arrangement information*, October 2010, attachment 7–4, p.13.
57 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 24.
58 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 26.
59 Envestra, *Qld access arrangement information*, October 2010, attachment 7-1, p. 11.
60 Envestra, *Qld access arrangement information*, October 2010, p. 37.

access arrangement period is not large in comparison to that contemplated by Envestra for its South Australian network.[61] Wilson Cook concluded that Envestra was capable of achieving its main replacement program at the planned rate.[62]

The AER accepts that a program of this magnitude presents a level of risk for customers. As the decision on the rate of replacement is largely in the hands of Envestra, it would seem appropriate that Envestra should manage most of the risk associated with this decision. A sharing of risks along these lines is achieved through the AER's intention to require forecast depreciation rather than actual depreciation to be used at the revision the access arrangement in 2016-17 (refer chapter 4). Under the forecast depreciation approach, a significant proportion of a capex allowance that is not spent would be recovered. This is because the depreciation removed from the capital base at the next reset will be based on the higher forecast capex allowance. If more expenditure is undertaken, Envestra would similarly have only depreciation associated with the forecast capex allowance removed from its capital base, but it would be able to add the full amount of the overspend to its capital base. Section 3.6.3 provides discussion on the incentives under forecast and actual depreciation approaches.

With the exceptions outlined in section 3.6.2.4, the AER considers that the proposed mains replacement capex forecasts for the Ipswich network are justified. The AER also considers that Envestra has not demonstrated an unacceptably high risk was posed by continuing low level gas leakages associated with the Brisbane network and the expenditure for this part of the network should be halved, along with the exceptions outlined in section 3.6.2.4.

3.6.2.2 Growth assets capital expenditure

Envestra has proposed $66 million ($2010–11) for growth asset capex, which is 38 per cent of the proposed capex program for the access arrangement period.[63] The expenditure comprises of mains, inlets and meter assets to service new users.[64]

Envestra's forecast growth asset capex is 55 per cent higher than actual expenditure incurred in the earlier access arrangement period.[65] Envestra's actual growth assets expenditure was 27 per cent greater than the QCA forecast for the earlier access arrangement period.[66]

The AER has reviewed Envestra's growth capex proposal to determine whether the investment in these new assets is justified and whether the costs have been estimated appropriately.

Prudence of growth capital expenditure

A key issue considered by the AER in relation to growth capex is the impact of declining average domestic consumption that is expected over the access arrangement

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61 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 26.
62 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 26.
63 Envestra, *Qld access arrangement information*, October 2010, p. 87.
64 Envestra, *Qld access arrangement information*, October 2010, p. 99.
65 Envestra, *Qld access arrangement information*, October 2010, pp. 34 and 87.
66 Envestra, *Qld access arrangement information*, October 2010, pp. 34–35.

period for existing customers. Envestra also anticipated new customers are expected to use less gas than existing customers. At issue is whether the additional revenue generated from new customer connections would justify the additional investment by Envestra. In their submissions, AGL and Origin questioned whether adding new users to Envestra's network would meet the national gas objective.[67] That is, would this expenditure on growth of the network be in the long term interests of consumers, in particular, with respect to price.

The AER has examined the impact of new customers on Envestra's network and whether new customers would be cross subsidised by existing customers. In particular, the AER has considered growth capex associated with new housing estates, domestic load in established suburbs and industrial and commercial load in established suburbs.[68] The AER has come to the view that there is a positive business case for undertaking the growth capex proposed by Envestra for the following reasons:

- Envestra's business case analysis for the significant extensions to its network showed that the net present value (NPV) of incremental revenue exceeded the NPV of capex[69]

- Wilson Cook reviewed the cost estimates provided by Envestra and found the unit rates used to estimate reticulation and customer connection costs were, in its view, within the expected range[70]

- Subject to the resolution of certain assumptions, ACIL Tasman has concluded that the customer number forecasts proposed by Envestra are reasonable[71] [72]

- Wilson Cook recommended that the scope and timing of the proposed growth capex is prudent based on Envestra's forecast demand.[73]

Consequently, the AER accepts that the proposed expenditure would result in a net benefit to customers overall.

Estimated cost

In its proposal, Envestra provided material supporting its growth capex costs.[74] Wilson Cook has also provided advice on growth capex costs and indicated that:

- the composition of the demand forecast unit rates and the breakdown of the unit rates by customer class were within a range Wilson Cook considered to be reasonable [75]

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67 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 3; and Origin, *Envestra (QLD) and APT Allgas access arrangement proposals*, November 2010, p. 1.
68 Envestra, *Qld access arrangement information*, October 2010, p. 100.
69 Envestra, *Qld access arrangement information*, October 2010, p. 100.
70 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 28–29.
71 These include the Queensland economic growth forecasts which are discussed in Chapter 10 of this decision.
72 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 33.
73 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.
74 Envestra, *Qld access arrangement information*, October 2010, attachment 7-1.

- the length of mains extensions work related to new connections proposed was acceptable [76]

- the proposed unit rates for cost of meters, regulators and meter boxes were reasonable [77]

- the application of the proposed unit rates to the volumes derived from the demand forecasts matched the proposed expenditure[78]

- it was satisfied with the application of the proposed unit rates to the volumes derived from the demand forecasts as these match the proposed expenditure in the case of volume customers.[79]

In light of the information provided by Envestra and the advice from Wilson Cook, with the exception of some contingency allowances (see section 3.6.2.4), the AER considers that growth capex proposed by Envestra is justified.

3.6.2.3 Other capital expenditure

Other capex of $31 million ($2010–11) makes up 18 per cent of the total capex forecast for the access arrangement period. This expenditure relates to a range of activities, including: meter replacement, augmentation of the network, telemetry, IT equipment in addition to a number of smaller expenditure items.

The AER has considered each of these expenditure items and considers that for most, the proposed costs have been adequately explained and justified by Envestra. However, the AER has adjusted meter replacement, augmentation and sleeved railway crossings. The AER has reached these positions for a variety of reasons including:

- it does not accept the costs associated with contingency allowances because the proposed contingencies did not include sufficient details on the justification of a contingency

- Envestra's approach to the recovery of overheads is too simplistic and may tend to overstate overhead costs over time

- Envestra's proposed real cost escalators have not been estimated on a reasonable basis nor produce the best forecast in the circumstances faced by Envestra.

In some cases, where the proposed expenditure is relatively small, the AER has undertaken a higher level review of the proposed costs to establish consistency with the previous pattern of capex incurred by Envestra.

In total the AER considers that Envestra's proposed other capex ought to be adjusted from $31 million ($2010–11) to $27 million ($2010–11).

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75 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.
76 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.
77 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.
78 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.
79 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 29.

The AER has also sought advice from Wilson Cook on each capex item. The AER's assessment of other capex expenditure and a brief summary of the recommendation provided by Wilson Cook are presented in table 3.10

Table 3.10: Other capital expenditure

Item of expenditure	Envestra proposal	Wilson Cook recommendation	AER consideration
Meter replacement capex	$7.0 million ($2010–11)	Envestra has a requirement to periodically (10–15 years) change gas meters in order to test them for metering accuracy which is in accordance with a Measurement Scheme under the Queensland Petroleum and Gas (Production and Safety) Act.[80] Envestra is required to address the Production and Safety Act, where compliance is required as a licence condition.[81] The forecast numbers of meters to be changed or refurbished compared to Envestra's inventory is reasonable.[82] Expenditure on meter replacement appears to be reasonable.[83]	The number of meter replacements is driven by the requirements of the Queensland Petroleum and Gas (Production and Safety) Act. The AER is satisfied the forecast number of meter replacements is consistent with the requirements of the Act based on the condition of the network. However, the AER requires Envestra to remove the 10 per cent contingency allowance, which is discussed further in section 3.6.2.4.
Augmentation capex	$5.7 million ($2010–11)	Business cases submitted by Envestra for the eight augmentation projects provided a suitable justification for capex. The direct expenditure on augmentation appears to be prudent and efficient.[84] Based on the evidence that Envestra provided, the proposed augmentation work is prudent in scope and timing.[85]	The AER is satisfied the augmentation projects proposed by Envestra have been justified. The business cases provided by Envestra justify the projects to a satisfactory standard. However, the AER requires Envestra to remove the 10 per cent contingency allowance, which is discussed further in section 3.6.2.4.
Telemetry capex	$1.9 million ($2010–11)	The forecast expenditure on telemetry was immaterial and appears to be justified.[86]	The AER is satisfied the forecast telemetry capex has been justified as the proposed costs are consistent with historic trends.

80 Envestra, *Qld access arrangement information*, October 2010, p. 94.
81 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 30–31.
82 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 31.
83 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 31.
84 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 30.
85 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 30.
86 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 31.

Item of expenditure	Envestra proposal	Wilson Cook recommendation	AER consideration
Regulators and valves capex	$1.9 million ($2010–11)	Envestra's forecast expenditure on regulators and valves was justified.[87]	The AER is satisfied the forecast regulators and valves capex has been justified as the proposed costs are consistent with historic trends.
IT capex	$5.3 million ($2010–11)	Concluded that Envestra's forecast capex on IT systems was prudent and efficient and reasonable for a business of this type. Includes periodic replacement and upgrading of hardware and software and the completion of new systems for works management, advanced asset management and field data capture.[88]	The AER is satisfied the IT capex proposed by Envestra has been justified. The costs are comparable with businesses of similar size and type.
Other distribution systems capex — Envestra has proposed $7.9 million ($2010–11) on other distribution systems capex over the access arrangement period.[89] [90] The individual items are discussed below.			
*Sleeved Railway Crossing*s	$4.4 million ($2010–11)	The expenditure on sleeved railway crossings appears to be prudent and its cost reasonable.[91] However, the expenditure on sleeved railway crossings should be adjusted to remove the 20 per cent contingency allowance associated with this expenditure.[92]	The AER is satisfied this capex proposed by Envestra has been justified to ensure the safety of the public and the security of supply to a large number of customers. Envestra submitted that a combination of previous installation practices and third party activities within road and rail corridors has resulted in compromised cathodic protection and the potential for gas to accumulate in a confined space.[93] The AER agrees with Wilson Cook's recommendation to remove the 20 per cent contingency allowance, which is discussed further in section 3.6.2.4.

87 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 31.
88 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 31.
89 Other non-systems distribution capex includes items of capex that relate to the network infrastructure but do not fall into the above categories.
90 Envestra, *Qld access arrangement information*, October 2010, pp. 87, 100–101.
91 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 32.
92 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 32.
93 Envestra, *Qld access arrangement information*, October 2010, p. 92, attachment S18.

Item of expenditure	Envestra proposal	Wilson Cook recommendation	AER consideration
Remaining items	$3.5 million ($2010–11)	The expenditure on these items was prudent and the cost reasonable.[94]	The AER is satisfied capex for the remaining items of capex proposed by Envestra have been justified. On the basis of Wilson Cook's advice, the AER concludes that the remaining items of capex are justified. [95]
Other non-distribution system capex	$1.0 million ($2010–11)	Forecast expenditure on other non-distribution systems appears to be prudent.[96]	The AER is satisfied the capex for other non-distribution system proposed by Envestra has been justified.

94 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 32.
95 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 32.
96 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 32.

3.6.2.4 Other adjustments made to the projected capital base

Contingency allowances

The AER recognises that the process for estimating capex, although expected to be efficient and final, is not necessarily an exact process. The AER therefore considers that a contingency allowance for a cost estimation risk factor of the type proposed by Envestra may be appropriate in some circumstances. Typically, such circumstances apply where the allowance is informed by specific instances of actual past cost increases where the inherent risks and some contingent risk could be identified in the determination of the base estimate. The Australian Competition Tribunal (Tribunal) formed such an opinion in respect of its decision on an application by East Australian Pipeline Limited (EAPL). In that decision, the Tribunal allowed a contingency factor in the calculation of an optimised replacement cost (ORC) to cover construction cost omissions as the Tribunal considered a prudent potential new entrant would allow for contingencies and include them in its calculation of its ORC to arrive at its "buy or build" depreciated optimised replacement cost.[97]

The AER considers that in its application to the Tribunal, EAPL provided significant design and cost estimate details on its pipeline network based on experience and knowledge of the network upon which its contingency for omissions was based. Further, the Tribunal considered the replacement cost of a complete pipeline which the AER considers is likely to have significantly greater cost uncertainties and risks than the capital projects proposed by Envestra (mains replacement, meter replacement, augmentation, replacement of hazardous services (inlets) and sleeved railway crossings).

Envestra's proposed contingencies for each of its capex categories did not include details on the justification of a contingency. Envestra has substantial experience in the construction, installation and estimation of capex activities such as augmentation and mains and meter replacement, and should be able to identity and estimate all the relevant costs for these activities. It is the view of the AER that Envestra's capex estimates should contain minimal cost omissions.

In its review of Envestra's capex, Wilson Cook considered that it was not appropriate for non-specific contingency allowances to be added to expenditure estimates in regulatory submissions for the following reasons:[98]

- the allowances constitute a provision
- whilst a contingency allowance may need to be called on in some instances, such allowances are unlikely to be called on generally, or to their full extent; and to argue that they would is to say, in essence, that the business concerned is unable to estimate its costs accurately or that it does not wish any risk of cost overruns to remain.[99]

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97 Australian Competition Tribunal, *East Australian Pipeline Limited [2004] ACompT 8*, paragraph 50, 8 July 2004.

98 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 37.

99 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 37.

The AER agrees with Wilson Cook that the forecasting and budgeting processes proposed by Envestra are sound, refined periodically and capable of producing estimates that prove, in the event, to have been accurate.[100] Wilson Cook considered that there is no reason why any general contingency or other such general provision should to be agreed to for capex, as it had not been established that it was necessary.[101]

Further, the AER considers that in some cases contingency allowances may be symmetrical resulting in deductions from the forecast expenditure. Without a detailed analysis and review of each specific expenditure item, such symmetries cannot be identified. The AER considers that a general contingency allowance, which is purely based on estimates, will not show this.

The AER therefore considers that Envestra's proposed capex on mains replacement, meter replacement, augmentation, replacement of hazardous services (inlets) and sleeved railway crossings is not consistent with r. 79(2)(c) of the NGR. The AER considers that the contingency allowances applied to these capex items are excessive and therefore do not meet the requirements of r. 79(2)(c) of the NGR. as it does not comply with the relevant requirements of the NGR and as such is not consistent with the national gas objective of the NGL. The AER requires Envestra to make the amendments set out in section 3.8 of this draft decision.

Overheads

Overhead costs include, for example, costs associated with network planning, procurement, fleet and other costs that are not related to specific capex categories and are allocated across other capex categories. The AER considers that overhead costs need to be directly referable to the delivery of pipeline services.[102] Envestra has proposed a general overhead rate of 20 per cent that is added to capex with the exception of expenditure on mains replacement and augmentation where a 10 per cent overhead rate has been applied.[103]

The AER considers Envestra's approach to the recovery of overheads is too simplistic and may tend to overstate overhead costs over time. Overheads costs are not likely to increase in direct proportion to underlying capex. Instead overhead costs would only partly relate to the level of capex incurred by Envestra as these overhead costs would contain certain fixed costs that should not increase in direct proportion to capex over time.

In reviewing the proposed overheads costs, the AER considered:

1. how the components of overheads costs relate to the provision of pipeline services
2. whether any of the overheads cost would be recovered elsewhere – that is, the potential for double counting
3. whether the growth of overhead costs expected by Envestra is reasonable.

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100 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 37.
101 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 37.
102 NGL, s.2 and 23.
103 Envestra, *Qld access arrangement information*, October 2010, p. 102.

Components of overheads costs

Envestra provided little information on the composition of overhead costs in its access arrangement proposal. On request from the AER, Envestra provided information detailing the costs that make up the capital overheads.[104] Envestra indicated its forecast overheads comprise of six types of costs. Envestra's proposed composition of capital overheads for 2009–10 is outlined in table 3.11 below.

Table 3.11: Composition of Envestra's capital overheads

Cost	Cost description
Operations Management and Administration	Includes the cost of senior management involvement in the management of capital projects and the costs involved in providing associated administrative support.
Planning & System Design	Includes the costs in providing network analysis, design, mapping and costing support in relation to network extensions and modifications.
Procurement and Fleet	Includes the procurement costs and maintenance of vehicles involved in capital activities.
Technical Assurance	Includes the costs of providing: ▪ Medium to high-level technical audits; ▪ Training with respect to field operations; ▪ Development, conduct and maintenance of competency-based skills system; ▪ Risk assessments; and ▪ Regulatory compliance assurance.
Network Engineering	Includes the costs of providing design and engineering of transmission pressure pipelines and non-standard gas distribution assets such as major I&C meter stations, regulator sets, etc.
Support	Includes the indirect costs in the business that support the capitalised overhead departments above (e.g. Finance, IT, HR, HSE and Insurance).

Source: AER, email to Envestra, *AER EN.12–Questions on capitalised overheads*, 16 November 2010, attachment.

Each component of the overhead costs set out in table 3.11 is related to the operation of Envestra's network. Consequently, the AER accepts Envestra's composition of the capital overheads and that the costs are those that would be incurred for the delivery of pipeline services.[105]

[104] AER, Email to Envestra, *AER EN.12–Questions on capitalised overheads*, 16 November 2010.
[105] NGL, s. 2 and s. 23.

Potential for double counting of overhead costs

The AER requested information from Envestra on whether the costs are allocated to the APA Group or to Envestra.[106] Envestra has further submitted that all the costs are incurred by the APA Group in operating Envestra's network.[107]

Further, the AER sought conformation from Envestra as to whether overheads were deducted from the base year costs used to forecast expenditure in the access arrangement period.[108] Envestra confirmed that the overheads were deducted from the base year costs, which were then used to forecast expenditure.[109]

On this basis, the AER accepts that Envestra's overhead costs are not double counted.

Growth of overhead costs

The AER considers that it is normal practice for overhead costs associated with putting new fixed assets into service to be recognised as a component of capex. This view was supported by Wilson Cook.[110]

Wilson Cook considered that given the large increase in the capex program, the level of overheads should be separately assessed.[111] It concluded that while the scope of overhead costs was reasonable, it considered there should be a reduction in the growth of overhead costs going forward as these costs would tend to be fixed rather than variable. The AER agrees with Wilson Cook that a significant proportion of overheads would be of a fixed nature and expected to decline as a proportion of total capex over time. Therefore, the AER considers that the forecast overhead costs proposed by Envestra are too high and therefore are not consistent with the NGR.[112]

In rejecting the proposed level of overhead costs forecast by Envestra, the AER considers an appropriate alternative is to use overhead costs incurred in 2009–10 as a basis for costs in the forecast period. The AER considers that overall capex incurred in 2009-10, of which overhead costs form a component, is consistent with the pattern of historical capex incurred during the earlier access arrangement period and was similar to the level accepted by the QCA.[113] On this basis, the AER considers that overhead costs incurred in 2009–10 of $2.5 million ($2010–11) forms an efficient base level.[114] These costs have been added by the AER to capex in each year of the access arrangement period. This approach results in a total overhead cost of $12 million ($2010-11) compared to total cost of $23 million ($2010–11) proposed by Envestra, a reduction of 46 per cent.

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106 AER, Email to Envestra, *AER EN.12–Questions on capitalised overheads*, 16 November 2010.
107 Envestra, Email to AER, *AER EN.12–Questions on capitalised overheads*, 2 December 2010; and Envestra, Email to AER, *AER EN.12–Questions on capitalised overheads*, 9 December 2010, attachment.
108 AER, Email to Envestra, *AER EN.12–Questions on capitalised overheads*, 8 December 2010.
109 Envestra, Email to the AER, *AER EN.12–Questions on capitalised overheads*, 9 December 2010.
110 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 33–34.
111 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 34.
112 NGR, r. 72(1)(c)(i) and r. 74(2)(b).
113 Envestra, *Qld access arrangement information*, October 2010, pp. 35–36.
114 Envestra, Email to the AER, *AER EN.12–Questions on capitalised overheads*, 29 November 2010.

Cost escalators

The AER's consideration of Envestra's proposed cost escalators is discussed in chapter 8 of this draft decision. For the reasons outlined in chapter 8; the AER is not satisfied that the proposed cost escalators applied to Envestra's forecast capex comply with the requirements of r. 79 and r. 74(2) of the NGR. As a result, the AER proposes that Envestra amend its forecast capex by applying the real cost escalators set out in chapter 8 of this draft decision.

Conclusion on capital expenditure

The AER consider that Envestra's forecast capex does not comply with the requirements of r. 79 of the NGR. That is, it does not represent capex 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 providing services.

Further, the AER considers that Envestra's proposed capex is inconsistent with the national gas objective as it does not represent 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.[115]

The AER also considers that Envestra's proposed forecast capex does not represent the best forecasts possible in the circumstances.[116]

Table 3.12 shows the capex proposed by Envestra compared with the capex which the AER considers satisfies the new capex criteria of the NGR.[117]

[115] NGL, s. 23.
[116] NGR, r. 74(2)(b).
[117] NGR, r. 79.

Table 3.12: Envestra's proposed and approved capital expenditure for 2011–2016 ($m, 2010–11)

	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Mains replacement						
Envestra proposed	14.6	14.8	15.4	15.8	16.0	76.4
AER approved	7.5	7.5	7.6	7.6	7.4	37.6
Growth assets						
Envestra proposed	12.6	13.4	13.0	12.9	14.1	66.1
AER approved	11.2	11.7	11.2	10.9	11.6	56.5
Other capital expenditure						
Envestra proposed	7.6	10.1	4.8	4.1	4.2	30.9
AER approved	6.7	8.8	4.2	3.5	3.5	26.7
Total capital expenditure						
Envestra proposed	34.8	38.3	33.2	32.8	34.3	173.4
AER approved	25.4	27.9	23.0	22.0	22.5	120.8

The AER requires Envestra to amend its access arrangement proposal as outlined in amendment 3.1.

3.6.2.5 Capital contributions

Envestra has not proposed any non-conforming capital contributions for the next access arrangement period.[118] Envestra proposes that all capex is conforming capex. However, Envestra has proposed that where capex does not comply with the requirements set out under r. 79(2)(b) of the NGR, capital contributions will be sought from the new users concerned.[119] The AER will require Envestra to provide details of these one-off payments as part of its annual reporting requirements to the AER.

Envestra submitted that there are currently no ongoing contractual agreements with consumers insofar as capital contributions are concerned.[120] Envestra noted that these are one-off payments.[121]

[118] Envestra, *Qld access arrangement information*, October 2010, p. 91.
[119] Envestra, *Qld access arrangement information*, October 2010, p. 91.
[120] Envestra, *Qld access arrangement information*, October 2010, p. 91.
[121] Envestra, *Qld access arrangement information*, October 2010, p. 91.

The AER considers that this is consistent with r. 82(3) of the NGR. Therefore the AER is not proposing that Envestra amend its access arrangement proposal for capital contributions.

3.6.2.6 Depreciation

The AER's assessment of Envestra's forecast depreciation allowance is presented in chapter 4. Table 3.13 reproduces the conclusions from that chapter.

Table 3.13: AER approved depreciation for the access arrangement period ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Straight-line depreciation	10.8	12.0	13.1	13.4	14.4
Inflationary gain	8.0	8.6	9.3	9.8	10.4
Regulatory depreciation	2.8	3.4	3.8	3.6	4.0

The AER requires Envestra amend its forecast depreciation as set out in chapter 4 of this draft decision.

3.6.2.7 Forecast disposals

The AER accepts Envestra's submission that the value of any disposals is likely to be insignificant and considers that forecasting the value for any disposals is problematic. No amendment is required to Envestra's access arrangement proposal for forecast disposals.

Envestra has submitted that it does not propose any disposals in the access arrangement period.[122] Envestra submitted that there are a few assets that do not form part of the gas distribution system and that no disposals of assets have taken place during the earlier access arrangement period.[123] Envestra further submitted that no material disposals are planned for the access arrangement period.

3.6.2.8 Adjustment to the capital base for inflation

Envestra used a forecast inflation rate of 2.57 per cent in its modelling. The AER's consideration of Envestra's approach to estimating expected inflation is discussed in chapter 5. For reasons discussed in chapter 5 the AER uses a geometric average comprised of the RBA's most up to date short-term inflation forecasts and the target range mid-point of 2.5 per cent to estimate an inflation rate of 2.52 per cent over a 10 year period for the access arrangement period. The AER therefore rejects the proposed forecast inflation rate used by Envestra. However, the AER notes that the forecast inflation amount will be updated for the final decision based on most up to date information.

[122] Envestra, *Qld access arrangement information*, October 2010, p. 111.
[123] Envestra, *Qld access arrangement information*, October 2010, p. 111.

3.6.2.9 Summary for projected capital base

The AER has considered the components of Envestra's proposed projected capital base. Given the amendments required to Envestra's proposed capex, forecast depreciation and adjustment of the capital base for inflation, the AER considers that Envestra's projected capital base does not comply with r. 74(2) and r. 78 of the NGR. The AER requires Envestra to make the amendments set out in section 3.8 of this draft decision.

3.6.3 Closing capital base for the access arrangement period

Envestra did not propose a depreciation approach to be used to roll forward the capital base at the next reset. However, in a response to a query from the AER, Envestra subsequently proposed an actual depreciation approach.[124] It considered such an approach to be complementary to its proposed efficiency carryover mechanism for the access arrangement period.

The AER is mindful of incentives created through the use of actual or forecast depreciation to roll forward the capital base at the next reset. A price cap form of regulation, which applies in the case of Envestra, provides an incentive to underspend capex as the associated allowances for depreciation and return on capital are retained (at least) until the access arrangement is next revised. The choice of depreciation approach interacts with this incentive. A forecast depreciation approach would update the straight-line depreciation determined in this decision for actual inflation only when the access arrangement is next revised. No adjustment would be made to the forecast depreciation for any difference between forecast and actual capex over the access arrangement period. Compared to a forecast depreciation approach, actual depreciation creates a greater incentive for a business to underspend its capex allowance. A forecast depreciation approach reduces this incentive because the business receives no advantage in terms of return of capital in underspending its capex allowance. Funds returned to the business during the access arrangement period are subtracted from the capital base (subject to the adjustment for actual inflation). Under an actual depreciation approach, if a business under spends its forecast capex, the depreciation adjustment to its capital base is recalculated. The business will have less depreciation removed from its capital base than the funds that were return to it during the access arrangement period. The normal incentive for a regulated business under a price cap to underspend its capex allowance is therefore heightened by an actual depreciation approach.

For example, consider where the AER had forecast $10 million in capex in a given year of an access arrangement period with $1 million of associated forecast depreciation. If the business subsequently spent:

- $5 million in capex in that year with associated actual depreciation of $0.5 million. Under the forecast depreciation approach $1 million would be removed from the capital base for that year, while under an actual depreciation approach only $0.5 million would be removed.

[124] Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

- $15 million in capex in that year with associated actual depreciation $1.5 million. Under the forecast depreciation approach $1 million would be removed from the capital base for that given year, while under an actual depreciation approach now $1.5 million would be removed.

The example above illustrates that a forecast depreciation approach is effectively neutral in its impact on incentives. However, under an actual depreciation approach the business will do better if it can underspend its capex allowance and will be worse off it overspends its capex allowance.

The AER recognises that a business can underspend its capex allowance for a number of reasons. For example, the business could:

- overstate its forecasts
- improve efficiency in provision of the service
- defer spending, extracting additional service out of existing assets
- compromise on service quality.

An actual depreciation approach is typically used for electricity distribution. The AER considers that the actual depreciation approach is appropriate for electricity distribution given the dynamics of that industry and the service quality incentives facing those businesses. Electricity distributors generally operate in a relatively more dynamic environment than gas distributors, where growing demand can apply significant pressure to increase spending. In such circumstances, the AER is concerned that such spending be efficient, while deferral of expenditure is relatively less likely given the pressing demands. To prevent electricity distributors compromising on service quality, service quality incentive schemes exist that penalise poor performance. In contrast, gas distributors generally operate in a less dynamic market, which can give them scope to defer expenditure as the situation allows. Gas distributors are also not subject to any service quality incentive scheme.

The AER considers that a forecast depreciation approach should be used to establish Envestra's opening capital base for the access arrangement period commencing 1 July 2016. While a forecast depreciation approach may not create as great an efficiency incentive as an actual depreciation approach, the AER considers this appropriate given the nature of the gas distribution industry. A forecast depreciation approach is neutral in terms of its impact on a business's spending on capex. It does not encourage deferral of spending nor discourage the maintenance of service quality. If capex forecasts prove to be well off target, above or below, it reduces the risk to the service provider and customers by removing from the capital base only the depreciation that had actually been allowed for by the regulator.

A forecast depreciation approach has been used historically under the previous Code and the AER has approved such an approach in its decisions for Jemena's, Country

Energy (Wagga Wagga)'s and ActewAGL's gas networks. This approach is also consistent with the approach outlined in the AER's access arrangement guideline.[125]

With regard to Envestra's argument for consistency between incentives for opex and capex efficiency, the AER considers that an actual depreciation approach is not an efficiency incentive mechanism. Even if it has incentive properties – to reduce expenditure - it does not have the mechanics of other incentive mechanisms such as the EBSS. There are also broader concerns (including the issue of Envestra's ability to deliver its projected mains replacement program at the rate it proposes) that must be weighed up by the AER in making its decision.

3.6.4 Other access arrangement proposal provisions relevant to the capital base

3.6.4.1 Capital redundancy policy

Envestra did not propose a capital redundancy policy for the access arrangement period. Envestra stated that a policy of identifying and removing redundant assets from the regulatory asset base would not be consistent with the national gas objective set out in section 23 of the NGR.[126] Consistent with the earlier access arrangement period, Envestra stated that due to the low frequency and asset value of any redundant assets that might arise, their overall value is immaterial. It would not be efficient or productive to attempt to identify such assets and remove them from the asset base.[127]

Rule 85 of the NGR does not require a business to have a capital redundancy mechanism. As stated in section 3.6.1.4, the AER considers that the value of any redundant assets in Envestra's network is unlikely to justify the cost of identifying them and removing them from the asset base. The AER therefore does not require Envestra to have a capital redundancy mechanism and accepts that no adjustments for redundant assets will be required during the access arrangement period.

3.7 Conclusion

Opening capital base

The AER does not propose to approve the opening capital base proposed by Envestra for the access arrangement period as it does not comply with r. 77(2) of the NGR and requires Envestra to make amendment 3.1 set out below.

Forecast capital expenditure

The AER does not propose to approve the forecast capex proposed by Envestra as it does not comply with r. 78 and r. 79 of the NGR. The AER requires Envestra to make amendment 3.2 as set out below.

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[125] AER, *Access arrangement guideline*, March 2009, pp. 61–62.
[126] Envestra, *Qld access arrangement information*, October 2010, p. 111.
[127] Envestra, *Qld access arrangement information*, October 2010, pp. 109–111.

Closing capital base for the access arrangement period

The AER considers that a forecast depreciation approach should be used to establish Envestra's opening capital base for the access arrangement period commencing 1 July 2016.

Other provisions of the access arrangement proposal

The AER considers that the proposed treatment of non-conforming capex is consistent with rr. 81–84 of the NGR.

3.8 Required amendments

Before the proposed access arrangement can be accepted, Envestra must make the following amendments:

Amendment 3.1: make all necessary amendments to the access arrangement proposal and access arrangement information in order to be consistent with the following table:

Table 3.14: AER approved opening capital base ($m, nominal)

	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12
Opening capital base	230.5	249.9	269.4	283.8	299.3	316.4
Add capex[a]	18.4	14.1	13.8	14.2	17.0	
Add indexation	5.8	10.9	6.8	8.4	7.8	
Less depreciation	4.9	5.5	6.3	7.1	7.7	
Less redundant assets	0.0	0.0	0.0	0.0	0.0	
Less disposals	0.0	0.0	0.0	0.0	0.0	
Closing capital base	249.9	269.4	283.8	299.3	316.4	

(a) Excludes capital contributions

Amendment 3.2: make all necessary amendments to the access arrangement proposal and access arrangement information in order to be consistent with the following table:

Table 3.15: AER approved forecast capex ($m, 2010–11)

	2010–11	2011–12	2012–13	2013–14	2014–15	Total
Mains replacement	7.50	7.49	7.61	7.61	7.43	37.64
Meter replacement	1.12	1.14	1.16	1.18	1.19	5.79
Augmentation	0.52	3.92	0.06	0.22	0.33	5.05
Telemetry	0.48	0.28	0.32	0.40	0.26	1.74
Regulators and valves	0.45	0.39	0.37	0.29	0.30	1.80
IT	2.49	1.30	0.92	0.11	0.07	4.89
Growth assets	11.19	11.65	11.18	10.86	11.58	56.46
Other distribution system	1.44	1.51	1.20	1.14	1.21	6.49
Other non-distribution system	0.23	0.26	0.16	0.17	0.16	0.98
Total	25.42	27.94	22.97	21.97	22.52	120.83

4 Depreciation

Depreciation affects total revenue in two ways. First, it is a component of the projected capital base, and second, it is a separate depreciation building block.

The AER accepts Envestra's proposed standard and remaining asset lives for the access arrangement period. The standard asset lives have been revised from those used in the earlier access arrangement period. The remaining asset lives have also been revised based on the proposed standard asset lives. These changes bring Envestra into line with previous AER decisions regarding the expected economic lives of pipeline assets.

The AER rejects Envestra's proposed forecast depreciation allowance. The AER has determined a total of $64 million in straight-line depreciation for the access arrangement period. This total reflects the various factors that affect the capital base over the access arrangement period.

4.1 Introduction

This chapter sets out the AER's consideration of Envestra's proposed depreciation schedule and asset lives for the access arrangement period against the requirements of the NGR. No submissions were received on Envestra's proposed depreciation schedules.

4.2 Regulatory requirements

Envestra is required to provide a depreciation schedule that sets out the basis upon which the assets constituting the capital base are to be depreciated for determining reference tariffs (r. 88(1) of the NGR). The schedule may consist of a number of separate schedules each relating to an asset or particular asset classes (r. 88(2) of the NGR).

Rule 89(1) of the NGR provides that the depreciation schedule should be designed:

> (a) so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services; and
>
> (b) so that each asset or group of assets is depreciated over the economic life of that asset or group of assets; and
>
> (c) so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or particular group of assets; and
>
> (d) so that (subject to rules about capital redundancy), an asset is depreciated only once (i.e. the amount by which an asset is depreciated over its economic life does not exceed the value of the asset as at the time of its inclusion in the capital base (adjusted, if the accounting method approved by the AER permits, for inflation)); and
>
> (e) so as to allow the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.

Rule 89(2) states that compliance with r. 89(1) may involve the deferral of a substantial amount of depreciation.

Clause 5(1)(d) of schedule 1 of the NGR, requires the AER, in deciding whether to approve an access arrangement revision proposal from a transitional access arrangement, to take into account the depreciation schedule for the transitional access arrangement under section 8.32 of the Code.[1]

4.3 Access arrangement proposal

Envestra proposed estimating depreciation using a straight-line method of depreciation. Table 4.1 sets out Envestra's forecast depreciation for the access arrangement period.

Table 4.1: Envestra's proposed depreciation for the access arrangement period ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Straight-line depreciation [a]	9.8	11.3	12.8	14.3	15.6

Source: Envestra, *Qld access arrangement information*, October 2010, p. 116.
(a) These depreciation figures do not include the negative depreciation adjustment associated with the inflation of the capital base.

The forecast depreciation amounts for the access arrangement period are based on the proposed remaining asset lives and standard asset lives presented in table 4.2.

Table 4.2: Envestra's proposed standard and remaining asset lives (years)

Asset Category	Original standard lives	Proposed standard Lives	Proposed remaining lives
Mains	75	60	52.6
Inlets	75	60	39.4
Meters	31	15	10.0
Telemetry	10	20	17.5
IT systems	10	10	7.5
Other distribution equipment (e.g. regulators)	75	40	17.4
Other (e.g. motor vehicles)	75	10	5.0

Source: Envestra, *Qld access arrangement information*, October 2010, pp. 113 and 116.

Envestra proposed adjustments to the standard assets lives from those used by the QCA in the earlier access arrangement period. Only the standard asset life used by the

[1] This clause is also relevant if the AER makes its own proposal for revision of a transitional access arrangement under r. 63 or r. 64 of the NGR.

QCA for IT systems of 10 years has been retained. Envestra benchmarked the standard asset lives as approved by the AER in recent access arrangement decisions. These decisions included access arrangements for Jemena Gas Network (NSW), ActewAGL and Country Energy (Wagga Wagga). In other instances Envestra provided a business case assessment (based on technical engineering factors) for the standard asset lives it proposed.[2] Envestra used the proposed standard asset lives for depreciation of new assets and to adjust the remaining asset lives of existing assets as at 1 July 2011.[3]

4.4 AER's consideration

In assessing the depreciation schedules proposed by Envestra, the AER reviewed the proposed:

- depreciation approach
- asset lives, used to determine the depreciation rate
- forecast depreciation allowance.

4.4.1 Depreciation approach

The AER considers that Envestra's use of the straight-line depreciation method is consistent with r. 89(1)(a) of the NGR in allowing for reference tariffs to vary over time in a way that promotes efficient growth in the market for reference services. Over the life of an asset, straight-line depreciation leads to relatively smooth price changes, which is appropriate as consumption of haulage services is expected to grow steadily over the access arrangement period.

4.4.2 Asset lives

The depreciation schedule reflects the asset lives of the various assets used to provide the reference services. There are two types of asset lives:

1. the standard asset lives to be applied to new assets, and
2. the remaining asset lives of existing assets.

4.4.2.1 Standard asset lives

The AER considers that consistency in the asset lives across access arrangement periods ensures that reference tariffs will vary in a way that promotes efficient growth in the market for reference services (r. 89(1)(a) of the NGR). In previous decisions, the AER accepted the standard asset lives proposed by the service provider largely on the basis that these were the same asset lives used for the earlier access arrangement period.[4]

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2 Envestra, *Qld access arrangement information*, October 2010, pp. 113–116.
3 Envestra, RFM in email to the AER, *AER.EN.3 - Depreciation modelling error*, 25 October 2010.
4 See for example; AER, *Draft Decision: ActewAGL Access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network,1 July 2010 – 30 June 2015*, November 2009, p. 54. The standard asset lives did not change for the final decision.

However, the AER is mindful that r. 89(1)(c) of the NGR allows (as far as reasonably practical) for adjustment to the depreciation schedule so as to reflect changes to expected economic lives. Accordingly, the AER has examined Envestra's arguments with regard to the economic lives of its assets.

In the present circumstances, the AER accepts the standard asset lives used by the QCA were relatively long compared to other gas networks in Australia. The standard asset lives used for the other decisions noted by Envestra are considered to be consistent with r. 89(1)(b) of the NGR that requires assets to be depreciated over their economic life. Envestra's benchmarking and business cases, which set out its proposed standard asset lives, show that these standard asset lives are comparable to those in other AER decisions for similar asset categories. Therefore, the AER accepts the standard asset lives as proposed by Envestra for the access arrangement period.

4.4.2.2 Remaining asset lives

Envestra revised the remaining lives of its assets based on its proposed changes to standard asset lives, which are discussed below. For example, the QCA previously used a standard life for Medium Pressure (MP) Polyethylene (PE) mains of 75 years. Using this life, MP PE mains constructed in 2000-01 would have a remaining life in 2010-11 (10 years later) of 65 years. However, Envestra has proposed that the standard life for MP PE mains should be 50 years.[5] It used this revised standard life to back cast the remaining life for those MP PE mains constructed in 2000-01 to arrive at a revised remaining life for those assets of 40 years (50 years minus the 10 years the asset has been in the ground). Envestra has justified its approach under r. 89(1)(c) of the NGR that allows for changes to the economic life of assets.

The AER agrees with Envestra that r. 89(1)(c) of the NGR allows for changes to assets lives. However, r. 89(1)(c) of the NGR is not the only consideration regarding the remaining lives of existing assets. Clause 5(1)(d) of schedule 1 of the NGR requires the AER to take into account the depreciation schedules from the earlier access arrangement. While this clause does not mean that the asset lives from the earlier access arrangement period need necessarily be applied mechanically going forward, it does require these asset lives be given some weight in the AER's consideration. Consistency in the remaining asset lives proposed by a service provider with the asset lives used for previous access arrangement periods has been usual practice in other AER decisions.[6]

For comparative purposes, the AER recalculated remaining asset lives as at 1 July 2011 based on the asset lives used during the earlier access arrangement period.[7] These remaining lives are presented in table 4.3. The AER also identified an error in the way Envestra switched depreciation methods in its model. Envestra agreed to correct this error. It also adjusted the remaining asset lives calculation to make it

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5 The 'mains' asset category contains a variety of mains types, each with separate standard asset lives. Envestra has proposed a standard asset life of 60 years for the 'mains' category as a whole based on mix of mains types it has as at 30 June 2009.

6 See for example, AER, *Draft decision: Country Energy Wagga Wagga, Natural Gas Distribution Network Access arrangement proposal, 1 July 2010 – 30 June 2015*, November 2009, p. 39.

7 The AER calculated these lives by dividing the closing asset values as at 30 June 2011 by their respective depreciation amounts for 2010–11.

consistent with its approach for South Australia.[8] These revised remaining asset lives are also shown in table 4.3.

Table 4.3: AER's and Envestra's remaining asset lives (years) as at 30 June 2011

Asset Category	Envestra revised remaining life	Remaining life using previous lives
Mains	52.8	64.9
Inlets	38.9	52.3
Meters	10.6	18.9
Telemetry (SCADA)	17.7	2.1[a]
IT Systems	5.2	12.9
Other distribution equipment (e.g. regulators)	26.7	19.3
Other (e.g. motor vehicles)	2.9	44.1

Source: Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

(a) For Telemetry, a negative asset life was calculated as forecast depreciation over the earlier access arrangement period exceeded the actual capex spent on Telemetry during that period. The absolute value of the remaining asset life calculated has been used for comparison.

The AER is mindful of r. 89(1)(a) of the NGR regarding the efficient growth of the market is a relevant consideration in the present circumstances. The AER assessed the step up in prices due to Envestra's proposed changes in remaining lives. It found that prices will be about 1.5 per cent per annum higher due to these revisions. The AER considers that the size of this impact does not risk efficient growth of the market for reference services.

Having considered the issues above, the AER accepts the remaining lives of existing assets proposed by Envestra. The AER considers that usually significant weight should be given to the asset lives used in the earlier access arrangement period. However, in the present circumstances, good reason has been shown to amend the remaining asset lives. The AER accepts that the proposed revisions to the remaining asset lives are appropriate and reflective of the assets' remaining economic lives.

4.4.3 Forecast depreciation

Due to changes to the capital base noted in chapter 3 of this draft decision, the AER has recalculated the forecast depreciation for the access arrangement period. This revised forecast is shown in table 4.4.

[8] Envestra, Email to the AER, *FW: AER.EN.16 - remaining asset lives and roll forward*, 10 December 2010.

Table 4.4: AER's draft decision on forecast depreciation for the access arrangement period ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Straight-line depreciation	10.8	12.0	13.1	13.4	14.4
Inflationary gain	8.0	8.6	9.3	9.8	10.4
Regulatory depreciation	2.8	3.4	3.8	3.6	4.0

Regulatory depreciation is straight-line depreciation net of the inflationary increase in the capital base for each year. As discussed in chapter 5, the forecast inflation has been set at 2.52 per cent per annum for each year of the access arrangement period for the draft decision. This inflation forecast will be updated for the final decision.

Envestra's depreciation schedule is consistent with r. 89(d) of the NGR that requires each asset is depreciated only once. No deferral of depreciation under r. 89(2) of the NGR is required in the present circumstances.

4.5 Conclusion

The AER has accepted the depreciation approach and the standard and remaining asset lives proposed by Envestra. However, due to changes in the capital base noted in chapter 3 of this draft decision, the forecast depreciation allowance for the access arrangement period has been revised. The AER therefore does not approve the depreciation schedule proposed by Envestra for the access arrangement period as it does not comply with r. 89(1) of the NGR.

4.6 Required amendments

Before its access arrangement proposal can be accepted, Envestra must make the following amendment:

Amendment 4.1: make all amendments necessary in the access arrangement proposal and access arrangement information to take account of the revised forecast depreciation allowance in table 4.4 of this draft decision.

5 Rate of return

The AER has rejected Envestra's proposed rate of return of 10.64 per cent, as it is not commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services. The AER is of the view that a rate of return of 9.96 per cent is appropriate for the benchmark service provider. The AER considers that Envestra's proposed rate of return is derived using financial models and parameter estimates that are inappropriate. The AER has undertaken a number of reasonableness checks to confirm the rate of return it has determined.

This decision reflects the AER's considerations that the equity beta and MRP proposed by Envestra were too high with respect to the risks involved in providing references services under prevailing market conditions. The AER has also rejected Envestra's proposed method of setting the debt risk premium, instead finding a combination of estimates derived from Bloomberg and the APA Group's BBB rated bond provide a debt risk premium which is sufficient to cover at least the efficient cost of debt, and more than sufficient to cover Envestra's actual cost of debt.

The AER calculates a rate of return of 9.96 per cent. This reflects market based parameters (risk free rate and debt margin) estimated over an indicative averaging period of 7 December 2010 to 6 January 2011 and will be updated for the final decision.

5.1 Introduction

This chapter sets out the AER's consideration of Envestra's proposed estimate of an efficient benchmark rate of return on capital over the access arrangement period. The key issues considered include the selection of a well accepted financial model to determine the return on equity and the determination of relevant parameters—including the equity beta and market risk premium to be applied in the context of the capital asset pricing model, and the debt risk premium.

The AER's consideration of the corporate taxation allowance, including the value of imputation credits (gamma), is set out in chapter 6.

5.2 Regulatory requirements

Rule 72(1)(g) of the NGR requires that the access arrangement information for a full access arrangement proposal must include the proposed rate of return, the assumptions on which the rate of return is calculated and a demonstration of how it is calculated.

Rule 74 of the NGR requires that any forecast or estimate included in the access arrangement information be arrived at on a reasonable basis, be supported by a statement of the basis of that forecast or estimate, and represent the best forecast possible in the circumstances.

Rule 87(1) of the NGR requires that 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.

Rule 87(2) of the NGR requires that in determining a rate of return on capital, it will be assumed that the service provider meets benchmark levels of efficiency, 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. Further, a well accepted approach that incorporates the cost of equity and debt is to be used; and a well accepted financial model is to be used. The WACC is given as an example of a well accepted approach, and the CAPM is given as an example of a well accepted financial model.

5.3 Access arrangement proposal

Envestra proposed a nominal vanilla WACC approach to determine the rate of return on its projected capital base.[1] This approach requires an estimate of the cost of debt and the cost of equity.

Envestra proposed a cost of equity through consideration of the CAPM and other asset pricing models.[2] Specifically, Envestra stated that it considered the (standard) Sharpe-Lintner CAPM, a variant of the this model known as the Black CAPM, two other asset pricing models (the Fama–French three factor model and the dividend growth model), and a market-based estimate.[3] The cost of equity derived from these differing approaches is shown in table 5.1.

Table 5.1: Envestra's cost of equity proposal

Method used			**Range for cost of equity (%)**
CAPM *with component parameters:*			10.5–14.1
	Risk free rate (%)	*5.30*	
	Market risk premium (%)	*6.5–8.0*	
	Equity beta	*0.8–1.1*	
Black CAPM			11.4–13.3
Fama-French three factor model			11.6–14.4
DGM based on Australian utility data			11.6–16.7
SFG market based estimate			12.0–14.0
Final range proposed			**11.4–14.4**

Source: Envestra, *Qld access arrangement information*, 1 October 2010, p. 135 (table 9.3); AER analysis.

1 The AER notes that Envestra labels its WACC approach a 'nominal post tax WACC' in its access arrangement information. The formula set out in this document is the nominal vanilla WACC formula and this is the label used by the AER. Envestra, *Qld Access arrangement information*, 1 October 2010, p. 144.

2 Envestra, *Qld Access arrangement information*, 1 October 2010, p. 127.

3 Envestra, *Qld Access arrangement information*, 1 October 2010, p. 121.

Table 5.2 shows the full range of WACC parameters proposed by Envestra. In several cases (including the cost of equity) a range is presented, and the selection of a point estimate from within this range was made by Envestra by using cashflow analysis based on credit rating metrics.[4]

Table 5.2: WACC parameters proposed by Envestra

WACC Parameter	**Envestra proposal**	
	Range	**Point estimate**
Nominal risk–free rate (%)		5.30
Inflation (%)		2.57
Real risk–free rate[a] (%)		2.66
Credit rating		BBB+
Debt risk premium (%)	3.24–3.54	3.39
Gearing (%)	40–80	55
Cost of debt (%)	8.54–8.84	8.69
Cost of equity (%)	11.4–14.4	13.02 [b]
Nominal vanilla WACC (%)	**9.11–12.18[c]**	**10.64 [d]**

Source: Envestra, *Qld Access arrangement information*, 1 October 2010, p. 139 (table 9.8); AER analysis.

(a) The real risk–free rate has been derived from the Envestra proposal using the Fisher equation.

(b) The point estimate is derived from the 11.4 to 14.4 range, following an analysis by Envestra of the projected cash flows required to maintain the benchmark BBB+ credit rating.

(c) The minimum WACC occurs with maximum gearing (8.54 per cent cost of debt 11.4 per cent cost of equity, 80 per cent gearing) and the maximum WACC with minimum gearing (8.84 per cent cost of debt, 14.4 per cent cost of equity, 40 per cent gearing).

(d) Derived as the mid point between 9.11 and 12.18.

In summary, Envestra's approaches with respect to individual parameters were as follows:

- Inflation forecast — based on the RBA's latest forecasts, combined with the midpoint of its target band out to a 10 year forecast horizon.
- Averaging period and risk free rate — no period was proposed, however an indicative risk free rate was calculated using the annualised yield on 10 year Commonwealth Government bonds over a period of 20 business days ending 2 July 2010.

4 Envestra, *Qld Access arrangement information*, 1 October 2010, p. 127.

- Gearing ratio — a ratio of 55 per cent was proposed from within a range of 40 to 80 per cent, based on a Standard and Poor's report

- Debt risk premium (DRP) — an average of CBASpectrum and Bloomberg fair value estimates (interpolated to 10 years) was proposed to calculate a premium with respect to a 10 year, BBB+ credit rating benchmark.

- Market risk premium (MRP) — a value of between 6.5 to 8 per cent was proposed

- Equity beta — Envestra proposed an equity beta range of 0.8 to 1.1, supported by a report from the Competition Economic Group (CEG). CEG considered that the AER's practice to exclude the effects of the GFC when estimating beta has resulted in a downward bias in its beta estimate.

To support its position that the overall rate of return was appropriate, Envestra submitted reports from SFG, CEG and Professor Bruce Grundy. SFG submitted that given an investor of a comparable firm expects a dividend yield of 10.5 per cent and capital gains of 2.5 to 3.5 per cent, the commercially plausible cost of equity would be in the 13 to 14 per cent range. Using the Miller–Modigliani framework, Professor Bruce Grundy submitted that the equity risk premium must be at least 2.66 times the size of the debt risk premium.

Envestra submitted that analysis from Officer and Bishop suggested the best forward looking estimate of the MRP in the current market conditions is around 8 per cent.[5] Envestra submitted that this value was also supported by CEG, which estimated a forward looking MRP of 8 per cent based on dividend growth model (DGM) analysis.[6] SFG stated that the MRP should not be adjusted for Envestra's proposed utilisation rate of 0.23. SFG submitted that, although the AER explicitly incorporated a utilisation rate of 0.65 in its estimates of historical excess returns,[7] the adjustment for theta would be in the order of 0.1 to 0.2 per cent, which is "well within the bounds of error".[8] To support this position, SFG stated that if different sample periods were chosen, historical excess return estimates would be much higher than 6 per cent.[9]

Officer and Bishop estimated the historical long term average MRP to be 7 per cent. However, they considered that current market volatility (as at July 2010) is higher than volatility levels prior to the GFC. Officer and Bishop submitted that if the MRP

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5 Envestra has not provided the Officer and Bishop paper referred to. However, there is a more recent update of Officer and Bishop's work dated July 2010. In the first instance, the AER has referred to the July 2010 paper.

6 CEG, *Estimating the cost of capital under the NGR, a report for Envestra*, September 2010, p. 39.

7 As noted below, the value of the forward looking MRP can be informed by looking at long-term historical averages of annual excess market returns (i.e. the difference between the return on a broad market index in a year and the return on government bonds over the same year). Stock market indices measure dividends and capital gains but do not incorporate any value in relation to franking credits, hence it is necessary to "gross up" historical excess returns by the estimated value of franking credits to reflect the full value of returns to equity holders.

8 SFG, *The relationship between theta and MRP, Report for Envestra*, 27 September 2010, p. 2.

9 SFG, *The relationship between theta and MRP, Report for Envestra*, 27 September 2010, pp. 2–5.

is assumed to revert to a long run average over time, 8 per cent is the best estimate of the forward looking MRP over a five year time horizon.[10]

5.4 AER's consideration

The AER has not accepted Envestra's proposed rate of return. In doing so, and in determined a rate of return it considers best meets the requirements of the NGR, the AER recognises that there is no single precise answer that can be determined through the mechanistic application of a mathematical formula or parameter estimates developed in isolation. In determining an appropriate rate of return the AER has been required to review a variety of evidence and arguments, and ultimately exercise its judgment to arrive at an outcome it determines best meets the revenue and pricing principles and the NGO. To arrive at this outcome, the AER has compared the rate of return against high level indicators of reasonableness. These indicators suggest that the rate of return chosen by the AER is at least sufficient to meet the objectives and requirements of the law and rules, and most likely in excess of the value needed to meet these requirements.

The AER's considerations are summarised in the following main sections:

- an evaluation of why the rate of return set by the AER is appropriate
- cost of equity models
- equity beta
- the market risk premium
- the debt risk premium
- the method of inflation forecast
- the averaging period and risk free rate
- the gearing (debt to equity) ratio.

Further details on particular matters, including the overall rate of return, equity beta, MRP and DRP are contained in appendix C.

5.4.1 Evaluation of the overall rate of return

This section considers the reasonableness of the overall rate of return resulting from parameters assessed and determined by the AER elsewhere in this chapter. Such a consideration is relevant in considering the adequacy of the rate of return in accordance with section 24(2)(a) of the NGL which requires the AER to provide a service provider with an opportunity to recover at least its efficient cost. Similarly, such comparisons can be applied to assess the reasonableness of the rate of return proposed by Envestra.

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[10] Officer and Bishop, Market risk premium, Comments on the AER draft distribution determination for Victorian electricity distribution network service providers, July 2010.

Recent regulated asset sales and trading ratios suggest that benchmark returns for regulated entities have been at least sufficient (and probably higher than needed) to meet the cost of capital faced by regulated entities. The AER has also considered the analysis present by Envestra regarding the reasonableness of return of equity as implied by broker reports and expected differences between the costs of debt and equity. The AER finds these analyses do not suggest any inadequacy of the overall rate of return set by the AER. These considerations are summarised briefly here, with further details in appendix C. This appendix also contains further analysis of the Modigliani and Miller theorem and its implications for the overall rate of return.

5.4.1.1 Recent regulated asset sales

Over the past few years, regulated assets have generally been sold at a premium to the regulatory asset base (RAB). The recent purchase of Country Energy's NSW gas network by Envestra is one such example. Envestra purchased the Wagga Wagga gas network at a 25 per cent premium to the 2010 RAB and 19 per cent premium to the 2011 RAB.[11] Other recent sales have been at premiums of between 20 and 119 per cent to the regulated asset base, and trading multiples of between 15 and 73 per cent (see appendix C).

As supported by Grant Samuel, listed infrastructure entities should theoretically trade at, and be acquired at, 1.0 times the RAB.[12] However, all recent asset sales have been transacted at RAB multiples of greater than one. A RAB multiple of higher than one may be justified if the buyer can:

- expect to achieve efficiency gains, reducing operational and capital expenditures below that amounts allowed by the regulator
- increase the service provider's revenues by encouraging demand for regulated services
- benefit from a more efficient tax structure, higher gearing levels, and growth options
- expect to achieve higher returns if regulation is relaxed or
- misjudge the true value of the business.

However, the trading and acquisition premiums have been substantial. The AER considers that premiums of this magnitude are unlikely to be explained by the factors noted above alone. This suggests that the regulated cost of capital has been at least as high as the actual cost of capital faced by the businesses, and most likely has been in excess of the actual cost of capital. The AER considers that market transactions do not

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11 AER, Final decision, *Wagga Wagga natural gas distribution network, 1 July 2010–30 June 2015,* March 2010 and ASX, *Envestra company announcement,* 26 October 2010, viewed 27 January 2011, <http://www.asx.net.au/asxpdf/20101026/pdf/31tcv1nblp4xqc.pdf>

12 Grant Samuel & Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure,* 9 October 2009, p. 77.

support the view that regulated rates of return result in under compensation with respect to actual required rates of return.

5.4.1.2 Cost of equity implied by broker reports

Envestra presented analysis which suggested that the cost of capital can be estimated from broker reports as the sum of the expected annual dividend yield and expected annual price appreciation. Using a dividend yield of 10.5 per cent and expected annual price appreciation of 2.5 to 3.5 per cent, Envestra submitted that 13 to 14 per cent is a conservative estimate of its required return on equity.

As discussed in appendix C, dividend yield and capital appreciation forecasts provided by Envestra can not be relied upon to test the overall reasonableness of the AER's return on equity. The AER considers the dividend yield forecast must be adjusted to remove the component associated with the return on capital. Further, the capital appreciation can not be relied upon as it:

- represents the expected high over the next 12 months and not the capital appreciation
- contains a component associated with asset mispricing
- is heavily influenced by the current state of the market.

It is unrealistic to assume that regulated utilities can appreciate in value when capital is also being returned to shareholders over time. The AER also notes that some of the reports quoted by SFG assume a WACC of around 7 per cent which implies that the benchmark returns set by the AER adequately compensate service providers. Further information on the use of broker reports to test the overall reasonableness of the AER's return on equity are presented in appendix C.

5.4.1.3 Relationship between return on equity and debt

Envestra submitted that in the period January to June 2009 the cost of equity as defined by the AER was lower than the cost of debt. As result, Envestra considered this implies that the AER's cost of equity it too low, as the cost of equity should always be greater than the cost of debt.

The AER considers it is valid to assume that the return on equity would be higher than the return on debt and this has been the case in all of the AER's decisions. However, the AER considers there are valid reasons for why the cost of equity as defined by the AER was lower than the cost of debt in the period January to June 2009 (see appendix C). For instance, at this time the risk on long term bonds seemed real to most investors leading to a short term beta escalation for such securities.

5.4.2 Cost of equity

Envestra stated that the standard AER methodology for determining the cost of equity was deficient, implausible, mechanistic and did not comply with the relevant criteria from the National Gas Rules.[13] Most prominently, Envestra criticised the AER's use

[13] Envestra, *Qld access arrangement information*, October 2010, pp. 124–126.

of the Sharpe-Lintner CAPM (CAPM) on the grounds that it was inherently biased,[14] and that using only one model—as opposed to multiple models—would not result in a reliable estimate of the cost of equity.[15] Instead, Envestra used four models, two methods, and 'the application of skill and judgement' in arriving at a proposed cost of equity of 13.02 per cent.[16]

The AER does not accept the cost of equity proposed by Envestra. Most importantly, the overarching approach used by Envestra—using multiple models/methods—is not a 'well accepted financial model', as required by r. 87 of the NGR. This is primarily because the component models/methods used in this multi-model approach are themselves not well accepted financial models. In several instances, there appear to be material inconsistencies between what Envestra stated it has done and what is presented in the access arrangement proposal or accompanying consultant reports. Finally, several techniques used to assess the overall cost of equity (as a cross check on the multi-model approach) are applied incorrectly.

Having found that the proposed cost of equity does not meet the requirements of the NGR, the AER needs to determine a cost of equity that does. The AER uses the CAPM to estimate the cost of equity of 10.48 per cent. The AER's use of this model reflects the evidence that, although the CAPM is not without weaknesses, it remains the preeminent asset pricing model in financial economics. The AER considers that the use of this model—which is not mechanistic—does not produce a deficient estimate of the cost of equity, but rather one that is commensurate with prevailing market conditions and the relevant risks involved in providing reference services.

The remainder of this section addresses the following issues with respect to the cost of equity the AER has determined for Envestra:

- the AER's reliance on the CAPM as a well accepted model and the reasonableness of the cost of equity derived from the CAPM
- Envestra's approach/ methodology with respect to the 'well accepted model' requirement of the NGR, and the unreasonableness of the cost of equity proposed by Envestra
- theoretical issues with the CAPM raised by Envestra
- empirical issues with the CAPM raised by Envestra
- conclusions.

5.4.2.1 The AER's use of the Capital Asset Pricing Model

The key issue arising from Envestra's proposal is whether or not the CAPM (as previously relied on by the AER, and stated as an example of a well accepted financial model in the NGR) produces a reliable estimate.[17] The AER acknowledges

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14 Envestra, *Qld access arrangement information*, October 2010, pp. 122–134, 125, 128–129.
15 Envestra, *Qld access arrangement information*, October 2010, pp. 121–124, 127.
16 Envestra, *Qld access arrangement information*, October 2010, p. 127.
17 Envestra, *Qld access arrangement information*, October 2010, pp. 121–126.

the limitations of the CAPM, which relies on assumptions that are simplifications of the real world. Further, if robust parameter inputs are not available the CAPM will not produce a reliable estimate. All financial models are afflicted by these limitations.

However, even with full awareness of the shortcomings of the CAPM, the AER considers that it remains the best available model for estimating the cost of equity. The AER has reached this conclusion by carefully considering the strengths and weaknesses of the CAPM as well as alternative models in the context of setting the rate of return under the NGR, plus its extensive use in financial markets.

The AER engaged Professor Kevin Davis of the University of Melbourne to provide expert advice on the use of the CAPM relative to alternative models.[18] Professor Davis concluded that the theoretical and empirical criticisms of the CAPM submitted by Envestra are not substantiated.[19] Further, Professor Davis noted various theoretical and practical problems with the alternative models used by Envestra that would be avoided by the use of the CAPM.[20]

One of the key practical issues highlighted by Professor Davis is the importance of having reliable inputs to a model (individual parameter estimates). The CAPM inputs are relatively robust.[21] As outlined below, the AER has considered the appropriateness of individual parameters that are to be used in the CAPM (the MRP and beta). By contrast, the alternative models put forward by Envestra rely on parameter inputs that cannot be estimated with any confidence.[22]

The CAPM is cited under r. 87(2) of the NGR as an example of a well accepted financial model. This reflects the CAPM's position as the preeminent asset pricing model employed in financial economics. In this context:

- the CAPM has a solid theoretical foundation[23]
- the CAPM has empirical support, particularly when considering the conditions relevant to the benchmark firm—such as considering longer time periods, focusing on return expectations (not return outcomes), and adjusting for the effect of real options.[24] Further, there are sound theoretical reasons why some conflicting empirical results do not invalidate the CAPM.[25]

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18 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011.

19 The exception to this statement is that Professor Davis concurs with the theoretical criticism of the single period nature of the CAPM. However, Professor Davis finds no basis for Envestra to conclude that this provides grounds to prefer the BCAPM. Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, pp. 4–10.

20 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, pp. 10–15.

21 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 10.

22 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, pp. 10–13, 16, 20–21.

23 Sharpe, W., 'Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk', *Journal of Finance*, 1964, vol. 19, pp. 425–442; Lintner, J., 'The Valuation of Risky Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets', *The Review of Economics and Statistics*, 1965, vol. 47, pp. 13–37; Mossin, J., 'Equilibrium in a Capital Asset Market', *Econometrica*, 1966, vol. 34(2), pp. 768–83.

24 See Davis report and references; Also AER, *JGN draft decision*, February 2010, page 111-113.

25 See Davis report, also R. Roll, and S. Ross, 'On the cross-sectional relation between expected returns and betas', *Journal of Finance*, 1994, vol. 44(1), March 1994, pp. 101– 121; and W.

- the CAPM is the dominant financial model used by Australian finance managers to estimate the expected rate of return[26]

- the CAPM has relatively robust long-term parameter inputs.[27]

Finally, in addition to considering the robustness of the CAPM, the AER has also considered the resulting cost of equity produced when using this model against the outcomes observed in capital markets. The adequacy of the AER's rate of return (including the cost of equity) is examined further in section 5.4.1 in the context of recent asset sales, market valuations and analyst reports. This information suggests an appropriate cost of equity is below 10 per cent and may be as low as 7.5 per cent. In this context, the AER considers that the cost of equity of 10.48 per cent in this draft decision would result in a rate of return that is that is commensurate with the prevailing conditions in the market for funds and the risks involved in providing reference services (rule 87(1) of the NGR) and that provides Envestra with a reasonable opportunity to recover at least its efficient costs (section 24(2) of the NGL).

5.4.2.2 Envestra's multiple model approach

The AER has considered whether Envestra has derived its cost of equity using a 'well accepted financial model' as required under r. 87(2)(b). The AER considers that Envestra's proposed cost of equity is not based on a well accepted model. While Envestra referred to the CAPM (listed in the NGR as an example of a well accepted model) it did not use the CAPM for the purposes of rule 87(2)(b) of the NGR in arriving at its proposed cost of equity. Of the models it referred to, the AER considers that the BCAPM and FFM are not well accepted financial models while the third model (the DGM) is not well accepted for use in the Australian context.

Envestra's access arrangement proposal set out a range for the cost of equity of 11.4 to 14.4 per cent, from which it selected a point estimate of 13.02 per cent.[28] The process by which these figures were generated involved consideration of the following models and methods:[29]

- the standard CAPM

- the Black CAPM (BCAPM)

- the Fama-French three factor model (FFM)

Ferson, S. Sarkissian and T. Simin, 'The alpha factor asset pricing model: A parable', *Journal of Financial Markets*, 1999, vol. 2, pp.. 49–68.

[26] Truong, G., Partington, G. and Peat, M., 'Cost-of-capital estimation and capital-budgeting practice in Australia', *Australian Journal of Management*, June 2008, vol. 33(1), pp. 95–121 and L. Coleman, K. Maheswaran, and S. Pinder, 'Narratives in managers' corporate finance decisions', *Accounting and Finance*, 2010, vol. 50(3), pp. 605–633.

[27] There is considerable debate over the appropriate parameter inputs for the CAPM (as is evident from the AER discussion of the MRP and equity beta later in this chapter). However, compared to the parameter inputs to any of the alternative models proposed by Envestra, the CAPM parameter inputs are well established, statistically robust and widely accepted.

[28] Envestra, *Qld access arrangement information*, October 2010, pp. 134–135, 143–144 (sections 9.12, 9.17).

[29] Envestra, *Qld access arrangement information*, October 2010, pp. 127–130, 134–135, 140–143 (sections 9.6, 9.12, 9.16).

- the dividend growth model (DGM)
- method based on market assessment
- method based on cashflow analysis to meet credit rating metrics.

The CAPM was included by Envestra as part of its access arrangement information, with an estimated CAPM cost of equity between 10.5 and 14.1 per cent.[30] As detailed below, the AER considers the CAPM inputs used to arrive at this range—an equity beta of 0.8 to 1.1 and an MRP of 6.5 to 8.0 per cent—are not reasonable, and therefore the AER does not consider this to be a reasonable CAPM estimate.

Notwithstanding the AER's concerns over this application of the CAPM, Envestra stated that it would 'narrow the CAPM range by cross-check against the outputs from the Black CAPM, FFM and DGM'.[31] Envestra also stated that its final cost of equity range was 'within the range estimated by the CAPM'.[32] Neither of these statements appears to be correct, since the final cost of equity range (11.4 to 14.4 per cent) extends outside the CAPM range estimated by Envestra.[33] Envestra stated at the outset that the cost of equity 'will be estimated using the CAPM, with the outcome cross checked against estimates obtained from other well known and recognised asset pricing models'.[34] In substance, Envestra did not implement this approach, using the alternative models not as 'cross checks' but as the primary determinants of the cost of equity. Envestra's reference to the CAPM in its access arrangement information appears to bear little (if any) relation to the derivation of the cost of equity range and point estimate proposed by it.

Envestra relied on CEG's recommended cost of equity range of 11.4 to 14.4 per cent, noting that this was 'broadly consistent with the advice from SFG'.[35] CEG explicitly rejected the (standard) CAPM.[36] Instead, CEG considered the BCAPM, FFM and the DGM and also noted a number of other methods.[37] However it is not clear how much weight CEG gave to each of the individual models/methods in making its recommendations, nor is CEG explicit in presenting its derivation of the final range.[38] The BCAPM appears to have been relied upon to set the bottom of the range, and the FFM appears to produce the top of the range. The point estimate proposed by

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30 Envestra, *Qld access arrangement information*, October 2010, p. 134.
31 Envestra, *Qld access arrangement information*, October 2010, p. 134.
32 Envestra, *Qld access arrangement information*, October 2010, p. 135.
33 Envestra, *Qld access arrangement information*, October 2010, p. 135 (table 9.3).
34 Envestra, *Qld access arrangement information*, October 2010, p. 135.
35 Envestra, *Qld access arrangement information*, October 2010, p. 135 (section 9.12).
36 CEG, *Estimating the cost of capital under the NGR: A report for Envestra*, September 2010, pp. 7-8, 13-14, and 17.
37 CEG, *Estimating the cost of capital under the NGR: A report for Envestra*, September 2010, pp. 18–48.
38 Some limited conclusions can be inferred from CEG's report regarding its consideration of various methods. For instance, CEG uses a method based on the relative returns to debt and equity to estimate the cost of equity at more than 14.4 per cent. It is apparent that very little or no weight has been given to this estimation method given this is outside its recommended range. CEG, *Estimating the cost of capital under the NGR: A report for Envestra*, September 2010, pp. 7–8, 47–48.

Envestra was based on a method using cash flow analysis to meet credit rating metrics. This method stands separate from any of the other approaches.[39]

The AER considers that the CAPM is a well accepted model, however the Envestra proposal does not 'use' the CAPM in determining the cost of equity for the purposes of rule 87(2)(b) of the NGR. The AER considers that the relevant consideration is not merely whether the CAPM was present, but what role the CAPM plays in the derivation of the final cost of equity.

Having determined that Envestra did not use the CAPM for the purposes of rule 87(2)(b) of the NGR, the AER has considered whether Envestra's multi-model approach otherwise meets the requirements of the NGR.

The AER considers that a multi-model approach is not precluded by the NGR.[40] Envestra presented its multi-model approach as something that can be regarded as well accepted, separately from a consideration of which component models are employed.[41] Envestra referred to an ASIC guideline, commentary from Grant Samuel and a recent decision by the Australian Competition Tribunal in support of its multiple model approach.[42] Regarding each of these, the AER notes that:

- The ASIC guideline states that the use of only one model may be appropriate,[43] and stresses that valuation methodologies must be carefully selected.[44]

- The Grant Samuel report on the sale of Alinta to Singapore Power does not suggest that the CAPM is inadequate, but actually uses the CAPM (rather than a multiple-model approach) to derive the discount rate in its calculations.[45]

- The Grant Samuel report also comments on alternatives to the CAPM, and states that there are 'more sophisticated multivariate models which utilise additional risk factors but these models have not achieved any significant degree of usage or acceptance in practice'.[46]

- The Australian Competition Tribunal statement that 'employing a variety of techniques provides a firmer foundation' for the estimation of individual parameters and the overall WACC value does not lead to the conclusion that the

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39 Envestra, *Qld access arrangement information*, October 2010, pp. 139–144.

40 The phrasing of the r. 87(2)(b) of the NGR is singular ('a well accepted financial model') however it is possible this may encompass a single aggregate model that has multiple component models.

41 Envestra, *Qld access arrangement information*, October 2010, pp. 123–124.

42 Envestra, *Qld access arrangement information*, October 2010, pp. 123 and 127.

43 ASIC regulatory guideline 111, p. 15 (RG111.49, RG111.52). Note that although Envestra states 'Therefore, the requirements and recommendations contained in ASIC Regulatory Guideline 111 are relevant considerations…' nothing in the guideline should be construed as a 'requirement' since this is not the nature of the document. Envestra, *Qld access arrangement information*, October 2010, p. 123.

44 ASIC regulatory guideline 111, p. 15 (RG111.49).

45 Grant Samuel and Associates Pty Ltd, *Financial Services Guide and Independent expert's report in relation to the proposed acquisition of Alinta Assets from Singapore Power International Pte Limited*, 5 November 2007, Appendix 1: Selection of Discount rates, pp. 6, 10.

46 Grant Samuel and Associates Pty Ltd, *Financial Services Guide and Independent expert's report in relation to the proposed acquisition of Alinta Assets from Singapore Power International Pte Limited*, 5 November 2007, Appendix 1: Selection of Discount rates, p. 1.

use of multiple model in general reflects a well accepted approach.[47] In particular, it does not reflect on the appropriateness of outcomes where individual components of the approach are not sufficiently robust.

The AER considers that this evidence does not provide a reasonable basis to conclude that the use of multiple models (in general) is well accepted. While the use of multiple models may produce a reasonable outcome, whether it actually does so depends heavily on the underlying models employed. Having reached this conclusion, the AER therefore considered whether the various individual models used by Envestra as part of its multi-model approach are well accepted.

The Envestra proposal did not, however, attempt to present evidence that the various financial models it employed (the BCAPM, FFM and DGM) were well accepted. The CEG report asserts that the BCAPM, FFM and DGM are well accepted, but does not provide any evidence on this matter.[48] Further, CEG and Envestra took markedly different approaches in defining what is 'well accepted'.[49]

The AER considers that the BCAPM is not a well accepted financial model. Surveys of the cost of capital techniques used by Australian finance managers record no use of the BCAPM.[50] The AER is not aware of any economic regulator using this model.

The AER considers that the FFM is not a well accepted financial model. In response to a recent access arrangement proposal, the AER examined at length the evidence for whether or not this model was well accepted and found no acceptance by any of the groups it considers relevant, namely academics, financial market practitioners or regulators.[51]

Envestra stated that the DGM is used extensively by US economic regulators, with the implication that this model is well accepted by this group. However, implementation problems mean that the DGM is not suitable for use as the primary determinant of the cost of equity. Professor Davis notes that the DGM is particularly sensitive to the input assumptions used. The AER has previously noted that the inputs to the DGM are highly contentious and cannot be estimated with precision for Australian markets.[52] This is one key difference between the Australian and US markets, since in the US there is a much larger pool of data available for the derivation of inputs to the DGM. The AER considers that, in the context of the relevant (Australian) financial

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47 Australian Competition Tribunal, Application by Telstra Corporation Limited, 2010, paragraphs 477–478.]

48 CEG, *Estimating the cost of capital under the NGR: A report for Envestra*, September 2010, p. 6.

49 CEG, *Estimating the cost of capital under the NGR: A report for Envestra*, September 2010, pp. 9–10 and Envestra, *Qld access arrangement information*, October 2010, p. 121.

50 Truong, G., Partington, G. and Peat, M., 'Cost-of-capital estimation and capital-budgeting practice in Australia', *Australian Journal of Management*, June 2008, vol. 33(1), pp. 95–121 and L. Coleman, K. Maheswaran, and S. Pinder, 'Narratives in managers' corporate finance decisions', *Accounting and Finance*, 2010, vol. 50(3), pp. 605–633

51 AER, *Final Decision, Jemena Gas Networks access arrangement proposal for the NSW gas networks*, June 2010, p. 134.

52 AER, *Final decision, Electricity transmission and distribution network service providers review of weighted average cost of capital (WACC) parameters*, 1 May 2009 (WACC review final decision), p. 219-220; AER, *Final decision, ActewAGL gas distribution*, p. 57-61. Further, the AER notes that using DGM to estimate a sector specific cost of equity is even more unreliable than using it to set the market wide cost of equity (the MRP).

market for the purposes of r. 87, Envestra has not demonstrated that the DGM is a well accepted model.

Overall, the AER considers that the evidence provided by Envestra does not show that its multi-model approach is a 'well accepted financial model' for the purposes of r. 87(2)(b) of the NGR. The AER considers that Envestra has not demonstrated that the individual models used as the principle components of its multi-model approach meet the requirements of r. 87(2)(b) of the NGR. Since the cost of equity model used by Envestra does not meet the requirements of the NGR, it cannot be accepted by the AER.

In otherwise assessing the reasonableness of the proposed rate of return under r. 87(1), as highlighted in section 5.4.1 above, Envestra's proposed cost of equity (13.02 per cent) is well above the cost of equity implied by several sources of information. Analysis of dividend yields suggests a cost of equity between 7.5 and 8.5 per cent, and analysis of recent asset sales and trading ratios also indicates a cost of equity below 10 per cent. When applied correctly, other techniques (such as those based on the relative returns to debt and equity) do not support the cost of equity proposed by Envestra.

5.4.2.3 Theoretical issues with the CAPM raised by Envestra

Envestra submitted a consultant report from Professor Bruce Grundy of the University of Melbourne that examined the theoretical basis for the CAPM.[53] Professor Grundy stated that the CAPM estimates of the cost of equity for companies with a beta less than one (such as the benchmark distribution network service provider) were downwardly biased. Professor Grundy identified four unrealistic assumptions underlying the CAPM as the cause of this downward bias:[54]

- investors can lend and borrow at the risk free rate
- there are no transaction costs
- the market contains all possible investments (equities, bonds, real estate and so on)
- investors live for one period only.

The AER considers that in all four cases, the magnitude of the bias is not established and is likely to be immaterial. Furthermore, in two cases the direction of the potential bias is ambiguous. The AER highlights the following for each assumption in turn:

- investors can borrow and lend at the risk free rate– Professor Davis notes that some private sector entities are able to borrow at an interest rate immaterially above the risk free rate (in his calculation, around five basis points).[55]

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53 Bruce Grundy, The calculation of the cost of capital: A report for Envestra, 30 September 2010, pp. 2–10.

54 Bruce Grundy, The calculation of the cost of capital: A report for Envestra, 30 September 2010, pp. 4-8

55 Since the CAPM assumes homogenous investors—which may be better proxied by the marginal investor than the average investor—it may be immaterial that the majority of private sector entities

- there are no transaction costs– Davis states that transaction costs are important in the short term, but immaterial at longer horizons.[56] The AER applies the CAPM using a long period (10 years). Further, the direction of the (very small) transaction cost bias may be in the opposite direction to that suggested by Professor Grundy.[57] Transaction costs for equity holders in regulated energy networks are relatively low and stable when compared to market wide averages.[58] Accounting for transaction costs would therefore reduce the correlation between returns on the benchmark firm and the market average return—lowering its beta and therefore its expected return.[59]

- the market consists of all possible investments– despite this being labelled a 'theoretical limitation', there is actually no statement by Professor Grundy that the CAPM assumption is incorrect.[60] Rather, Professor Grundy's argument is that 'most empirical investigations of the CAPM' implemented the CAPM by treating the equity market as if it were the entire market, instead of including other major asset types.[61] In other words, it is this particular type of test of the CAPM that is incorrect, not the theory. Professor Davis notes that the direction of the effect proposed by Professor Grundy is indeterminate.[62] The location of the mean-variance efficient portfolio will account for the covariance of all possible investments and so the end effect may be upward or downward.

- the investor only lives for one period– Professor Davis considers that the CAPM is conditional with parameters that can vary over time,[63] but notes that there is no agreement on which conditional factors cause variation across periods. This means it is not reasonable to implement a true conditional CAPM.[64] However, the AER implicitly accounts for changes in the underlying CAPM parameters when it re-estimates them for each access arrangement revision. This allows the AER to set the rate of return in a manner that mitigates the impact of the single period assumption.

Their impacts aside, in all four cases these theoretical arguments also apply to the alternative models proposed by Envestra.[65] On a more practical level, several of the studies cited by Professor Grundy use a short term risk free rate—the interest rate on

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do not have access to funds at these rates. Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 9–11.

56 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 9.

57 Bruce Grundy, *The calculation of the cost of capital: A report for Envestra*, 30 September 2010, p. 5.

58 In particular, these companies pay large dividends, undertake regular dividend reinvestment programs, possess steady growth options and have proportionally small bid-ask spreads.

59 The net direction would depend on the magnitude of the upward change in the risk free rate and the downward change in equity beta.

60 Bruce Grundy, *The calculation of the cost of capital: A report for Envestra*, 30 September 2010, pp. 6–7.

61 Bruce Grundy, *The calculation of the cost of capital: A report for Envestra*, 30 September 2010, p. 6.

62 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 10.

63 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 9.

64 Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 10.

65 The AER notes that Professor Grundy was asked to identify the theoretical and empirical problems with the CAPM, but not asked to undertake the same analysis for the alternative models.

three month treasury bills.[66] In contrast, the AER uses a long term risk free rate—the interest rate on 10 year government bonds—which is around 100 basis points higher than the short term risk free rate.[67]

Turning to Envestra's proposal, there are theoretical limitations to each of the alternative models it uses in developing its cost of equity estimate. The BCAPM alters only one of the CAPM assumptions (that investors can lend and borrow at the risk free rate), so may be similarly affected by the other three theoretical problems alleged by Professor Grundy.

Like the CAPM, the dividend growth model assumes that there are no transaction costs. This may be a material issue for the DGM because transaction costs are unequally distributed across the two components of the DGM equation—the purchase of a share (now) involves one transaction; but the redemption of (all) future cash flows involves an infinite number of transactions. If transaction costs form a greater proportion of future cash flows (relative to the single purchase transaction), then the discount rate that equates these future cash flows to the current share purchase price would be lower. In other words, a dividend growth model that accounted for transaction costs would result in a lower cost of capital.

The Fama-French three-factor model has no theoretical basis but arose purely from the observation of empirical patterns (often labelled 'data mining').[68] While a variety of theoretical justifications have been advanced after it was developed, none has achieved consensus support and the authors of the model state that it needs no theoretical basis, only empirical success.[69] The AER considers that in the absence of a theoretical basis, there are no reasonable grounds to conclude that the model can reliably predict the return on equity. This is particularly of concern since the FFM was primarily developed using United States market data. Research using Australia data does not suggest that the same empirical patterns are present here.[70]

The AER considers that Envestra and its consultants have not presented any compelling theoretical arguments to suggest that the CAPM produces a rate of return that would not reflect prevailing conditions in the market for funds and the risks involved in providing reference services.

5.4.2.4 Empirical issues with the CAPM raised by Envestra

Both the Grundy report and the CEG report examined a range of empirical evidence on the CAPM and concluded that the empirical evidence does not support the CAPM. In particular, they suggest that the realised rate of return on low beta stocks is higher than that predicted by the CAPM. This leads directly to the BCAPM, which both Grundy and CEG endorse as a better fit for the empirical evidence.

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66 Bruce Grundy, *The calculation of the cost of capital: A report for Envestra*, 30 September 2010, p. 13 (table 1B).

67 Using current Australian data produced by the Reserve Bank of Australia.

68 For example, see F. Black, 'Beta and return', *Journal of Portfolio Management*, 1993, p. 10 and New Zealand Commerce Commission, *Cost of Capital Workshop*: 12 November 2009, p. 22.

69 F. Fama and E. French, 'The Capital Asset Pricing Model: Theory and evidence', *Journal of Economic Perspectives*, 2004, vol. 18, p. 41.

70 AER, *Final Decision, Jemena Gas Networks access arrangement proposal for the NSW gas networks*, June 2010.

Grundy and CEG appear to select empirical evidence from the set of papers used in a previous AER decision, which was concerned with the evaluation of the FFM proposed by JGN. While clearly relevant to the evaluation of the FFM, it is not the case that these papers were selected to give an assessment of the empirical evidence on the CAPM. In contrast, Professor Davis surveys relevant recent academic literature on the CAPM itself.

Professor Davis notes a number of limitations with the empirical testing of the CAPM, including:

- inappropriate statistical testing[71]
- use of a time horizon that is too short [72]
- use of realized returns, which are a biased proxy for expected returns[73]
- defining a market portfolio that is not mean-variance efficient.[74]

It is worth noting the conclusion of Professor Davis in full:

> This brief overview of a number of recent studies in well regarded academic journals suggests a number of conclusions. First, there is ongoing debate about the statistical tests appropriate and suitable for discriminating between and rejecting alternative asset pricing theories. Second, there is a wide range of additional explanatory variables which have been added to the standard CAPM as additional risk factors. While some have theoretical underpinnings, there remains disagreement on whether they are capturing priced risk factors. Third, the evidence is mixed on whether alternative models outperform the static CAPM, although recognition that the CAPM is conditional with parameters which can vary over time is important.

In summary, the AER considers that Envestra and its consultants have not presented any compelling empirical evidence to suggest that the CAPM produces a rate of return that is not the commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.

5.4.2.5 Conclusion on the cost of equity

Overall, the AER considers that Envestra's multi-model approach to estimating the cost of equity does not meet the requirements of r. 74(2), r. 87(1) and r. 87(2)(b) of the NGR. Therefore, the AER does not accept the use of the multi-model approach.

The AER instead uses the (standard) CAPM to estimate the cost of equity. The AER considers that the use of the CAPM to estimate the cost of equity:

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71 As per Ray et al – see Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 6.

72 As per Cohen, Polk and Vuolteenaho – see Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 5.

73 As per Campello, Chen and Zhang – see Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, p. 7.

74 As per Levy and Roll – see Kevin Davis, *Cost of Equity Issues: A report for the AER*, 17 January 2011, pp. 7–8.

- complies with the applicable requirements of the NGL and the NGR
- is consistent with the revenue and pricing principles set out in section 24 of the NGL
- will or is likely to contribute to the achievement of the National Gas Objective (NGO) in section 23 of the NGL.

The AER concludes that the cost of equity for Envestra for the access arrangement period should be set at 10.48 per cent. This estimate is based on parameter inputs (the risk free rate, MRP and equity beta) that are described in detail later in this chapter. Further, the AER has cross checked the estimate generated by the CAPM against market data.

5.4.3 Equity beta

The equity beta measures the standardised correlation between the returns on an individual risky asset or business with that of the overall market. It represents the 'riskiness' of the business returns compared with that of the market. A beta estimate of greater (less) than one implies that the business is exposed to more (less) non diversifiable risk than the overall market. Risk results from the possibility that returns will differ from expected returns—the greater the uncertainty around the returns of a business, the greater its level of risk. As noted above, the AER has applied the CAPM in determining Envestra's cost of equity, hence an estimate of the equity beta as an input to the CAPM is required.

Consistent with the WACC review, the AER considers an equity beta estimate of 0.8 is appropriate and will result in a rate of return commensurate with the risk involved in providing reference services. The AER considers that regulated utilities face lower systematic risk than the general market, which is primarily driven by the stable cash flows of regulated utilities. The lower equity beta value of 0.8 is partly due to the regulatory regime that provides protection to regulated businesses that are not available to businesses in the competitive environment, particularly as:

- the tariff variation mechanism allows for the annual adjustment for inflation, lowering exposure to inflation risk
- the roll forward of the capital asset base occurs in a manner that lowers exposure to cost overruns for capital expenditure
- the cost pass through mechanism allows for certain costs to be passed on to consumers during the access arrangement period, lowering exposure to costs not forecast at the commencement of the access arrangement period
- the access arrangement provides for acceleration of the review submission date on occurrence of a trigger event
- a service provider may submit an access arrangement variation proposal for the AER's approval.

In this context, the AER rejects Envestra's proposed equity beta estimate range of 0.8 to 1.1 as it would result in a cost of capital which is excessive with respect to the risk involved in providing reference services. Appendix C contains further detail on particular issues raised by Envestra in relation to beta.

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 gas distribution network service provider.[75] Although the WACC review was conducted in an electricity context, gas and electricity businesses are close comparators. Further, the sample set of data used to derive the equity beta is predominantly made up of gas businesses. The sample in the WACC review provides a value for gas equity beta of between 0.4 and 0.7. Therefore, an equity beta of 0.8 provides the service provider with an opportunity to recover at least its efficient costs incurred in providing reference services and meeting regulatory requirements.[76]

The AER stated in the WACC review that gas businesses may have higher business risk than electricity.[77] However, the AER did not intend to imply that business specific risk should be compensated for in the equity beta. The AER considers that the difference in systematic risk exposure between gas and electricity businesses is likely to be insignificant.

Further, the CEG report submitted with Envestra's proposal contains individual equity beta estimates for all firms in its sample.[78] The AER considers the beta estimate provided in the CEG report demonstrates a beta estimate range of 0.4 to 0.7 is still appropriate for this draft decision. Table 5.3 reproduces the most up to date beta estimates from the CEG report. As is evident in table 5.3, the most recent beta estimate from Australian comparable firms (with the exception of Hasting[79]) is within the bound of 0.1 to 0.6.

75 AER, *WACC review final decision*, 1 May 2009, pp. xv–xviii, 239–292, 343–361.
76 NGL, s. 24(2).
77 AER, *WACC review final decision*, 1 May 2009, pp.170–108, 257–258.
78 Competition Economics Group, *Estimating the cost of capital under the NGR, A report for Envestra*, September 2010, p. 49.
79 Given the take over bid, refinancing pressure and sharp falls in the share price of HDF in 2009, the AER considers caution should be used when interpreting the Hasting beta estimate.

Table 5.3: Competition Economist Group beta analysis

Company	Competition Economist Group equity beta at 60% gearing	WACC review
Envestra	0.51	0.10–0.42
Hastings	1.64	0.49–1.01
Australian Pipeline	0.54	0.60–0.92
DUET	0.34	0.19–0.41
Spark Infrastructure	0.53	0.79–1.11
SP AusNet	0.14	n/a

Source: Competition Economist Group, *Estimating the cost of capital under the NGR A report for Envestra,* September 2010, p. 49 and Olan T. Henry, *Estimating beta,* 23 April 2009, pp. 10–18.

Envestra previously received a beta estimate of 1.1 for it Brisbane gas network under the QCA's determination. However, substantial new empirical analysis has been undertaken since the QCA's final decision, which provides a more up to date estimation of the equity beta for prevailing market conditions as required by the NGR.[80] The NGR requires the AER to determine a rate of return that reflects prevailing market conditions. Based on this information, an equity beta of between 0.4 and 0.7 ensures that the service provider has the opportunity to recover at least its efficient costs incurred in providing reference services and meeting regulatory requirements.[81] The AER considers that a reduction in Envestra's beta from 1.1 to within a range of 0.4 to 0.7 would be significant and potentially undermine investment certainty for regulated energy businesses. The AER is also mindful it has recently considered a beta value of 0.8 to be appropriate, if not overstated, for other gas businesses. On the basis of the information presented here, the AER concludes that a beta value of 0.8 is appropriate. The AER considers that a value of 1.1 does not provide the best estimate of the equity beta given prevailing market conditions,[82] and requires Envestra to amend its access arrangement information as outlined in amendment 5.1.

5.4.4 Market risk premium

The MRP is the expected return over the risk-free rate that investors require in order to invest in a well diversified portfolio of riskier assets. The MRP represents the risk premium 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 is not specific to an individual asset or business.

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80 For particular details, see AER, *WACC review final decision*, May 2009 and NGR, r. 87(1).
81 NGL, s. 24(2).
82 NGR, r. 74 (2)(b) and r. 87 (1).

As noted above the AER has determined that the CAPM should be used to estimate Envestra's cost of equity. Within the CAPM framework, the MRP is scaled up or down by the equity beta (of a particular asset or business) to reflect the risk premium—over and above the risk-free rate—equity holders would require to hold that particular risky asset or business as part of the investor's diversified portfolio. The MRP is an expected or forward looking parameter within the CAPM. It is the expected return on the market portfolio minus the risk free rate. Envestra proposed the use of the yield on 10 year Commonwealth Government Securities (CGS) as the proxy for the risk free rate.[83] The AER has accepted the use of the yield on 10 year CGS.[84] To maintain consistency within the CAPM, the MRP must be estimated for a 10 year investment horizon.[85]

The MRP is not observable because it is a forward looking measure. There is a range of evidence that can inform the best estimate of the forward looking 10 year MRP. In previous regulatory decisions the AER has used historical estimates, survey based estimates, and qualitative data on expected market conditions to inform the best estimate. Historical data on realised excess market returns may provide a starting point. Surveys provide information on the expectations and practice of market practitioners. Short term estimates of volatility can provide some information on the expected MRP, but are highly variable. In addition to this, short term estimates are unlikely to reflect a 10 year horizon.

The evidence used to estimate the MRP is imprecise and subject to varied interpretation, a point that is well recognised in academic literature[86] and in reports put forward by regulated entities.[87] As a result, the AER and previous regulators have had regard to a range of indicators, informed by an understanding of the strengths and weaknesses of each method. The available evidence is imprecise and potentially conflicting, which means a degree of judgment is required to determine the MRP that is the best estimate in the circumstances and commensurate with prevailing conditions in the market for funds.[88]

For the purposes of determining the best estimate of the MRP for Envestra, the AER has considered the national gas objective set out in the National Gas Law (NGL), which 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

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83 Envestra, *Qld access arrangement information*, October 2010, p. 131.

84 See section 5.4.7. The AER considered the term of the risk free rate in detail as part of the WACC review. The AER estimated the weighted average effective term to maturity for the debt portfolio of a benchmark efficient energy network business was 7.37 years. This was after hedging was taken into account. On this basis the AER considered the previous regulatory practice of using the yield on 10 year CGS as the proxy for the risk free rate was appropriate. See AER, *WACC review final decision*, 1 May 2010, pp. 172–173.

85 The Australian Competition Tribunal also noted the importance of consistency between the term of the risk free rate and the MRP. See Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6.

86 See for example Mehra R. and Prescott E.C., The equity premium, A puzzle, Journal of Monetary Economics, 15, 1985, pp. 145–161; Damodoran A., Equity Risk Premiums (ERP), Determinants, Estimation and Implications, September 2008, p. 1; Doran J.S., Ronn E.I. and Goldberg R.S., A simple model for time-varying expected returns on the S&P 500 Index, August 2005, pp. 2–3.

87 See for example Officer and Bishop, Market risk premium, a review paper, August 2008, pp. 3–4; SFG, The relationship between theta and MRP, Report for Envestra, 27 September 2010, p. 5.

88 NGR, r. 87(1).

price, quality, safety, reliability and security of supply of natural gas. The AER has also had regard to the revenue and pricing principles in the NGL, which state a service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in providing reference services.[89]

The value of the MRP is a highly contentious issue amongst academics and market practitioners and there is no definitive answer on what the value of the unobservable MRP should be. The AER has used its judgment to balance academic evidence and evidence from a range of other sources to achieve an outcome which balances the objectives set out in the NGL.

5.4.4.1 Previous regulatory practice

In regulatory decisions prior to the AER's WACC review final decision in 2009,[90] the ACCC, the AER and state regulators maintained 6 per cent as the best long term estimate of the MRP in the Australian market. In examining those earlier decisions for the purposes of the WACC review (in particular, considering the MRP previously adopted by various regulators), the AER noted the precedent set in 1998 by the ACCC and the Victorian Office of the Regulator General (ORG).

The ACCC's decision in 1998 was to reject the MRP value of 6.5 per cent proposed by Transmission Pipelines Australia (TPA) for its gas access arrangements and instead use a value of 6 per cent, taking into account the following evidence and considerations:

- TPA's consultant, CSFB, proposed 6.5 per cent given the conventionally accepted value was 6–7 per cent under the classical tax system
- the relatively stable inflationary environment prevailing at the time suggested that the MRP was less than that observed over recent years
- dividend growth model estimates produced by Professor Davis suggested a MRP within the range of 4.5–7 per cent
- the probable range for the MRP is 4.5–7.5 per cent and 6 per cent is the mid-point within the range.[91]

In making its 1998 decision for the Victorian gas distribution businesses, the ORG determined that a value of 6.5 per cent as proposed by the businesses was towards the upper end of the feasible range. However, it considered that 6 per cent was a more reasonable estimate taking into account the following:

- research undertaken by Professor Officer suggested that the mean of historical excess returns was in the range of 6.5 per cent to 7 per cent over the period 1947 to 1991, depending on the specific period over which excess returns were measured

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89 NGL, s. 24(2)(a).
90 AER, *WACC review final decision*, 1 May 2009.
91 ACCC, Final decision, *Access arrangement for Transmission Pipelines Australia and Victorian Energy Networks Corporation*, October 1998, p. 53.

- a direct quote from Officer that he had consistently used an MRP of 6 per cent in his own work, simply on the basis that he believed 6 per cent was consistent with historical evidence

- dividend growth model estimates produced by Davis (however the ORG cautioned against placing too much weight on these given the sensitivity to assumptions employed)[92]

- comments by Davis that historical excess returns calculated over a 30 year period, once adjusted for imputation credits, were in the order of 5.5 to 6 per cent

- comments by Associate Professor Stephen Gray that the generally accepted MRP in the Australian market was in the range of 6 to 7 per cent.[93]

Further studies were commissioned after the ACCC and ORG's gas network decisions which factored into regulators' considerations of the MRP. For example, in 2005, Associate Professor Neville Hathaway produced a report recommending an MRP of 4.5 per cent. Associate Professor Hathaway's estimate was based on a 6 per cent geometric average of historical excess returns for 1875–2005 that was adjusted by 145 basis points to take account of the increase in the price to earnings ratio after 1960.[94] In 2005, Jim Hancock of the South Australian Centre for Economic Studies estimated the historical equity risk premium to be 4.5–5.0 per cent.[95] Hancock's estimate was based on an arithmetic average of 5.5–6.0 per cent for the period 1974–2003 adjusted downwards by 1 per cent to take account of declining discount rates and the large unanticipated initial market response to the introduction of dividend imputation between July and September 1987.[96] Other studies suggesting a MRP greater than 6 per cent should be adopted have also been considered.[97]

Rather than simply adopting the latest estimates presented at the time, regulators carefully considered the various arguments and limitations surrounding the forms of evidence presented to them and used judgment when forming a view of the most appropriate forward looking MRP. Decisions by the ACCC and state regulators regarding point estimates of the MRP consistently chose a value of 6 per cent.

In the WACC review final decision, the AER considered the best estimate for the forward looking 10 year MRP prior to the onset of the GFC was 6 per cent. This estimate was based on a range of information including historical estimates, survey

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92 ORG, Access arrangements – Multinet Energy Pty Ltd and Multinet (Assets) Pty Ltd – Westar (Gas) Pty Ltd and Westar (Assets) Pty Ltd – Stratus (Gas) Pty Ltd and Stratus Networks (Assets) Pty Ltd , Draft decision, May 1998, pp. 211, 212.

93 ORG, Access arrangements – Multinet Energy Pty Ltd and Multinet (Assets) Pty Ltd – Westar (Gas) Pty Ltd and Westar (Assets) Pty Ltd – Stratus (Gas) Pty Ltd and Stratus Networks (Assets) Pty Ltd , Final decision, October 1998, p. 199.

94 Hathaway, Australian market risk premium, January 2005, p. 28.

95 Hancock. The market risk premium for Australian regulatory decisions, April 2005, p. 13.

96 Hancock. The market risk premium for Australian regulatory decisions, April 2005, pp. 11–13.

97 See for example the studies referred to in ESCV, *Electricity Distribution Price Review 2006-10 October 2005 Price Determination as amended in accordance with a decision of the Appeal Panel dated 17 February 2006 Final Decision Volume 1 Statement of Purpose and Reasons*, February 2006, pp. 359–361 and ESCV, Review of Gas Access Arrangements Final Decision, October 2002, p. 324.

estimates, cash-flow based measures and past regulatory practice. However, the AER acknowledged the uncertainty in the market at the time of the WACC review final decision. The AER considered one of two scenarios could have explained market conditions at that time:

- The prevailing medium term MRP was above the long term MRP, but would return to the long term MRP over time; or
- There had been a structural break in the MRP and the forward looking long term MRP (and consequently also the prevailing) MRP is above the long term MRP that previously prevailed.

Due to the uncertainty about the effects of the GFC on future market conditions, the AER departed from the previously adopted forward looking MRP estimate of 6 per cent and increased it to 6.5 per cent.[98]

Market conditions since the time of the WACC review have significantly improved and now reflect a lessening of concerns about the potential ongoing impact of the GFC and a much more robust long term economic and financial markets outlook for Australia. This suggests a change in circumstances from those that justified the AER's departure from the long run MRP value of 6 per cent, in that the uncertainty regarding the impact of the GFC is no longer a characteristic of prevailing market conditions. In this context the AER has re-examined the various forms of evidence considered at the time of the WACC review to inform its current view of the forward looking 10 year MRP. The AER's analysis is set out below.

5.4.4.2 Historical estimates of the MRP

Historical excess returns represent the additional return that investors could have earned in the past by investing in a diversified portfolio of shares. Although not forward looking, historical excess return estimates have been reviewed under the assumption that investors' expectations of the forward looking MRP are informed by past experience.

Associate Professor John Handley has provided estimates of historical excess returns for three time periods up to 2010, which are outlined in table 5.4. These estimates are arithmetic means and with data available to the end of 2010 provide a range of 6.1–6.6 per cent.

[98] AER, *WACC review final decision*, 1 May 2009, p. 238.

Table 5.4: Historical excess return estimates (assuming an imputation credit utilisation rate of 0.65)

	Historical excess returns	95% confidence interval
1883–2010	6.3%	3.4% – 9.2%
1937–2010	6.1%	1.5% – 10.7%
1958–2010	6.6%	0.4% – 12.9%

Source: Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, p. 8.

Estimates of average historical excess returns are accompanied by very wide confidence intervals and can also fluctuate considerably with the addition of new observations for each year. This is illustrated in table 5.5.

Table 5.5: Historical excess return estimates (assuming an imputation credit utilisation rate of 0.65)

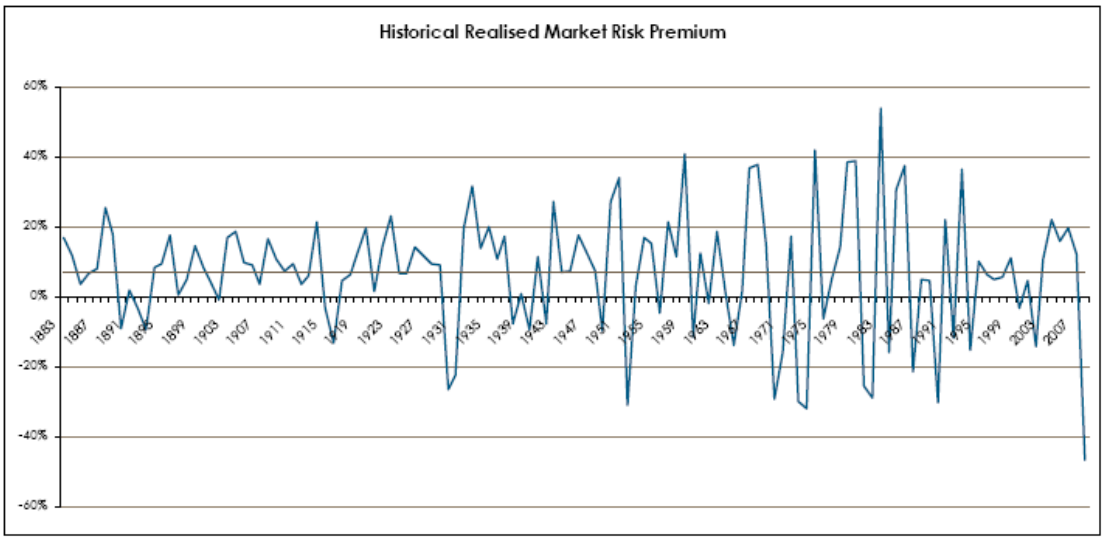
	2005	2007	2008	2009	2010
1883–	6.4%	6.6% (1.4%)	6.1% (1.5%)	6.4% (1.5%)	6.3% (1.5%)
1937–	6.1%	6.4% (2.3%)	5.7% (2.3%)	6.1% (2.3%)	6.1% (2.3%)
1958–	6.8%	7.2% (3.1%)	6.2% (3.2%)	6.7% (3.2%)	6.6% (3.1%)

Source: AER, WACC review final decision, May 2009, p. 215; Handley, Memorandum: Supplement to historical equity risk premium, 27 November 2008; Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, p. 8; Brailsford, Handley and Maheswaran, Re-examination of the historical equity risk premium in Australia, Accounting and finance, vol. 48, pp. 90–93; AER analysis.

Note: The standard errors of the estimates are contained in the parentheses. Figures for 2005 are from Brailsford et al. (2008) and have been adjusted to reflect an assumed imputation credit utilisation rate of 0.65. Estimates have not previously been calculated for 2006, and the AER has not retrospectively calculated figures for 2006.

The reason for the sensitivity in these results is the variability in market returns in any given year. This is illustrated in figure 5.1, which graphs realised historical market returns minus the proxy for the risk free rate.

Figure 5.1: Historical realised excess market returns 1883–2008



Source: Officer and Bishop, Market risk premium, further comments, January 2009, p. 4.

The historical estimates summarised in table 5.4 would suggest a forward looking MRP of 6.1 to 6.6 per cent for the period ending 2010. These estimates are not inconsistent with those prior to the GFC. Consistent with past regulatory practice the AER does not consider historical estimates of excess market returns should be applied mechanistically to give a point estimate of the MRP or a restrictive range for point estimates of the MRP since:

- the estimates are subject to wide confidence intervals and as a result there is low statistical precision in the estimates[99]
- it could result in potentially significant changes to the MRP on the basis of what may be statistical noise, leading to investment uncertainty
- while this information would be taken into account by investors, their expectations of the long run forward looking MRP are unlikely to change annually in response to the latest historical estimates of the type calculated by Handley.

The historical excess return estimates outlined above are arithmetic means. Arithmetic means are more appropriate when the excess return in each year is an independent observation in a statistical sense. In contrast, geometric means are more appropriate when yearly returns are related to each other over time (for example, if the return is compounded and accumulates over a certain holding period). As long as returns vary over time, a geometric mean will be less than an arithmetic mean. The greater the volatility in returns, the greater the difference between arithmetic and geometric means.

[99] The AER notes that expectations about market risk are likely to differ at any point in time based on different economic and financial market circumstances. However, this in itself makes estimates of the actual MRP through time very difficult to estimate with accuracy.

In the WACC review, the AER noted that Blume, as well as Dimson, Marsh and Staunton have proposed methods that could be used to calculate an expected MRP using a weighted average of arithmetic and geometric means.[100] If historical excess returns are estimated as geometric means, Associate Professor Handley's latest estimates of the MRP range from 4.1–4.9 per cent. Table 5.6 illustrates the difference between the historical excess returns estimated as geometric means or arithmetic means. The significant difference between these two estimates further demonstrates the variability of excess returns over time.

Table 5.6: Historical excess returns estimated using geometric means and arithmetic means (assuming an imputation credit utilisation rate of 0.65)

	Historical excess returns (geometric means)	Historical excess returns (arithmetic means)
1883–2010	4.9%	6.3%
1937–2010	4.1%	6.1%
1958–2010	4.1%	6.6%

Source: Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, p. 8.

There is already a low degree of precision in historical estimates of excess returns and using a weighted average of geometric and arithmetic means adds a further degree of complexity that may not add any greater degree of precision. Therefore, rather than using a complex weighted average approach, the AER considers that arithmetic averages should be interpreted with the understanding that they may overstate the expected forward looking 10 year MRP.[101]

5.4.4.3 Historical estimates and the assumed value of imputation credits

Officer and Bishop use a 7 per cent long term MRP estimate in their 'glide path' analysis (which is examined further below). Officer and Bishop's 7 per cent long term MRP estimate is based on historical excess returns data up to 2008.[102] Officer and Bishop have previously stated the main reason for adopting an MRP of 7 per cent over an MRP of 6 per cent was due to the value of imputation credits, which they stated had not been considered by Australian regulators in the past.[103] This issue was considered in detail during the WACC review, where the AER noted:

- previous regulators had taken into account the value of imputation credits in the process of determining 6 per cent as the best estimate of the MRP[104]
- within the Officer WACC framework, it is conceptually valid to take into account the value of distributed imputation credits when estimating historical excess

[100] AER, Final decision, *Review of weighted average cost of capital parameters*, 1 May 2010, pp. 198–199.
[101] The difference between geometric and arithmetic means is discussed further in appendix C.
[102] Officer and Bishop, Market Risk Premium, Estimate for January 2010–June 2014, Prepared for WestNet Energy, December 2009, pp. 9–10.
[103] Officer and Bishop, *Market risk premium, a review paper*, August 2008, p. 1.
[104] AER, *WACC review final decision*, 1 May 2009, pp. 182–184.

returns by grossing up excess returns after 1987 for the assumed utilisation rate (theta) of imputation credits.[105]

The AER explicitly incorporated the value of imputation credits in its estimates of historical excess returns, which at the time of the explanatory statement for the WACC review produced a range of 5.9–6.5 per cent.[106] At the time of the WACC review final decision, the range for historical estimates was 5.7–6.2 per cent.[107] Both of these ranges were 'grossed-up' using a utilisation rate for imputation credits of 0.65. Neither of these ranges supports a MRP estimate of 7 per cent.[108]

SFG stated that adopting an assumed utilisation rate for imputation credits of 0.23 as opposed to a utilisation rate of 0.65 should not reduce the AER's estimate of the MRP. SFG stated that there is such imprecision in the estimate of the MRP that such an adjustment would be well within the bounds of error. To support this SFG stated that changing the sample periods considered by the AER would have a more significant effect on the estimates.[109]

The AER has considered historical excess returns explicitly 'grossed-up' for a utilisation rate of 0.65, consistent with the utilisation rate estimate adopted by the AER for estimating gamma. The excess return estimates have first been estimated by Associate Professor Handley and then adjusted for an assumed value of imputation credits. Therefore, the historical excess return estimates considered by the AER should be 'grossed-up' for the utilisation rate for imputation credits used by the AER for estimating gamma.[110] The latest historical excess return estimates 'grossed-up' for a utilisation rate for imputation credits of 0.2 provide a range of 5.8–6.3 per cent.[111] While the AER has maintained that 0.65 is an appropriate value for the utilisation rate, it highlights that changes in this value may affect the interpretation of historical excess returns when setting the MRP.

5.4.4.4 Implied volatility and Officer and Bishop's glide path approach

Officer and Bishop submitted that an MRP of 8 per cent is appropriate over a five year period to 2016 based on a 'glide path' approach:

- Officer and Bishop estimated the volatility implied from the Black-Scholes option-pricing formula for 12-month ASX200 index call options to be

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105 AER, *WACC review final decision*, 1 May 2009, p. 209.

106 AER, Explanatory statement, *WACC review*, August 2008, p. 170.

107 AER, *WACC review final decision*, 1 May 2009, p. 209.

108 Officer and Bishop also use arithmetic means and therefore may also overstate the expected forward looking 10 year MRP. Officer and Bishop's estimate uses the same data as Associate Professor Handley for the period 1883–1958. Consequently Officer and Bishop's 7 per cent long term estimate of the MRP also suffers from the data issues outlined above.

109 SFG, *The relationship between theta and the MRP, Report for Envestra*, 27 September 2007, p. 5. As noted above, the selection of time periods was based primarily on the data.

110 In this regard, the AER notes the utilisation rate for imputation credits estimated by the AER is under consideration by the Australian Competition Tribunal. The Tribunal's decision in relation to the AER's estimate of the utilisation rate will affect the AER's best estimate of the utilisation rate in the future.

111 Handley, *An estimate of the historical equity risk premium for the period 1883–2010*, 1 February 2010, p. 6.

11.9 per cent. This estimate assumed a market risk per unit of option implied volatility of 0.5. It is a 1-year estimate of the MRP.

- Officer and Bishop then estimated the geometric average MRP over five years assuming the MRP would revert from 11.9 per cent in 2011 to a long run estimate of 7 per cent within a five year period. [112]

The AER does not consider Officer and Bishop's use of implied volatility and their 'glide path' approach is a reliable method of estimating a forward looking 10 year MRP. The AER's concerns are outlined in appendix C.

5.4.4.5 Dividend growth model based estimates

CEG submitted that its best estimate of the MRP is 8 per cent based on its dividend growth model (DGM) analysis. The AER has previously noted that DGM based estimates of the MRP are highly sensitive to assumptions.[113] CEG's analysis makes a number of assumptions, including:

- An imputation credit payout ratio of 100 per cent and an imputation credit utilisation rate of 0.65, which is used to 'gross-up' estimates of cash dividends

- Dividend growth of 9.8 per cent from 2010 to 2014 and long run dividend growth of 2.8 or 3.9 per cent.

The AER has accepted Envestra's proposed imputation credit payout ratio estimate of approximately 70 per cent as the best estimate in the circumstances.[114] CEG's DGM analysis is inconsistent with this imputation credit payout ratio estimate. A payout ratio of 70 per cent would reduce the value of dividends used in CEG's DGM analysis.

DGM assumes that dividends grow into perpetuity. Dividend growth cannot be greater than economic growth because dividends comprise part of the economy. If the growth rate for dividends exceeded economic growth, at some point dividends would become larger than the economy, which is logically impossible. In addition to this, for consistency within the CAPM, the MRP needs to be estimated as a forward looking 10 year MRP. Therefore it may be appropriate to apply a long run dividend growth estimate, rather than a short term estimate that reverts to a long term dividend growth estimate. This is particularly relevant as volatility levels have reduced significantly following the onset of the GFC.[115]

The sensitivity of DGM based estimates to the assumptions made is illustrated by the variability of estimates from different sources. For example, CEG's MRP estimates from DGM analysis were 8.9 per cent in June/July 2008 and 14.2 per cent in

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[112] Officer and Bishop, Comments on the AER draft distribution determination for Victorian electricity distribution network service providers, July 2010, p. 19.

[113] AER, *Draft decision, South Australian electricity distribution determination*, November 2009, p. 315; AER, *WACC review final decision*, 1 May 2009, p. 218; AER, *Explanatory statement, Review of weighted average cost of capital parameters*, December 2008, pp. 171–173.

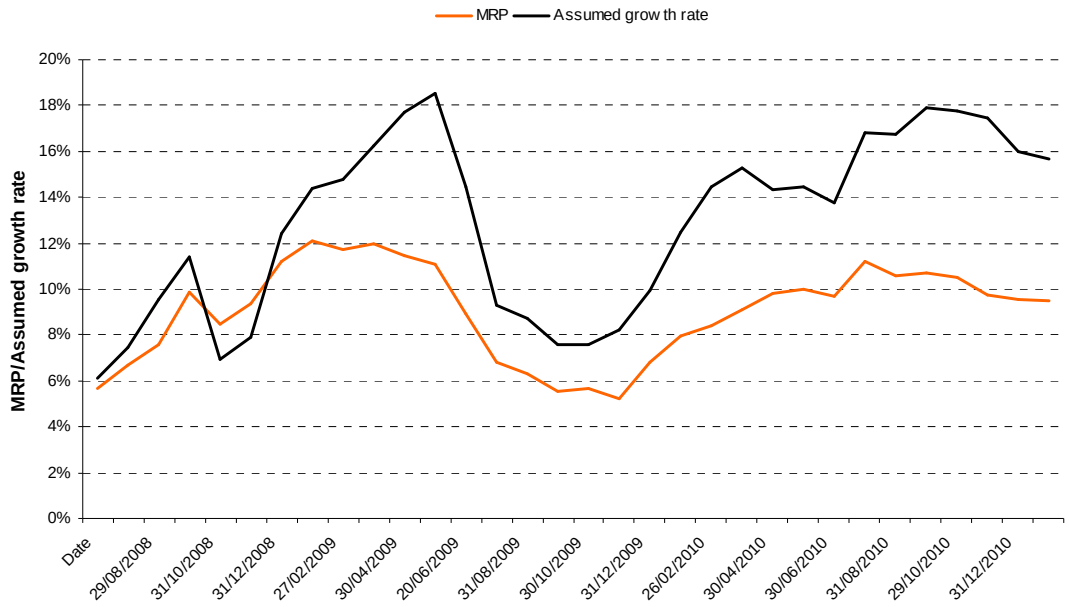
[114] See chapter 6.

[115] This is noted in appendix C.

November 2008.[116] This differed from Bloomberg's DGM based estimates of the MRP, which declined from 8.6 per cent in July 2008 to 8.0 per cent in January 2009.[117]

Bloomberg's DGM based estimates of the MRP are updated regularly and the assumptions are also updated regularly. Bloomberg's DGM based estimates of the MRP in 2004 and 2006 were 4.5 and 4.9 per cent respectively.[118] More recently, DGM based estimates of the MRP from Bloomberg have fluctuated from 12.1 per cent in February 2009 to 5.2 per cent in December 2009. In January 2011, Bloomberg's estimate was 9.6 per cent. The variability of DGM estimates from Bloomberg based is illustrated in figure 5.2, which graphs the assumed dividend growth rate and the MRP estimate. It appears that Bloomberg uses current dividend growth forecasts and assumes they will grow into perpetuity. This may be appropriate for short term estimates. However, for a 10 year MRP estimate, the growth of dividends should not exceed economic growth forecasts. Therefore, Bloomberg's estimates illustrate the sensitivity of DGM based estimates of the MRP to the assumptions made, but they are not reflective of a forward looking MRP 10 year.

Figure 5.2: Sensitivity of Bloomberg DGM based estimates to growth assumptions



Source: Bloomberg and AER analysis.

The AER considers that DGM based estimates of the MRP can provide some information on the expected MRP. However, due to the variability in the estimates over time, and due to the sensitivity of results to input assumptions, they should be limited to providing a general point of reference for assessing the reasonableness of estimates derived from other sources. CEG's 8 per cent and Bloomberg's 9.6 per cent estimate (as at January 2011) provide some conflicting evidence with respect to the

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116 AER, Final decision, Review of weighted average cost of capital parameters, May 2009, p. 219.
117 AER, Final decision, Review of weighted average cost of capital parameters, May 2009, p. 219–220.
118 Officer and Bishop, Market risk premium, a review paper, August 2008, p. 15.

MRP implied from historical excess returns discussed above and from survey evidence presented in the next section.

5.4.4.6 Survey evidence

Surveys of market practitioners and academics reflect the forward looking MRP applied in practice. Survey results are subjective, because market practitioners may look at a range of different time horizons and they are likely to have differing views on market risk. However, survey based estimates of the MRP are both forward looking and reflect actual market practice. Furthermore, the fact that different surveys and methodological designs tend to invoke the same responses indicates that there is no reason to suspect any biases in this type of evidence. Therefore, the AER is of the view that survey based estimates should be considered when estimating the MRP for the purposes of this access arrangement review.

In the WACC review final decision, the AER noted that survey based estimates of the MRP prior to the onset of the GFC supported a forward looking estimate of 6 per cent:

- Truong, Partington and Peat (2008) found that the MRP adopted by Australian firms in capital budgeting ranged from 3–8 per cent, with an average of 5.94 per cent. The most commonly adopted MRP was 6 per cent.

- Capital Research (2006) found that the average MRP adopted across a number of broker dailies was 5.09 per cent.

- KPMG (2005) found that the MRP adopted in independent expert valuation reports ranged from 6–8 per cent. KPMG's report showed that 76 per cent of survey respondents adopted an MRP of 6 per cent. [119]

During the WACC review the AER had regard to these surveys in concluding that the best estimate of the MRP prior to the onset of the GFC was 6 per cent. However, the surveys were conducted before the onset of the GFC, which was expected to affect market practitioners' views of the future.

The most recent survey based estimates of the MRP from Fernandez and Del Campo in May 2009 and May 2010 suggest that market views of the MRP did not significantly differ from those expressed prior to the onset of the GFC:

- Fernandez and Del Campo (2009) found that the MRP used by Australian academics in 2008 ranged from 2–7.5 per cent with an average of 5.9 per cent.[120]

- Fernandez and Del Campo (2010) found that the MRP used by Australian analysts in 2010 ranged from 4.1–6 per cent with an average of 5.4 per cent.[121]

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[119] AER, WACC review final decision, 1 May 2010, pp. 221–225.

[120] 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.

[121] Fernandez and Del Campo, Market Risk Premium Used in 2010 by Analysts and Companies: A Survey with 2400 Answers, IESE Business School, May 21 2010, p. 4.

Independent valuation reports that were completed following the GFC have also adopted a MRP of 6 per cent.[122] For example, Grant Samuel noted in 2009 it has consistently adopted an MRP of 6 per cent and that in view of general uncertainty, this continues to be a reasonable estimate.[123] The AER considers this provides some indication that expectations of the forward looking 10 year MRP have not been affected by the GFC, and that a structural break of the type considered at the time of the WACC review has not occurred.[124] Moreover, this evidence supports the view that 6 per cent is the best estimate of the forward looking MRP in the current circumstances.

5.4.4.7 Economic outlook and current market conditions

The AER's view of prevailing market conditions has been informed by recent comments from the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD) and the Reserve Bank of Australia (RBA). These views indicate that the economic outlook for Australia has improved considerably since the GFC.

In a May 2010 paper titled the *Potential Growth of Australia and New Zealand in the Aftermath of the Global Crisis*, the IMF noted:

> For Australia, investment barely fell in 2009, and average investment growth is expected to be slightly stronger over the medium term … growth in the capital stock is expected to be almost twice the level of New Zealand.[125]
>
> The global downturn had a fairly small impact on the Australian economy, as real investment barely contracted in 2009 and the unemployment rate went up by less than 2 percentage points. Not surprisingly, Australia's potential growth is estimated to have declined by just ⅓ percent to 3.1 percent in 2009. In comparison, New Zealand's decline in potential growth was only slightly smaller than that of Canada and the U.S. in 2009.[126]

In its November 2010 economic outlook summary for Australia, the OECD forecast robust economic growth in Australia. The OECD stated:

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122 Grant Samuel and Associates, *Financial services guide and independent expert's report in relation to the recapitalisation and restructure of Babcock and Brown Infrastructure*, 9 October 2009, Appendix 1, p. 7; Deloitte, *Arrow Energy Limited Independent expert's report and financial services guide*, 2 June 2010, p. 82. Grant Samuel and Associates, *Financial services guide and independent expert's report in relation to the ConocoPhillips proposa*l, 15 September 2008, Appendix 4, p. 6. Grant Samuel and Associates, *Financial services guide and independent expert's report in relation to the proposed acquisition of the Alinta assets from Singapore Power International Pte Limited*, 5 November 2007, Appendix 1, p. 6.

123 Grant Samuel and Associates, *Financial services guide and independent expert's report in relation to the recapitalisation and restructure of Babcock and Brown Infrastructure*, 9 October 2009, Appendix 1, p. 7.

124 AER, Final decision, *Review of weighted average cost of capital parameters*, 1 May 2010, pp. 237–238.

125 Yan Sun, *Potential Growth of Australia and New Zealand in the Aftermath of the Global Crisis, IMF Working Paper, WP/10/27*, May 2010, pp. 9–10.

126 Yan Sun, *Potential Growth of Australia and New Zealand in the Aftermath of the Global Crisis, IMF Working Paper, WP/10/27*, May 2010, p. 19.

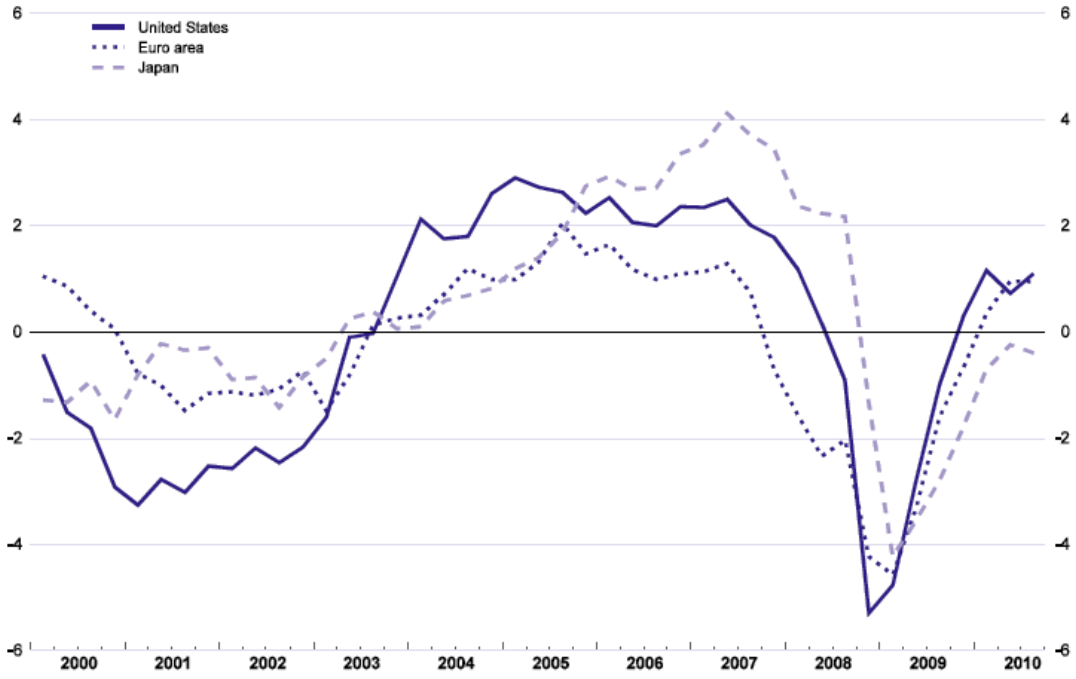
> The Australian economy, fuelled by the mining boom, should grow robustly in 2011 and 2012 at a rate of between 3½ and 4%. Strong growth, driven by terms of trade gains and dynamic investment, will reduce unemployment.[127]

In its November 2010 statement on monetary policy, the RBA forecast robust economic growth in the Australian economy. The RBA stated:

> GDP is expected to expand by 3.5 per cent over 2010 and then by 3.75–4 per cent over both 2011 and 2012. This forecast continues to be driven by the effects of the income boost flowing from the very high level of the terms of trade and the expected substantial increase in business investment, particularly in the resource sector.[128]

The OECD's financial conditions index gives an indication of likely future GDP growth. The OECD has noted that its financial conditions index for the United States, Japan and the Euro area has stabilised since the onset of the GFC.[129] This indicates a positive global market outlook and is illustrated in figure 5.3.

Figure 5.3: OECD financial conditions index



OECD, Economic outlook no. 88: Press conference Paris, 18 November 2010, p. 17.

The robust economic outlook in Australia, as noted by statements from the IMF, the OECD and the RBA suggest that market conditions appear to have stabilised to the extent that investors are no longer factoring the substantial volatility experienced at the height of the GFC into their expectations of the future. This is supported by survey

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127 OECD, *Australia economic outlook 88—country summary*, November 2010, http://www.oecd.org/document/15/0,3746,en_2649_34573_45268687_1_1_1_1,00.html, viewed 23 December 2010.

128 RBA, *Statement on monetary policy*, November 2010, p. 3.

129 OECD, *Economic outlook no. 88: Press conference Paris*, 18 November 2010, p. 17.

evidence and independent valuations presented above. Therefore the conditions that underlined the AER's reasons for increasing the MRP to 6.5 per cent during the WACC review appear to no longer be present.

5.4.4.8 Conclusion – Market risk premium

The MRP is an unobservable forward looking estimate. The AER considers that the MRP value chosen should be informed by a range of evidence, noting the particular advantages and limitations of each source of information.

In the WACC review, the AER considered the best estimate of the forward looking 10 year MRP was 6 per cent based on historical estimates, survey based estimates and past regulatory practice. However, given prevailing uncertainty about the potential impact on investor expectations of the GFC, the AER exercised its judgment to increase the MRP to 6.5 per cent. The latest evidence now indicates the AER's caution in raising the MRP to 6.5 per cent is no longer warranted. The significant uncertainty that characterised markets at the time the AER made the WACC review final decision has so substantially diminished that it is not reflected in prevailing conditions in the market for funds, nor is it expected to form part of forward looking expectations of returns over the next 10 years.

The latest long term historical estimates of excess returns produce a range of 6.1–6.6 per cent (assuming an imputation credit utilisation rate of 0.65). However, consistent with previous regulatory practice, the AER has not mechanistically relied on these figures. This is because such measures may overstate the forward looking MRP, are highly sensitive to additional years of observations and are also inherently imprecise. The AER does not consider the latest historical excess return estimates are inconsistent with the long term MRP value of 6 per cent previously estimated by the AER and other regulators.

Survey based estimates of the MRP indicate that the forward looking MRP expected to prevail in the future has not changed as a result of the GFC. Survey based estimates of the MRP both before and following the GFC suggests a value of 6 per cent is consistent with the views of market practitioners, academics and independent valuation reports.

Comments from the OECD, the IMF and the RBA indicate a robust outlook for the Australian economy, which further suggests that investor expectations of market returns would now reflect those seen prior to the onset of the GFC.

Estimates derived from DGM analysis currently suggest a MRP of at least 8 per cent, however this appears to be entirely dependent on the time at which the estimates are prepared and assumptions used.

Overall the available evidence on the MRP is imprecise and as a result the MRP is subject to a wide margin of variation. The AER has used its judgment to interpret the evidence currently before it and considers the available evidence both prior to, and following, the GFC supports 6 per cent as the best estimate of the forward looking 10 year MRP in the current market circumstances. The AER considers that an MRP within the range of 6.5 to 8 per cent proposed by Envestra is not the best estimate possible in the circumstances (rule 74(2) of the NGR) and is not consistent with the

requirement that the rate of return is to be commensurate with prevailing conditions in the market for funds (rule 87(1) of the NGR).

The AER considers the MRP of 6 per cent meets the requirements under the NGR. It is also consistent with the revenue and pricing principle set out in section 24(2)(a) of the NGL, which states that the service provider should be provided with a reasonable opportunity to recover at least the efficient costs. The AER also considers the MRP of 6 per cent best meets the national gas objective, which 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.

5.4.5 Debt risk premium

The DRP is the margin above the nominal risk-free rate that a debt holder would require in order for it to invest in a benchmark efficient firm. When combined with the nominal risk-free rate, the DRP represents the return on debt and is an input for calculating the WACC.

The DRP varies depending on the firm's default risk. The risk of default is generally taken into account by a firm's credit rating and reflects both the operational and financial risks of the debt issuance. Typically, a lower credit rating is associated with a higher yield to maturity demanded by investors.[130] The DRP will also vary depending on the term of the debt. Higher yields are often associated with longer terms of debt, reflecting the increased risk of a bond provider defaulting at some point over the life of a longer term bond.

Prior to the onset of the GFC, when market conditions were relatively robust and liquidity was high, the AER placed heavy reliance on the fair value estimates produced by Bloomberg and CBASpectrum. However, deciding on the appropriateness of these estimates with respect to the 10 year BBB+ benchmark has become increasingly difficult, and is the subject of several applications for review to the Australian Competition Tribunal. The decision by CBASpectrum to cease publishing its estimates makes this task even more difficult, particularly as it reflects on the reliability of Bloomberg's estimates given they are based on the same type of market information. To this end, the AER notes that Bloomberg ceased publishing its 10 and 8 year BBB estimates in late 2007 and August 2009 respectively, and then again in June 2010 stopped publishing 10 year AAA rated estimates. For the BBB fair values Bloomberg currently publishes, the AER has commented previously that these tend to reflect yield observations for bonds traded below a 7 year maturity. However this assessment was in the absence of any alternative benchmark developed independently of the regulatory process. Furthermore, observed yield data on which this assessment was made did not display any systematic relationship with respect to maturity or credit rating, rather yields were randomly distributed around the Bloomberg curve.[131]

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[130] That is, investors would typically require a higher yield for a BBB bond, as distinct from the yield required on an otherwise equivalent AAA rated bond.

[131] See AER, *Final decision Victorian electricity distribution network service providers Distribution determination 2011–2015*, October 2010, p. 502.

In this context, and as further detailed in appendix C, the AER has departed from placing sole reliance on Bloomberg, and has instead averaged the extrapolated 10 year BBB Bloomberg fair values margin with the margin calculated from the APT bond.[132] The key considerations in reaching this decision are:

- there is some evidence to suggest that the behaviour of the Bloomberg curve since the onset of the GFC is somewhat counter intuitive, including the extrapolated 10 year DRP derived from Bloomberg currently being at an all time high

- the characteristics of the APT bond closely match those of the benchmark corporate bond set by the AER, namely BBB rated and approximately 10 year maturity. As this bond has a lower credit rating than the BBB+ benchmark, its use would be expected to result in a DRP that overstates the benchmark cost of debt

- the APA Group is an owner of various regulated and unregulated energy network assets. The nature of the underlying risk and markets in which the APA Group operates resemble those of the benchmark gas pipeline service provider. To the extent that credit ratings are an imperfect indicator of default risk, the APT bond is suitable for deriving a DRP that reflects the risks involved in providing reference services

- a recently issued A- rated, 10 year bond by Stockland displays yields that are closer to the APT bond, and significantly below the extrapolated Bloomberg 10 year estimates. This gives further support for relying on the APT bond over Bloomberg

- a further 10 year BBB+ rated DBCT bond has yields that are higher than Bloomberg's BBB fair values, however the AER has discounted this observation for the purposes of comparison given previous issues with its owner and credit wrapper.

While the available evidence is limited, the AER considers that placing sole reliance on Bloomberg estimates would result in a rate of return that is excessive with respect to the risks involved in providing reference services. In particular, Bloomberg estimates imply that prevailing conditions in debt markets are more risky now than during the GFC. This is counterintuitive, and other evidence (such as that assessed in section 5.4.4) indicates financial market conditions have substantially improved since this time.

In these circumstances the AER considers it prudent to adopt an approach which does not place complete reliance on either Bloomberg or the APT bond. Accordingly the AER has set the DRP as an average of the spreads of the extrapolated Bloomberg 10 year, BBB fair value estimate and of the APT bond maturing in 2020. Based on the indicative averaging period for this draft decision, these two information sources produce margins over the risk free rate of 4.81 per cent and 3.06 per cent, which the

[132] The margin on the APT bond reflects a simple average of both Bloomberg and UBS yields over the 20-day averaging period ending 6 January 2011.

AER has averaged to produce a DRP of 3.93 per cent.[133] The AER considers this is the best DRP estimate possible in the circumstances of Envestra.[134] The AER has also considered that the benchmark will provide Envestra a comfortable margin with respect to its expected actual cost of debt over the forthcoming access arrangement period.

Placing equal reliance on Bloomberg and the APT bond contrasts from the most recent decision of the AER (for the Victorian electricity distribution businesses) that determined the DRP based on a 75 per cent weighting to estimates from Bloomberg and a 25 per cent weighting to estimates from the APT bond. The increased reliance on the APT bond in this decision is primarily the result of Bloomberg's more recent estimates being unusually high, and recent issuance of the Stockland bond. The AER also notes that the Victorian decision is currently the subject of a merits review before the Australian Competition Tribunal. The AER will consider the outcome of the merits review and the implications, if any, for the DRP as appropriate.

5.4.6 Inflation forecast

The expected inflation rate is not an explicit parameter within the WACC calculation. However, it is used in the revenue model to forecast nominal allowed revenues and to index the capital base. It is an implicit component of the nominal risk-free rate, with implications for the return on both equity and debt. The inflation forecast must be consistent with the ten year investment horizon of the risk free rate.

Envestra's method of calculating forecast inflation is to apply the RBA's short-term inflation forecasts extending out for two years and the mid-point of the RBA's target inflation band (that is, 2.5 per cent) for the remaining eight years.[135] The forecast is the geometric average of the annual inflation for each of the ten years. This method is accepted by the AER as reasonable and is consistent with its recent regulatory determinations.

Envestra's forecast of 2.57 per cent is slightly different from the 2.52 per cent calculated by the AER, as presented in table 5.7. The AER considers this difference is due to an inadvertent error by Envestra. For the purpose of this draft decision, the AER has adopted an inflation forecast of 2.52 per cent over a ten year period.

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133 As noted previously, the margin on the APT bond reflects a simple average of both Bloomberg and UBS yields over the 20-day averaging period ending 6 January 2011.

134 Consistent with NGR, r. 74(2)(b).

135 It should be noted that the AER has previously used a market-based inflation forecast derived by taking the difference between indexed and nominal Commonwealth Government Security (CGS) yields. The AER notes the resumption of issuance of Treasury Indexed Bonds by the Australian Office of Financial Management in October 2009. The AER will closely monitor developments in capital markets to determine the effect of this new issuance on the relative demand and supply for indexed CGS.

Table 5.7: AER inflation rate forecast

	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Geometric average
AER inflation forecast	2.75%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.52%

Source: RBA, Statement on monetary policy, November 2010, p. 62.

The AER considers that the estimate of expected inflation should be updated to incorporate the latest available data closer to the time of the final decision. Inflation forecasts can change in line with market sensitive data and regulatory practice in Australia has been to update these forecast values at the time of making a decision. The AER will update its estimate of inflation based on the latest RBA forecasts as close as is practical to the date of the final decision.

5.4.7 Averaging period and risk free rate

The risk-free rate measures the return an investor would expect from an asset with zero volatility and zero default risk. The yield on long-term Commonwealth Government Securities (CGS) is often used as a proxy for the risk-free rate because the risk of government default on interest and debt repayments is considered to be low.[136]

In the CAPM framework, all information used for deriving the rate of return should be as current as possible in order to achieve an unbiased forward looking rate and a rate of return that is commensurate with prevailing conditions in the market for funds. While it may be theoretically correct to use the on the day rate as it represents the latest available information, this can expose the service provider and customers to daily volatility. For this reason, an averaging method is used to minimise volatility in observed bond yields.[137]

For the purposes of its access arrangement proposal, Envestra proposed to calculate the risk free rate as the annualised yields on 10 year CGS over an indicative averaging period of 20 business days ending 2 July.[138] Envestra did not propose a final averaging period which is a necessary component for the determination of the rate of return as required by r. 87 of the NGR.

When asked about the omission of final averaging period in its proposal, Envestra responded that it intends to provide the final averaging period as part of its revised proposal.[139]

The AER considers that under r 74 of the NGR, a proposed final averaging period must be submitted as part of the access arrangement proposal to support the estimates of WACC parameters (such as the risk free rate and debt risk premium), rather than providing an intention to submit an averaging period at a later date. Also as no final

[136] AER, *WACC review final decision*, 1 May 2009, pp. 128–174.
[137] AER, *WACC review final decision*, 1 May 2009, pp. 128–174.
[138] Envestra, *Qld access arrangement information*, 1 October 2010, p. 131.
[139] AER, Note for file, *Telephone discussion with Envestra*, 8 & 20 October 2010.

averaging period was proposed, the AER does not consider Envestra has demonstrated that its proposed approach to calculate the rate of return satisfies the requirements of r. 87 of the NGR.

The purpose of allowing the service provider to nominate the final averaging period is so that it can execute appropriate financing arrangements prior or during the averaging period if it so chooses. This approach is justified under s. 24(2) of the NGL, as it ensures that the service provider has opportunity to recover at least its efficient costs. However, the AER considers that the final averaging period should not include a date in the past. This is to prevent gaming of the regulatory regime by deliberately selecting an averaging period with a high risk free rate that would not be consistent with the requirement of r 87(1) of the NGR.

The AER requires that a final averaging period satisfying the following design criteria should be adopted for the access arrangement period

1. The final averaging period should be nominated in advance of the commencement of the access arrangement period and should not include a date in the past.
2. The final averaging period should be between 10 and 40 business days in length.

The AER will accept a final averaging period that meets the averaging period design criteria and falls within the following boundaries:

- The final averaging period is nominated by Envestra at the time of or no later than the lodgement of its revised regulatory proposal
- The final averaging period starts on a day that is after notification to the AER of the proposed period
- The final averaging period ends on or before Friday 29 April 2011
- The final averaging period is between 10 and 40 business days in length.[140]

If Envestra does not nominate a final averaging period in its revised proposal, the AER intends to assign a final averaging period that meets these criteria. In this event, the AER will notify Envestra in writing of the period it will apply in its final decision. For the purpose of calculating relevant WACC parameters for this draft decision, the AER use an indicative averaging period of 20 business days ending 6 January 2011 yielding a nominal risk free rate of 5.68 per cent.

5.4.8 Gearing ratio

The gearing ratio is defined as the ratio of the value of debt to total capital (that is, both debt and equity) and is used to weight the costs of debt and equity when formulating the WACC.

[140] Note that an averaging period of 40 business days would use the entire available time, i.e. start on 3 March 2011 and conclude on 29 April 2011, as Anzac day (25 April 2011) falls on Easter Monday, and no additional public holiday is granted in Tasmania. Accordingly, 26 April 2010 is a business day as per s. 10 of the NGL.

Envestra considered the efficient level of gearing should be in the range of 40 per cent to 80 per cent based on a report prepared by Standard & Poor's in 2001, a recent draft decision released by New Zealand Commerce Commission (NZCC) and its own credit rating analysis. Envestra proposed that the benchmark efficient gearing ratio should be of 55 per cent.[141]

The AER considers that Envestra's proposed gearing ratio of 55 per cent does not reflect what would apply for the benchmark efficient gas distribution business, and is therefore not consistent with the objective of the NGL and the requirements of r. 87 of the NGR. Instead, the AER has determined that a value of 60 per cent is appropriate with respect to these requirements.

Envestra established the lower bound of its range for an efficient gearing ratio based on NZCC's draft reason paper for electricity distribution services.[142] However, the decision to apply 40 per cent gearing ratio for New Zealand distribution businesses was made under a different cost of capital framework.[143] Consequently, the AER considers this information should have very little bearing on estimating the efficient gearing ratio for Envestra.[144]

The proposed gearing ratio of 55 per cent lies at the bottom end of the range (55 per cent to 80 per cent) for BBB credit rated distribution utilities as reported in the Standard & Poor's report.[145] The AER considers this report is of limited relevance to this review given the analysis was prepared in 2001. 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. With respect to the gearing ratio, this requires the AER to consider an appropriate level of compensation for costs of debt and equity that arise under an efficient capital structure.

Consistent with the approach taken in the WACC review, the AER considers it appropriate to select a group of comparator businesses to inform the level of gearing for the benchmark efficient gas network business.[146] The 2001 Standard & Poor's gearing ratio range was derived based on analysis of 75 utilities around the world, each with exposure to country specific risks, and regulated under different regimes.[147] These factors form an integral part of Standard & Poor's analysis of the gearing ratio range. Given that no information was provided on the proportional representation of Australian utilities in the sample, the AER considers these utilities may not be close

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141 Envestra, *Qld access arrangement information*, October 2010, p. 138.

142 New Zealand Commerce Commission, Input Methodologies (Electricity Distribution Services) Draft Reasons Paper, June 2010.

143 New Zealand Commerce Commission, Input Methodologies (Electricity Distribution Services) Draft Reasons Paper, June 2010, pp. 236–237. It should be noted that unlike the capital framework adopted by the AER, under the simplified Brennan-Lally model applied by the NZCC, the cost of capital increases with gearing ratio (leverage).

144 It should be noted that New Zealand Commerce Commission also have the view that in making its decision, little weight should be placed on the gearing levels determined by overseas regulators, instead it determines that the greatest informational value is New Zealand regulatory precedent.

145 Standard & Poor's, Utilities: International Utility Ratings and Ratios, September 2001.

146 AER, *WACC review final decision*, 1 May 2009, pp. 121–124.

147 Standard & Poor's, Utilities: International Utility Ratings and Ratios, September 2001.

comparators for the benchmark efficient gas network business in Australia. [148] On this basis, the AER considers that little weight should be placed on this information when estimating the efficient gearing ratio for Envestra.

The AER considers that a gearing ratio of 60 per cent for the benchmark efficient electricity business is supported by the most recent available empirical evidence as presented in table 5.8.[149] In the WACC review, 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.[150] Further, the majority of businesses in the WACC review sample were involved in gas networks.[151] The AER considers that the best estimate arrived at on a reasonable basis[152] of the gearing level for the benchmark efficient gas business is 60 per cent. This is consistent with the requirement of r 87 of the NGR that the rate of return on capital is to be commensurate with prevailing conditions in the market for funds.

Table 5.8: Average gearing levels

Year	Average gearing levels (per cent)
2002	65.1
2003	64.8
2004	61.7
2005	64.6
2006	63.0
2007	60.5
Average 2002-07	63.3

Source: AER, *WACC review final decision*, May 2009, p. 124, table 5.3

5.5 Conclusion

The AER does not propose to approve the rate of return on capital proposed by Envestra as it does not comply with r. 87 of the NGR and requires Envestra to make the amendments set out below.

[148] The AER considers that the close comparators of the benchmark efficient network business should be all businesses that operate in the Australian market and have operations which predominantly involve network businesses in the energy sector. See, AER, *WACC review final decision*, 1 May 2009, pp. 121–124.

[149] AER, *WACC review final decision*, May 2009, pp. 124–125.

[150] AER, *WACC review final decision*, May 2009, pp. 104–110.

[151] For the Bloomberg gearing ratio analysis, five out of six businesses were involved in gas networks; for the Standard and Poor's gearing analysis, nine out of eighteen businesses were involved in gas networks. AER, *WACC review final decision*, 1 May 2009, pp. 121–127.

[152] NGR, r. 74(2).

5.6 Required amendments

Before its access arrangement proposal can be accepted, Envestra is required to make the following amendment:

Amendment 5.1: make all amendments necessary in the access arrangement proposal and access arrangement information to take account of the rate of return calculated in accordance with the following table.

Table 5.9: WACC parameters for the access arrangement period (units as stated)

Parameter	
Nominal risk–free rate (%)	5.68
Inflation (%)	2.52
Real risk–free rate (%)	3.08
Equity beta	0.8
Market risk premium (%)	6.0
Debt risk premium (%)	3.93
Gearing (%)	60
Cost of debt (%)	9.61
Cost of equity (%)	10.48
Nominal vanilla WACC (%)	**9.96**

6 Taxation

The AER has accepted the post-tax approach proposed by Envestra for the access arrangement as it is consistent with the AER's usual approach. It has also accepted the way that taxation is to be calculated (including the use of a 30 per cent corporate tax rate), the opening tax asset base as at 1 July 2011 and the tax asset lives proposed by Envestra. These matters were investigated by the AER and found to have been appropriately determined by Envestra.

No tax loss carried forward is expected as at 1 July 2011. The AER reviewed Envestra's assessment of its tax loss carried forward and considered it unlikely that there would be any tax loss to be carried over to the access arrangement period.

Envestra's estimate of the use of imputation credits by investors (gamma) of 0.2 has been rejected by the AER. Based on the currently available evidence, the AER considers the best estimate for the value of gamma to be 0.45.

The AER has calculated a total $8.5 million in forecast tax for the access arrangement period. This forecast reflects the revised revenue and cost figures presented in the various chapters of this draft decision.

6.1 Introduction

This chapter provides the AER's assessment of Envestra's proposed approach to establishing an allowance for taxation for the access arrangement period. No submissions were received on Envestra's proposed tax allowance.

6.2 Regulatory requirements

Rule 72(1)(h) of the NGR provides that the access arrangement information for an access arrangement proposal must include the proposed method for dealing with taxation, and a demonstration of how the allowance for taxation is calculated.

Rule 76(c) of the NGR provides for the estimated cost of corporate taxation as a building block for total revenue insofar as this is applicable.

6.3 Access arrangement proposal

Envestra proposed a post-tax approach for the access arrangement period.[1] Envestra proposed determining the forecast cost of tax (FCT) for each year of the access arrangement period in accordance with the following formula:[2]

$$FCT = (RTI_t * STR_t) * (1 - \gamma)$$

where:

RTI_t is an estimate of the regulatory taxable income for regulatory year t that would be earned by a benchmark efficient distributor as determined by the AER post-tax revenue model.

1 Envestra, *Qld access arrangement information*, October 2010, p. 146.
2 Envestra, *Qld access arrangement information*, October 2010, p. 147.

STR_t is the expected statutory tax rate for regulatory year t; and γ is the assumed utilisation of imputation credits.

The determination of RTI is based on the same inputs used to determine the regulatory revenue requirement. Specifically, RTI is calculated as the regulatory revenue requirement less operating expenditure that is deductible for tax purposes, tax depreciation and interest expense. The STR is set at 30 per cent while the value of imputation credits (γ or gamma) is set at 0.2.

Envestra established an opening tax asset base (TAB) as at 1 July 2011 of $131.2 million. The model Envestra used to determine the opening TAB was reviewed by PWC.[3] The value of the assets in the opening TAB was derived from Envestra's tax asset registers. These registers have been reviewed annually by PWC since Envestra's inception in 1997.[4] The registers include all assets in the network, including non-regulatory assets, although Envestra expects the value of non-regulatory assets that might be included in the TAB to be immaterial (and most likely non-existent).[5] A break down of Envestra's proposed TAB is set out in table 6.1.

Table 6.1: Envestra's proposed tax asset base as at 1 July 2011

Asset Category	Tax value ($m, nominal)	Tax Remaining Lives (yrs)	Tax Standard Lives (yrs)
Mains	90.7	23.2[a]	20
Inlets	24.6	16.3	20
Meters	12.6	13.0	15
Telemetry	0.3	8.1	10
IT systems	0.3	1.0	4
Other distribution equipment	1.9	17.7	20
Other	0.8	6.6	10

Source: Envestra, *Qld access arrangement information*, October 2010, p. 152.
(a) For discussion on why the remaining life for this asset exceeds the standard life, please refer to section 6.4.2 below.

Envestra made an error in section 10.5 of its access arrangement information as it repeated the tax loss carried forward analysis for its South Australian network. In response to an inquiry from the AER, Envestra confirmed that it supported the analysis in PWC's report that there was no tax loss carried forward.[6]

3 Envestra, *Qld access arrangement information*, October 2010, Attachment 10-1.
4 Envestra, *Qld access arrangement information*, October 2010, p. 148.
5 Envestra, *Qld access arrangement information*, October 2010, p. 149.
6 Envestra, Email to AER, *RE: AER.EN.06 - Question concerning the tax carried forward*, 1 November 2010; and Envestra, *Qld access arrangement information*, October 2010, Attachment 10-1, p. 13.

Envestra submitted that the reasonable range for gamma is between zero and 0.5, and proposed a point estimate of 0.2.[7] As per the approach adopted in recent AER determinations, Envestra's approach to estimating gamma was to separately estimate its subcomponents, specifically the payout ratio (the proportion of imputation credits generated that are distributed to shareholders) and the rate of imputation credit utilisation (or theta). Envestra submitted that the appropriate range for the payout ratio is 0.66 to 0.71, given the following:

- studies completed by Officer and Hathaway, Synergies, Professor Officer and Peter Feros support this range
- the AER's adoption of a 100 per cent payout ratio is a simplifying assumption and does not reflect a best estimate as required by the NGR, and is also inconsistent with the practice of market practitioners[8]
- the AER's consultants have noted that assuming retained and distributed credits have equal value would likely overstate the value of gamma.[9]

With respect to the utilisation rate, Envestra proposed a range between zero and 0.74.[10] In support of this, Envestra stated:

- all the issues identified by the AER with the SFG study have been addressed by SFG and Associate Professor Skeels who conclude that the SFG estimate of 0.23 is the best available dividend drop-off estimate[11]
- the AER has not established that multicollinearity has affected the SFG estimate, but merely speculates that there is potential for it, and there is no reason to assume that multicollinearity is any less of an issue in the Beggs and Skeels study[12]
- the AER should not rely on the Handley and Maheswaran tax statistics study as it does not empirically estimate the redemption rate for imputation credits for the post-2000 period. Rather, it only assumes, that the redemption rate for individuals and funds over this period is 100 per cent and therefore only reflects an upper bound value of theta[13]
- the Handley and Maheswaran study should not be relied upon as it is based on assumptions created by the authors, has potential methodological issues and other issues with the underlying data[14]
- the AER's approach of averaging the theta estimates produced by the Handley and Maheswaran study, and again with that estimated from the Beggs and Skeels

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7 Envestra, *Qld access arrangement information*, October 2010, p. 138.
8 Envestra, *Qld access arrangement information*, October 2010, p. 155.
9 Envestra, *Qld access arrangement information*, October 2010, p. 156.
10 Envestra, *Qld access arrangement information*, October 2010, p. 154, 158.
11 Envestra, *Qld access arrangement information*, October 2010, p. 158.
12 Envestra, *Qld access arrangement information*, October 2010, p. 160.
13 Envestra, *Qld access arrangement information*, October 2010, p. 161.
14 Envestra, *Qld access arrangement information*, October 2010, p. 162.

dividend drop off study, does not result in a conservative outcome and lacks logic.[15]

Envestra stated that the value of 0.65 for gamma which has been adopted by the AER in its recent electricity and gas pricing decisions does not provide sufficient revenue and cash flow to support business operations at the benchmark BBB+ Standard & Poor's credit rating.[16]

Table 6.2 sets out Envestra's forecast tax allowance for the access arrangement period. These forecasts reflect all the proposals that impact on the revenues/expenses that Envestra expects to earn/incur over the access arrangement period.

Table 6.2: Envestra's proposed tax allowance ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Tax	4.1	4.3	4.4	4.6	4.7

Source: Envestra, *Qld access arrangement information*, October 2010, p. 167.

6.4 AER's consideration

The AER accepts Envestra's proposed post-tax approach for the access arrangement period (r. 72(1)(h) of the NGR). This approach has been adopted in all previous AER gas and electricity distribution decisions. The alternative pre-tax approach has not been used by the AER to date.

In assessing the forecast tax allowance proposed by Envestra, the AER has reviewed the proposed taxation calculation and the components that form part of that calculation, including:

1. the opening tax asset base, used to determine tax depreciation
2. the tax asset lives, used to determine the rate of tax depreciation
3. whether there is any tax loss carried forward from the earlier access arrangement period that needs to be offset against future tax claims
4. the use of imputation credits (gamma).

These issues are considered in turn below. Besides these considerations, any other component that affects revenues/costs will affect the forecast tax allowance. Accordingly, a change to any of the proposed revenue/cost components in this draft decision will require the forecast tax allowance to be revised.

6.4.1 Opening tax asset base

There was no existing TAB for Envestra that could be rolled forward from the earlier access arrangement period to establish the opening TAB as at 1 July 2011. While the QCA used a post-tax approach for its building blocks assessment, this approach used the regulatory capital base to estimate tax depreciation. Accordingly, Envestra had to develop a TAB for the first time.

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15 Envestra, *Qld access arrangement information*, October 2010, p. 162.
16 Envestra, *Qld access arrangement information*, October 2010, p. 166.

The AER has reviewed the tax asset base model submitted by Envestra and accepts the opening TAB as proposed. The approach adopted by Envestra to setting the taxation asset base reflects the approach outlined by the AER in its issue paper on transitioning from pre-taxation to post-taxation frameworks.[17] No issues were identified by PWC with the model. The AER has also not identified any issues with the model. The value of the assets used in the model are derived from tax asset registers that have been reviewed annually by PWC since 1997.[18]

The AER accepts Envestra's position that the value of any non-regulatory assets that might be included in the TAB is likely to be immaterial. Any non-regulated assets that are included in the TAB would increase tax depreciation and reduce Envestra's forecast tax allowance. In such circumstance, Envestra clearly has an interest to identify any significant non-regulated assets and exclude them from the TAB.

6.4.2 Asset lives

Tax depreciation reflects the asset lives of the various tax assets. There are two types of tax asset lives:

1. the standard tax asset lives to be applied to new assets, and

2. the remaining tax asset lives of existing assets.

The AER has reviewed the tax asset lives and finds no issue with the tax asset lives as proposed by Envestra. The standard tax lives proposed by Envestra are consistent with the requirements of the *Income Tax Assessment Act 1997*. From 1 July 2002, the effective lives of gas distribution assets became subject to a statutory cap of 20 years.[19] Envestra's proposed standard tax asset lives are consistent with these caps. Therefore, the AER accepts the standard tax asset lives proposed by Envestra.

The AER also accepts the remaining tax asset lives proposed by Envestra. These lives were appropriately rolled forward from 1 July 1998 to 30 June 2011 reflecting Australian Taxation Office (ATO) changes in tax treatment during this period. Once an asset begins to be depreciated at a standard life for tax purposes, it generally continues to be depreciated at that life until fully depreciated.[20] If there have been changes in standard tax lives over time, the remaining tax asset lives for a category of assets can reflect assets with different rates of depreciation for tax purposes. As shown in table 6.1 the remaining tax life for the asset category of mains exceeds the proposed tax standard life for this asset category. While it seems an illogical outcome, this is because the standard tax life for mains acquired prior to 1 July 2002 being significantly longer than those used for mains acquired after this time due the change in the statutory cap noted above.

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17 AER, *Electricity Distribution Network Service Providers: Transition of energy businesses from pre-tax to post-tax regulation*, June 2007, p. 12.

18 Envestra, *Qld access arrangement information*, October 2010, p. 148.

19 Australian Taxation Office, *Taxation Ruling TR 2010/2 – 'Income tax: effective life of depreciating assets'*, 2010, p. 10.

20 The AER's issue paper on transitioning from pre-taxation to post-taxation frameworks also requires the "vintage profile of regulatory assets when first subject to tax" be used to roll forward the TAB. AER, *Electricity Distribution Network Service Providers: Transition of energy businesses from pre-tax to post-tax regulation*, June 2007, p. 12.

6.4.3 Tax loss carried forward

The AER reviewed PWC's analysis of whether Envestra will have any tax loss carried forward as at 1 July 2011. The analysis covered the period 2001–02 to 2010–11 and showed that there was no tax loss carried forward. The AER is satisfied that PWC's analysis is appropriate and therefore that there is no tax loss carried forward that needs to be accounted for in the assessment of Envestra's forecast tax allowance.

6.4.4 Use 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') 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. Under a post tax revenue building block framework the value of imputation credits is recognised when determining the corporate income tax building block.

The AER and other regulators define the value of imputation credits in accordance with the Monkhouse definition, where 'gamma' (γ) is defined as a product of the 'imputation credit payout ratio' (F) and the 'utilisation rate' (θ). Gamma has a range of possible values from zero to one.

Under the National Electricity Rules the AER is periodically required to consult on and publish a Statement of Regulatory Intent (SORI) setting out values, methods and credit rating levels relevant to determining the weighted average cost of capital (WACC) for electricity network service providers. In May 2009 the AER completed its first "WACC review" and published a SORI which prescribes a gamma value of 0.65 for electricity transmission determinations for which the SORI is applicable. This value has been applied in subsequent electricity distribution determinations, where the AER has determined that there has been no persuasive evidence to depart from 0.65.

While the SORI has no direct or formal applicability to gas access arrangements, the AER's WACC review and SORI were intended to provide guidance to the gas sector on WACC related matters.

On 13 October 2010 the Australian Competition Tribunal handed down its decision and reasons for decision with respect to the recent appeal by Ergon Energy, Energex and ETSA Utilities of the AER's South Australia and Queensland distribution determinations in relation to gamma. The Tribunal found errors by the AER in its treatment of the imputation credit distribution ratio and the utilisation rate. However, the Tribunal did not make a determination on the correct value of gamma and directed the AER to undertake further work and seeks a report from the AER in relation to various aspects of the calculation determination of gamma. One element of this work relates to the payout ratio, where on 24 December 2010 the Tribunal issued a decision finding that, on the basis of the information before it, a value of 70 per cent was appropriate.

The gamma aspect of the application for review by Jemena's New South Wales gas network has also been stayed by the Tribunal. The Tribunal is waiting for the outcome of the review of the South Australia and Queensland distribution determinations in relation to gamma before it makes a decision on the gamma to be applied in access arrangement for the Jemena New South Wales gas network.

The further work as part of the Tribunal proceedings is not available for this draft decision however the AER has made this decision on the basis of all relevant information currently before it. The aforementioned Tribunal decisions in relation to gamma may be before the AER when determining the final decision for Envestra, and will be taken into account by the AER at that time if available.

The remainder of this section summarises the AER's consideration of Envestra's proposal in terms of the following key areas:

- overall considerations with respect to gamma
- payout ratio
- estimation of theta using tax statistics
- estimation of theta using dividend drop off studies.

6.4.4.1 Overall considerations on gamma

Determining the value of gamma is difficult as it requires various assumptions at both the theoretical and empirical levels, and is also subject to other issues in the development and interpretation of empirical evidence.

The AER and other regulators have estimated equity returns (of which gamma forms part) using the capital asset pricing model, under which one must determine the value of imputation credits to the particular (marginal) investor(s) that sets prices and returns in the relevant market. The residence of this investor is a crucial assumption one must make as an Australian domestic investor will value imputation credits whereas a resident in a country without a dividend imputation system would not value credits at all. During the WACC review the AER adopted a domestic CAPM framework which recognised foreign investors to the extent they influenced market outcomes.

Estimation of gamma is typically done by separately estimating the ratio of credits generated to those that are paid out, and then the utilisation rate of these distributed credits (theta). Many studies have attempted to infer the value of theta from changes in share prices on ex-dividend days. These studies are subject to numerous issues given the many other known and unknown factors that affect share prices, the variety of measurement techniques available and the influence of particular data examined. Interpretation of results from dividend drop-off studies is also problematic given differences in the personal tax arrangements of individual investors and their differing risk perceptions regarding trading around the ex-dividend date.

Other studies attempt to infer a value of theta by examining data from the ATO which is subject to issues of interpretation given the particular conceptual framework adopted.

Empirical evidence relating to the payout ratio has also been the subject of debate given the practice of companies retaining imputation credits and questions about whether and how these are valued by investors.

The method adopted by the AER to derive an estimate of gamma in the SORI was to assume a payout ratio of 100 per cent. The AER's estimate of theta was obtained by averaging the values derived from the Handley and Maheswaran tax statistics study (0.74) and from the Beggs and Skeels dividend drop off study (0.57). The AER took a simple average of these two values to arrive at a theta value of 0.65 on the basis that both methodologies were somewhat uncertain in terms of providing a point estimate.[21]

The resulting theta value of 0.65 was then multiplied by the assumed payout ratio of 100 per cent to derive a gamma estimate of 0.65.

6.4.4.2 Estimating the payout ratio

As noted above, an ongoing issue in relation to the payout ratio is the practice of companies to not distribute all imputation credits that are created each year. The AER has acknowledged its conclusions in the WACC review regarding a 100 per cent payout ratio were based on a misinterpretation of data presented during the WACC review. The AER accepts that estimates of a payout ratio of approximately 70 per cent reflect total or average observations over the various time periods considered, whereas during the WACC review the AER interpreted these values to be the amount of all imputation credits created in a given year to be distributed to shareholders in that same year. The correct interpretation of these values means that the proportion of credits in franking account balances (which are subjected to time value decay) is not simply 30 per cent of total credits generated every year and that the 70 per cent value includes franking credits generated in a year and paid out in the same year, as well as franking credits generated in previous years. That is, there is no constant or predictable relationship between the time a credit is generated and when it is paid out.

However, the AER does not consider this evidence supports an assumption that retained credits have zero value, as implied by Envestra's submission that the payout ratio lies in a range of between 0.66 and 0.71. There are strong theoretical grounds to support the conclusion that investors place some value on retained credits and reasonably expect that this value may eventually be passed back to them. A payout ratio of approximately 70 per cent implicitly assumes retained credits (which as at 2007 amounted to $148 billion for Australian businesses[22]) are worthless, which the AER considers to be an extreme assumption.

For the purposes of Envestra's access arrangement period, the AER acknowledges, however, that it is unlikely that there would be a significant payout of retained imputation credits in the immediate future.

Based on these considerations, the AER concludes that:

- consistent with previous decisions, the estimated value of the payout ratio is within a range of 70 to 100 per cent
- the 70 per cent payout ratio estimated from various studies reflects the average payout ratio. These studies do not provide any information regarding the value of retained credits

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21 AER, *Final decision, WACC parameters*, May 2009, p. 468.

22 Synergies, *Estimating a WACC for the APT Allgas Distribution Network*, September 2010, p. 79.

- the view that retained credits have value to shareholders and may be eventually distributed is supported by the AER's consultants, and is also supported on theoretical grounds given the rational expectation that businesses will return this value to shareholders

- the empirical evidence currently before the AER supports a value of the payout ratio of 70 per cent, which the AER has adopted as the best estimate possible under the current circumstances in accordance with r. 74(2) of the NGR.

6.4.4.3 Use of dividend drop-off studies to estimate theta

Dividend drop off studies attempt to infer a value of the imputation utilisation rate by observing changes in share prices on ex dividend dates, then decomposing this change into the implied market value of dividends paid and any attached imputation credits. There has been ongoing debate since the AER's WACC review about the study relied on by the AER (Beggs and Skeels) and alternative studies presented and revised by SFG that the AER has not relied on.

The AER acknowledges that it has not been possible to apply the same level of scrutiny to the Beggs and Skeels dividend drop off study as to SFG's studies. However the AER has consistently maintained that the ex ante filtering approach adopted by Beggs and Skeels is superior to the ex post and arbitrary method employed by SFG. The different filtering methods employed undermine the reliability of SFG's estimates and also magnify issues associated with multicollinearity.

SFG's comment that a larger data set generally improves the reliability of estimates may be true, provided there are no issues with the quality of observations in the data set, over which the AER has repeatedly raised concerns. The AER recently re-examined SFG's data in the context of its final decision for the Victorian electricity distribution network service providers (DNSPs), which illustrated the sensitivity of SFG's theta estimates to its filtering approach and validated the AER's reluctance to rely on the study for this reason.

The AER replicated the result of a 0.23 value of theta from SFG's February 2010 study and applied the Cook's D statistic to interrogate the SFG 2010 data set. The most influential observation identified was AngloGold Ashanti (AGG), with a Cook's D statistic of 1.59. AGG is a CHESS Depository Interest (CDI) and represents an interest in a foreign company. For a CDI it is difficult to isolate the share price change effect due to the stock going ex-dividend from other factors and this may represent a reasonable economic justification to exclude the AGG observation from the SFG data set. In addition, AGG is highly priced and pays high dividend per share, making it influential in the least squares-based regression. The AER conducted a sensitivity analysis of SFG's estimated theta using the following filtering options:

- if one AGG observation (19 February 2001) is excluded, the estimated value of franking credits is increased from 0.227 to 0.432

- if all the 12 AGG observations are excluded from the data, the estimated value of franking credits is increased from 0.227 to 0.506

- if all the top one per cent influential observations (based on Cook's D-statistic) are excluded from the data, the estimated value of franking credits is increased from 0.227 to 0.394.[23]

The AER acknowledges that a thorough examination of SFG's dataset would be a costly and time consuming exercise, however an effort of this magnitude has already been undertaken by Beggs and Skeels.[24]

Multicollinearity is a symptom inherent in all dividend drop-off studies. Given the presence of multicollinearity, measuring the implied value of imputation credits through dividend drop-off studies is uncertain, as it is difficult to isolate the effects of cash dividends and imputation credits. Multicollinearity makes the results of the study more sensitive to a small number of observations within the relevant data set. That is, the presence of multicollinearity underlines the importance of an appropriate data filtering method to remove unreliable observations. The sensitivity of results to a limited number of observations was demonstrated above in relation to SFG's data set. Beggs and Skeels' method of developing economically justified filters and applying these ex ante to the entire data set contrasts from SFG's dividend drop-off study, and therefore multicollinearity is expected to be less of an issue for the Beggs and Skeels study.

The AER maintains its view that the SFG dividend drop off study should not be relied upon and that theta value of 0.57 estimated by Beggs and Skeels is the best available estimate.

6.4.4.4 Issues in estimating theta from tax statistics

Tax statistics provide relevant information for estimating the value of imputation credits. The distribution of franking credits represents a means by which a credit for taxes paid by the company is passed onto shareholders.[25] Investors will utilise such credits to offset their taxable income, and reduce their tax liability, to the extent that their tax status and domicile permits. As per its position from the WACC review, the AER considers that the theta estimate of 0.74 derived from the Handley and Maheswaran study is the most reliable estimate available from tax statistics. Envestra's arguments do not represent any substantive issues with this study or the AER's use of its estimates.

The Handley and Maheswaran study estimates an aggregate reduction in personal taxes due to the aggregate receipt of franking credits (ignoring the time value loss of money from receipt of the franking credit and receipt of the tax saving).[26] As it is significantly unlikely that credits would be worth more than this amount, the redemption rate represents an upper bound on the value of a distributed imputation credit (theta).

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23 We assume the same weights applied to sample observations as per SFG Feb 2010, p. 5.

24 For example, the reported number of ordinary dividend events for Beggs and Skeels (2006) was 5511 after filtering – see Beggs and Skeels, *Market arbitrage of cash dividends and franking credits*, 2006, p. 252. , while SFG's data set (after filtering) consisted of 3201 observations – see SFG, *Response to the AER draft determination in relation to gamma*, January 2010, p. 2.

25 Handley, *Further Issues Relating to the Estimation of Gamma*, October 2010, p. 17.

26 Handley, *Further Issues Relating to the Estimation of Gamma*, October 2010, p. 20.

The AER's reliance on tax statistics is consistent with previous advice obtained from McKenzie and Partington who recommend the consideration of information drawn from multiple types of studies when estimating gamma.[27] The AER disagrees with Envestra's arguments that tax statistics should be completely ignored in this process.

In addition to these conceptual arguments, Envestra highlighted concerns raised by Neville Hathaway regarding the robustness of the Handley and Maheswaran study given issues with data and assumptions made by the authors. The AER addressed Hathaway's criticisms recently in its final decision for the Victorian electricity distribution businesses, where it concluded:

> …Hathaway and the DNSPs have incorrectly argued that the Handley and Maheswaran study makes unsubstantiated and unreasonable assumptions. Additionally, the AER notes that Hathaway's analysis merely implies that these assumptions are unreasonable without providing sufficient evidence to demonstrate that this is the case. The Handley and Maheswaran study has been peer-reviewed by members of the Economic Record publication, which provides scrutiny of Handley and Maheswaran's assumptions and should provide further comfort as to their reasonableness. [28]

Handley has acknowledged that the utilisation rate estimated in Handley and Maheswaran ignores the time value difference between receipt of the imputation credit and the attached tax saving.[29] For this reason, the true value of theta must be below those estimates derived from tax statistics. In obtaining a point estimate of theta from this study the AER takes the 0.81 theoretical upper-bound estimate from the pre-2000 period and adjusts it downward to generate a point estimate of 0.74 to reflect the time value loss of money. This time value loss would approximately reflect a period of no more than a period of 18 months (being the time taken between when a credit is received to when it is utilised) discounted at the risk free rate given the certainty of investors being able to utilise the credits. The AER considers that the estimate of 0.74 would conservatively reflect the time value loss of money, given the lack of appropriate data to undertake a more precise calculation.

Overall the AER does not believe that there is sufficient reason or evidence to over-ride its view that the assumptions made by Handley and Maheswaran are reasonable, and as such the study provides valuable information in establishing a value of theta. The AER's adjustment to the Handley and Maheswaran estimates to derive a point estimate of theta from tax statistics is a conservative and practical method of incorporating this information, and recognises the limitations inherent in this type of study. Based on these considerations, the AER maintains that the theta point estimate of 0.74 produced from tax studies is still appropriate.

6.4.4.5 Miscellaneous gamma issues

This section addresses the following issues raised by Envestra and its consultants:

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27 McKenzie and Partington, *Evidence and submissions on gamma*, March 2010, pp. 3–4.

28 AER, *Final decision Victorian electricity distribution network service providers Distribution determination 2011–2015*, October 2010, p. 557.

29 Handley, *Further Issues Relating to the Estimation of Gamma*, October 2010, p. 20.

- the AER is inconsistent in its interpretation of empirical studies with respect to the market value of cash dividends and imputation credits
- the AER's previous determinations on gamma are inconsistent with IPART's recent determination
- the AER's approach to assigning any value to imputation credits is inconsistent with the practice of market practitioners
- a gamma value of 0.65 would result in cashflows that are inadequate to maintain a benchmark BBB+ credit rating.

Envestra's (SFG's) statement that there is an inconsistency in the valuation of cash dividends was presented to the AER and addressed in its recent determination for the Victorian electricity distribution businesses.[30] In summary, the AER does not consider that the value of cash dividends has been inconsistently applied across CAPM and dividend drop-off models. The coefficients reflecting the value of cash dividends derived from market based studies (i.e. that imply cash dividends are valued less than 100 per cent, as per the CAPM) reflect the impact of differential personal taxes and risk. In this way, they do not reflect the after-company-before-personal tax value of one dollar of dividends.

The AER acknowledges Envestra's statement regarding IPART's view of the value of gamma of between 0.3 and 0.5, and notes that this is now consistent with the AER's view in light of its re-examination of the value of the payout ratio.

The AER does not accept Envestra's statement that the AER should adopt an assumption that franking credits have no value simply because this is the practice of corporate valuation professionals. As the AER has previously stated during the WACC review, this practice does not necessarily imply that market practitioners unequivocally believe that imputation credits have zero value, and may simply assign a value of zero for a variety of reasons, including the complexity and uncertainty in estimating their value.[31]

Envestra's analysis regarding cashflow adequacy with respect to a BBB+ rated firm were addressed in chapter 5 in relation to the rate of return.

6.4.4.6 Conclusion on gamma

The AER considers that, based on the material currently available, 0.45 is the best estimate of gamma arrived at on a reasonable basis currently available, as required by r. 74 of the NGR. This is based on an assumed payout ratio of 70 per cent and a theta estimate of 0.65. The estimate of theta reflects the simple average of the values derived from the Beggs and Skeels dividend drop off study (0.57) and the Handley and Maheswaran tax statistics study (0.74). In reaching this conclusion the AER has considered the information submitted by Envestra as part of its access arrangement proposal, as well as the advice of the AER's consultants.

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30 AER, *Final decision Victorian electricity distribution network service providers Distribution determination 2011–2015*, October 2010, p. 581.

31 AER, *Final decision, WACC parameters*, May 2009, p. 409.

In summary, the AER considers:

- the true value of the payout ratio is within a range of 70 to 100 per cent, however empirical evidence does not support a value of the payout ratio above 70 per cent
- given the material currently available, the AER considers that for this draft decision, the theta value of 0.65 is still appropriate
- when the 70 per cent value of the payout ratio is combined with a theta of 0.65, the value of gamma is 0.45.

The AER considers that the adoption of a gamma of 0.45 is consistent with the revenue and pricing principles set out in section 24 of the NGL and will or is likely to contribute to the achievement of the national gas objective in section 23 of the NGL.

However, the AER notes that the further work as part of the Tribunal proceedings is not available for this draft decision. Any Tribunal decisions on this matter will be taken into account by the AER at the time of the final decision for Envestra.

6.4.5 Forecast tax allowance

Due to changes discussed above and the various other changes that affected Envestra's proposed revenues/costs, the AER has recalculated the forecast tax allowance for the access arrangement period, as shown in table 6.3.

Table 6.3: AER tax allowance for the access arrangement period ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Tax	1.8	1.8	1.7	1.6	1.6

6.5 Conclusion

The AER has accepted the tax approach proposed by Envestra. However, due to changes in gamma and the various other factors that impact on revenues and costs, the forecast tax allowance for the access arrangement period has been revised. The AER considers this revised forecast tax allowance can be included as a building block for revenues under r. 76(c) of the NGR.

6.6 Required amendments

Before its access arrangement proposal can be accepted, Envestra must make the following amendments:

Amendment 6.1: make all amendments necessary in the access arrangement proposal and access arrangement information to take account of a gamma of 0.45.

Amendment 6.2: make all amendments necessary in the access arrangement proposal and access arrangement information to take account of the revised tax allowance in table 6.3 of this draft decision.

7. Incentive mechanisms

Envestra has proposed an incentive mechanism applied only to opex for the access arrangement period.[1] The AER accepts that a mechanism to provide incentives for the achievement of efficiencies in opex should be in place, but considers that amendments are required to the mechanism proposed by Envestra before it can be approved as being consistent with the NGR and the NGL. These amendments include adding specific safeguards to ensure that Envestra is not penalised or rewarded for changes resulting from matters outside its control, ensuring that the incentive works not only for Envestra but against it should it not achieve efficiencies, and other specific amendments to the formulaic calculation of the efficiencies.

7.1 Introduction

This chapter sets out the AER's analysis and consideration of Envestra's proposed incentive mechanism for the access arrangement period.

7.2 Regulatory requirements

Where an incentive mechanism is operating in the earlier access arrangement period, the NGR requires that Envestra includes in its access arrangement proposal details of the carryover of increments (decrements) for efficiency gains (losses). It should also demonstrate how an allowance is to be made for any such increments (or decrements) (r. 72(1)(i) of the NGR).

For the access arrangement period, the NGR allows for Envestra to propose (or for the AER to require) one or more incentive mechanisms to encourage efficiency in the provision of services (r. 98(1) of the NGR). Such a mechanism may provide for the carryover of increments (decrements) for efficiency gains (losses) from the access arrangement period to the next (r. 98(2) of the NGR).

Where an incentive mechanism is proposed the NGR requires Envestra to:

- include the rationale for proposing such a mechanism (r. 72(1)(l) of the NGR)
- ensure that the proposed mechanism is consistent with the revenue and pricing principles (r. 98(3) of the NGR).

In assessing Envestra's proposed access arrangement the AER must take into account the transitional provisions of the NGR including clause 5(1)(a) of schedule 1 of the NGR. This relates to the operation of an incentive mechanism approved under section 8.44 of the Code. In particular, the AER is required to ensure that revenue calculations made for the access arrangement period properly reflect increments or decrements resulting from the operation of the incentive mechanism in the earlier access arrangement period.

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[1] Envestra, *QLD access arrangement information*, October 2010, pp. 168–169.

7.3 Access arrangement proposal

7.3.1 Proposed incentive mechanism

Envestra has proposed to include in its access arrangement a rolling carryover incentive mechanism applied to opex. Envestra has submitted that the proposed incentive mechanism would result in Envestra retaining the reward associated with an efficiency-improving initiative for five years after the year in which the gain was achieved.[2]

7.3.1.1 Calculating efficiency gains or losses

Envestra has proposed that the opex annual efficiency gain (or loss) for any year can be calculated as follows:[3]

$$\text{Efficiency Gain} = \text{Underspending}_t - \text{Underspending}_{t-1}$$

where:

$$\text{Underspending}_t = \text{Opex}_t^{\text{Forecast}} - \text{Opex}_t^{\text{Actual}}$$

7.3.1.2 Treatment of final year of access arrangement period

In the access arrangement proposal Envestra submitted it has assumed that it will not achieve more than the forecast productivity gain between the penultimate and last years of the access arrangement period. This effectively means that if Envestra makes an efficiency gain in the final year of the access arrangement period, there would be no carryover in respect of that year.[4]

7.3.1.3 Adjustments

Envestra has proposed that the carryover of cost-related efficiency gains will be calculated in a manner that takes account of any change in the scope of activities that formed the basis of the approved forecast opex. Envestra submitted that this will only occur where the changes in scope arise from exogenous factors and where they impose material additional costs on Envestra.[5]

7.3.1.4 Exclusions

Envestra has proposed that the costs associated with an Impost or complying with any retailer of last resort requirements will be excluded from the operation of the incentive mechanism. Envestra has further proposed that any other activity that Envestra and the Regulator agree to exclude from the operation of the incentive mechanism will be so excluded.[6]

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2 Envestra, *QLD access arrangement information*, October 2010, p. 168.
3 Envestra, *QLD access arrangement information*, October 2010, p. 168.
4 Envestra, *QLD access arrangement information*, October 2010, p. 169.
5 Envestra, *QLD access arrangement information*, October 2010, p. 169.
6 Envestra, *QLD access arrangement information*, October 2010, p. 168.

7.3.1.5 Application of carryovers

Envestra has submitted that to the extent that a negative carryover (in net present value terms) amount results at the end of the access arrangement period, that amount will not be carried into the following access arrangement period.[7]

7.3.1.6 Establishment of fixed principle

Envestra has proposed that the incentive mechanism, with respect to operating expenditure efficiencies, be established as a fixed principle until the end of the fourth access arrangement period (that is, 30 June 2021).[8]

7.4 AER's consideration

7.4.1 Proposed incentive mechanism

The AER has identified a number of issues with Envestra's proposed incentive mechanism that will need to be addressed before such a mechanism can be approved.

7.4.1.1 Operating expenditure incentive mechanism

The AER agrees in principle to the application of an incentive mechanism to encourage efficiencies in opex, but considers that the mechanism as proposed by Envestra is not consistent with the NGR.[9]

Envestra has proposed an incentive mechanism that applies only to opex.[10] This approach is consistent with the efficiency benefit sharing scheme (EBSS) developed by the AER under the National Electricity Rules[11] and the AER's decision on ActewAGL under the NGL.[12]

In only applying the incentive mechanism to opex the AER notes that there may be an incentive to shift opex to capex. As the AER does not envisage implementing a similar incentive mechanism to capex, the AER considers that this concern can be partially mitigated by ensuring that any reclassification of opex or capex is reasonable and does not adversely affect the calculation of the carryover amounts. To mitigate this risk a number of safeguards are required to be implemented by Envestra and provided to the AER, including:

- its approach to classifying costs as either opex or capex
- a detailed description of any costs that are reclassified between opex and capex during the access arrangement period
- adjustments made to the forecast opex used to calculate the carryover amounts so that the forecast expenditures are consistent with the capitalisation changes.

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7 Envestra, *QLD access arrangement information*, October 2010, p. 169.
8 Envestra, *Email response to the AER's questions*, 24 November 2010.
9 NGR, r. 98(1) and (3).
10 Envestra, *QLD access arrangement information*, October 2010, p. 168.
11 AER, *Electricity distribution network service providers: Efficiency benefit sharing scheme*, June 2008, p. 8.
12 AER, *Draft decision: ActewAGL – Access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010 – 30 June 2015*, November 2009, p. 78.

If Envestra's approach to classifying costs as either opex or capex should change during the access arrangement period, this could create an inconsistency between the forecast and actual opex figures used to calculate the carryover amounts. In calculating the carryover amounts, the measurement of actual opex must be done using the same cost categories and methodology used to calculate the forecast opex for that access arrangement period. The AER considers that the provision of this information is required for the AER to determine that any such cost reclassification is reasonable. This requirement would remove any incentive for the capitalisation of opex purely to exploit the operation of efficiency calculations, which the AER considers would not be consistent with r. 98 of the NGR.

7.4.1.2 Calculating efficiency gains or losses

The AER considers that Envestra's approach to calculating the opex annual efficiency gain (or loss) is not appropriate for year one and year five of the access arrangement period.

For all years of the access arrangement period except for the first and last years, the AER considers that the method for calculating efficiency gains and losses can be expressed as:

$E_i = (F_i - A_i) - (F_{i-1} - A_{i-1})$

where:

E_i is the efficiency gain in year i of the access arrangement period.

F_i is the forecast opex in year i of the access arrangement period.

A_i is the actual opex in year i of the access arrangement period.

The AER considers that the above equation is not correct for the first year of the access arrangement period. This is because forecast expenditures for the first year will be newly formulated and will be based on the most up to date estimates of forecast costs.[13] Instead, the efficiency gain for the first year (2011–12) should be calculated as:[14]

$E_1 = (F_1 - A_1)$

where:

E_1 is the efficiency gain in year one of the access arrangement period.

F_1 is the forecast opex in year one of the access arrangement period.

A_1 is the actual opex in year one of the access arrangement period.

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[13] NERA, *Efficiency carryover mechanism: a report for TransGrid*, September 2004, p. 3.

[14] AER, *Draft decision: ActewAGL – Access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010 – 30 June 2015*, November 2009, p. 79.

The AER considers that consistent with the AER's EBSS and decision on ActewAGL, these formulaic additions to Envestra's incentive mechanism ensure that:

- there is clarity as to the operation of the mechanism
- the estimate of the carryover amount is arrived at on a reasonable basis, consistent with r. 74 of the NGR.

7.4.1.3 Treatment of final year of access arrangement period

The AER considers that Envestra's proposed approach to calculating efficiency gains and losses in the final year of the access arrangement period (2015–16) can be expressed as the following equation:

$A_5^* = F_5 - (F_4 - A_4)$

where:

A_5^* is the estimate of opex for the final year of the access arrangement period.

F_5 is the forecast opex for the final year of the access arrangement period.

F_4 is the forecast opex for the penultimate year of the access arrangement period.

A_4 is the actual opex for the penultimate year of the access arrangement period.

The AER notes that carryover amounts from the access arrangement period will form part of total revenue in the following access arrangement period. As the next access arrangement review will be finalised before the end of the access arrangement period in which the incentive mechanism applies, an estimate must be used to derive the actual opex used to calculate the carryover for the final year. To account for this, the AER considers that consistent with the EBSS and ActewAGL decision, this equation should be used to calculate the carryover for the final year of the access arrangement period.

Further, the AER considers that where differences arise between the estimate, A_5^*, and the actual opex incurred in the final year of the access arrangement period, the first year of the following access arrangement period (1 July 2016 to 30 June 2021) should be adjusted as follows:[15]

$E_6 = (F_6 - A_6) - (F_5 - A_5) + (F_4 - A_4)$

where:

E_6 is the efficiency gain in the first year of the following access arrangement period.

F_6 is the forecast opex for the first year of the following access arrangement period.

A_6 is the actual opex for the first year of the following access arrangement period.

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[15] AER, *Draft decision: ActewAGL – Access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010 – 30 June 2015*, November 2009, p. 80.

F_5 is the forecast opex for the final year of the access arrangement period.

A_5 is the actual opex for the final year of the access arrangement period.

F_4 is the forecast opex for the fourth year of the access arrangement period.

A_4 is the actual opex for the fourth year of the access arrangement period.

This approach assumes no additional efficiency gain in the final year of the access arrangement period and offsets the implicit carryover amount in the following access arrangement period. It is also consistent with the approach taken in the AER's EBSS for electricity[16] and the AER's decision on ActewAGL under the NGL.[17]

The AER proposes to amend Envestra's incentive mechanism to include the specified equations to calculate the efficiency carryover amounts for the final year of the access arrangement period, and also to provide an adjustment to the first year of the following access arrangement period. The AER considers that in the absence of information about the actual opex in the final year of the access arrangement period, the amendment will allow for an estimate of the carryover amount to be arrived at on a reasonable basis.[18]

7.4.1.4 Adjustments

The AER considers that rewarding or penalising a business for changes in activity scope that are outside of its control (that is, exogenous) would not serve the intention of promoting efficiency in the provision of services as required under the NGR.[19] As such, and consistent with the AER's EBSS and ActewAGL decision, the AER accepts that the incentive mechanism should exclude exogenous factors.

The AER considers that where forecasts do not reflect the efficient level of opex, it is possible that Envestra could experience a windfall gain or loss. Therefore, the AER seeks to minimise the risk of a windfall gain or loss by allowing an adjustment in forecasts for a change in scope. The AER accepts Envestra's proposal that such an adjustment should only occur where the changes in scope arise from exogenous factors (that is, outside of the control of the business) and where they impose material additional costs on Envestra.

In order for the AER to assess the changes in the scope of activities and the impact of these changes on the approved expenditure, the AER considers that Envestra should provide information on these changes. This information should include detailed explanation and reasoning for the changes in scope and an outline of the impact of the changes in scope on the approved forecast opex.

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16 AER, *Final decision, Electricity distribution network service providers: Efficiency benefit sharing scheme, Appendix E,* June 2008, p. 6.

17 AER, *Draft decision: ActewAGL – Access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010 – 30 June 2015*, November 2009, p. 80.

18 NGR, r. 74(2).

19 NGR, r. 98(1).

7.4.1.5 Exclusions

The AER considers that the efficiency promotion objective of an incentive mechanism would not be served by providing a business with benefits or penalties for variances in costs over which it has no control. The AER will therefore have regard to whether or not an opex category is controllable when assessing whether it should be excluded from the operation of the incentive mechanism.

The AER accepts Envestra's proposal that the costs associated with an impost or in complying with any retailer of last resort requirements will be excluded from the operation of the incentive mechanism.[20] The AER considers that these costs result from factors external to Envestra and can be considered as uncontrollable costs.

Further the AER considers that, consistent with the EBSS, a range of additional uncontrollable costs should also be excluded from the operation of the incentive mechanism, including:

- amounts for approved cost pass through events
- debt raising costs
- insurance costs
- superannuation costs for defined benefits and retirement schemes
- other specific uncontrollable costs incurred and reported by Envestra during the next access arrangement period, which the AER considers should be excluded in accordance with the NGL and NGR.

The AER considers that if Envestra seeks to exclude further costs from the operation of an incentive mechanism that it needs to specify all such costs and the basis on which they are deemed to be uncontrollable.

7.4.1.6 Application of carryovers

The AER rejects Envestra's proposal to exclude the application of negative carryovers from the operation of the incentive mechanism. This is because the AER considers that the application of a symmetrical mechanism is required to encourage efficiency in the provision of services[21] and it provides Envestra with effective incentives to promote economic efficiency.[22]

To encourage efficiency in the provision of services, the AER considers that an incentive mechanism should have regard to the incentive benefits of a symmetric scheme as allowed under r. 98(2) of the NGR. The AER examined the

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20 Envestra, *QLD access arrangement information*, October 2010, p. 168.
21 NGR, r. 98(1).
22 NGL, s. 24(3).

appropriateness of applying negative carryover amounts in detail as part of its decision on the EBSS for electricity.[23]

In its decision on the EBSS, the AER identified four main circumstances where negative carryover amounts may arise. These include:

- a one-off decrease in opex
- shifting of opex into year four of the access arrangement period
- an ongoing increase in opex
- forecasts not reflecting the efficient level of opex.[24]

Where the circumstances relate to variations in opex over which Envestra has control, the AER considers it appropriate that Envestra share with users a portion of the cost increase through the application of a negative carryover. The AER considers that this is required to provide Envestra with an effective incentive to reduce controllable opex.

In circumstances beyond Envestra's control, the proposed incentive mechanism provides safeguards to minimise or prevent a negative carryover amount arising. For example, a negative carryover amount arising as a result of forecasts not reflecting the efficient level of opex will be offset by adjusting the benchmark amounts for changes in the scope of activities as discussed in section 7.4.1.4 above.

Furthermore the AER considers that, in the absence of the symmetrical application of both positive and negative carryovers, there will be no incentive for Envestra to strive to achieve efficiency gains in the last years of the access arrangement period where it has exceeded forecasts at the start of the access arrangement period. Where substantial inefficiencies are incurred at the beginning of the access arrangement period, Envestra may not be able to recoup these in the final years and will hence defer any efficiency gains to the start of the next access arrangement period. The application of a negative carryover will ensure that the incentive mechanism will encourage efficiency consistently across the entire access arrangement period.

7.4.1.7 Establishment of fixed principle

The AER rejects Envestra's proposal to establish the proposed incentive mechanism as a fixed principle, until the end of the fourth access arrangement period (that is, 30 June 2021).[25]

The AER considers that there is merit in monitoring the operation of the incentive mechanism. At the next access arrangement review an assessment should be carried out to determine:

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23 AER, *Explanatory statement: Proposed electricity distribution network service providers efficiency benefit sharing scheme*, April 2008, pp. 7–8.

24 AER, *Explanatory statement: Proposed electricity distribution network service providers efficiency benefit sharing scheme*, April 2008, p. 8.

25 Envestra, *Email response to the AER's questions*, 24 November 2010.

- whether the incentive mechanism is still relevant for Envestra given its position at the time of the next review
- how effective the mechanism was during the previous period
- whether the incentive mechanism needs to be modified to increase its effectiveness
- whether there are any new costs which should be included or excluded from the operation of the incentive mechanism.

The incentive mechanism will need to be amended after this assessment to ensure that it operates as necessary to fulfil the requirements of r. 98 of the NGR. The establishment of a fixed principle would prevent any required changes to the incentive mechanism.

The AER has also considered the possible concern over regulatory certainty which may arise if the incentive mechanism is not implemented as a fixed principle, but considers the risk to be low. Even without being a fixed principle, the incentive mechanism permits that any increments (decrements) for efficiency gains (losses) are necessarily carried over to the next access arrangement period in line with the NGR.[26] The AER considers that this should allay any possible uncertainty as to the calculation of entitlements for efficiency gains over the access arrangement period.

7.5 Conclusion

The AER does not approve the incentive mechanism proposed by Envestra as it is not consistent with r. 98 of the NGR and s. 24(3) of the NGL. The AER considers that various amendments are required. Where these amendments involve annual reporting requirements these are set out in appendix E.

7.6 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments.

Amendment 7.1: amend the access arrangement proposal to include a statement under s. 5.2 that, if Envestra changes its approach to classifying costs as either capex or opex during the access arrangement period then, Envestra must adjust the forecast opex used to calculate the carryover amounts so that the forecast expenditures are consistent with the capitalisation changes.

Amendment 7.2: amend the access arrangement proposal to include a statement under s. 5.2 that, if there is a change in Envestra's approach to classifying costs as either capex or opex Envestra must provide to the AER a detailed description of the change and a calculation of its impact on forecast and actual opex.

[26] NGR, r. 98(2).

Amendment 7.3: amend the access arrangement proposal to include a statement under s. 5.2 that carryover amounts for the first year of the access arrangement period will be estimated using the following equation:

$E_1 = (F_1 – A_1)$

where:

E_1 is the efficiency gain in year one of the access arrangement period.

F_1 is the forecast opex in year one of the access arrangement period.

A_1 is the actual opex in year one of the access arrangement period.

Amendment 7.4: Envestra must delete and replace the second dot point under s. 5.2 of the access arrangement proposal to state that carryover amounts in the second, third, and fourth years of the access arrangement period are to be estimated using the following equation:

$E_i = (F_i – A_i) – (F_{i-1} – A_{i-1})$

where:

E_i is the efficiency gain in year i of the access arrangement period.

F_i is the forecast opex in year i of the access arrangement period.

A_i is the actual opex in year i of the access arrangement period.

Amendment 7.5: Envestra must delete and replace the eighth dot point under s. 5.2 of the access arrangement proposal to state that carryover amounts in the last year of the access arrangement period are to be estimated using the following equation:

$A_5^* = F_5 – (F_4 – A_4)$

where:

A_5^* is the estimate of opex for the final year of the access arrangement period.

F_5 is the forecast opex for the final year of the access arrangement period.

F_4 is the forecast opex for the penultimate year of the access arrangement period.

A_4 is the actual opex for the penultimate year of the access arrangement period.

Amendment 7.6: amend the access arrangement proposal to include a statement under s. 5.2 that carryover amounts for the first year of the access arrangement period commencing 1 July 2016 are to be estimated using the following equation:

$E_6 = (F_6 – A_6) – (F_5 – A_5) + (F_4 – A_4)$

where:

E_6 is the efficiency gain in the first year of the following access arrangement period.

F_6 is the forecast opex for the first year of the following access arrangement period.

A_6 is the actual opex for the first year of the following access arrangement period.

F_5 is the forecast opex for the final year of the access arrangement period.

A_5 is the actual opex for the final year of the access arrangement period.

F_4 is the forecast opex for the fourth year of the access arrangement period.

A_4 is the actual opex for the fourth year of the access arrangement period.

Amendment 7.7: Amend sub point 1, dot point 7 of s. 5.2 of the access arrangement proposal to state that the information will be provided to the AER, and will, without limitation, quantify and substantiate the impact of the scope changes on the original benchmarks.

Amendment 7.8: amend dot point 5 of section 5.2 of the access arrangement proposal to state the following costs will also be excluded from the operation of the incentive mechanism (i.e. the amounts in relation to these categories will be deducted from both the forecast opex and actual opex):

- amounts for approved cost pass through events
- debt raising costs
- insurance costs
- superannuation costs for defined benefits and retirement schemes
- other specific uncontrollable costs incurred and reported by Envestra during the access arrangement period, which the AER considers should be excluded in accordance with the NGL and NGR.

Amendment 7.9: delete dot point 9 of s. 5.2 of the access arrangement proposal which states:

> To the extent that a negative efficiency carryover (in net present value terms) amount results at the end of the Third Access Arrangement Period, that amount will not be carried into the Fourth Access Arrangement Period.

Amendment 7.10: amend dot point 3 and dot point 4 of s. 5.2 of the access arrangement proposal to include costs associated with inefficiencies and negative carryover amounts during the access arrangement period.

Amendment 7.11: delete s. 5.1 of the access arrangement proposal which states:

5.1 Fixed Principle

Rule 98 allows for a full access arrangement to include one or more incentive mechanisms to encourage efficiency in the provision of services by the service provider.

This incentive mechanism is a fixed principle which will apply until the end of the Fourth Access Arrangement Period on 30 June 2021.

8 Operating expenditure

Operating expenditure (opex) refers to the operating, maintenance and other costs of a non-capital nature incurred by a service provider in the provision of distribution pipeline services. This expenditure also includes costs incurred in increasing long-term demand for pipeline services and otherwise developing the market for pipeline services.

Envestra has applied a base year roll forward method of forecasting opex. It proposed opex of $110 million ($2010–11) over the access arrangement period, representing a real increase of 16 per cent on actual incurred expenditure in the earlier access arrangement period. This increase has been principally substantiated by increasing unaccounted for gas (UAG) costs, the need for increased network development, and various non-base year costs and increases resulting from input cost escalation.

The AER reviewed Envestra's proposed opex and its constituent components under its roll forward method against the NGR and the NGL. The AER engaged independent consultants Wilson Cook to provide expert engineering advice on whether Envestra's proposed opex is prudent and efficient, and Access Economics to provide expert economic advice on the reasonableness of Envestra's forecast labour costs.

Having considered the advice of its consultants, together with internal analysis, the AER considers that Envestra's proposed opex is not consistent with the NGR and NGL requirements. The AER has set out a number of amendments that Envestra is required to make to its access arrangement proposal, including changes to input cost escalation, reductions in network development and UAG expenditure and several of the proposed non base year costs. Overall, the AER accepts $85 million in opex over the access arrangement period, which is 23 per cent less than proposed by Envestra. The accepted amount represents an 11 per cent reduction in real terms compared to actual expenditure over the earlier access arrangement period.

8.1 Introduction

This chapter sets out Envestra's opex proposal, and the AER's consideration of Envestra's proposal and submissions from interested parties.

8.2 Regulatory requirements

Rule 91 of the NGR provides that operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

The access arrangement information for an access arrangement proposal must include operating expenditure (by category) over the earlier access arrangement period and a

forecast of operating expenditure over the access arrangement period and the basis on which the forecast has been derived.[1]

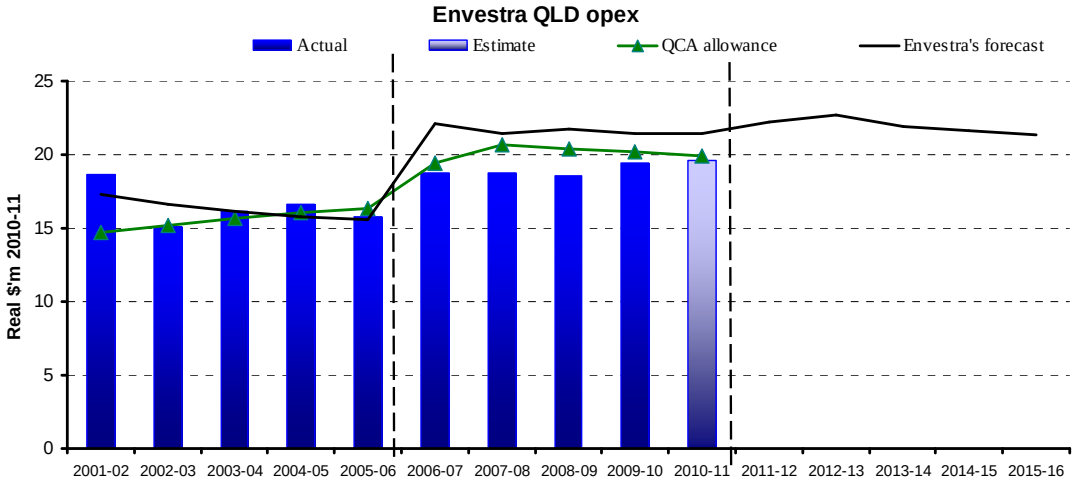
Any forecast or estimate must be supported by a statement of the basis of the forecast or estimate.[2] A forecast or estimate must be arrived at on a reasonable basis, and must represent the best forecast or estimate possible in the circumstances.[3]

The access arrangement information must include the key performance indicators to be used by the service provider to support expenditure to be incurred over the access arrangement period.[4]

8.3 Access arrangement proposal

Figure 8.1 compares Envestra's actual opex expenditure in the earlier access arrangement period with that approved by the previous regulator (the QCA) and expenditures proposed to the QCA in previous reviews.

Figure 8.1: Envestra opex – historic (actuals v forecasts) vs proposed



Source: QCA, *Allgas & Envestra gas distribution networks – Draft decision*, March 2001, p. 208;
QCA, *Envestra gas distribution network – Draft decision*, December 2005, pp. 91–101;
Envestra, *Access arrangement information proposal – Envestra Queensland* Network, September 2005, p. 8; and
Envestra, *Qld access arrangement information*, October 2010, p. 30; and
Envestra, *Email to the AER, re: Envestra – Opex categories AER EN 02 Response 101020.doc*, 20 October 2010.

1 NGR, r. 72(1)(a)(ii) and r. 72(1)(e).
2 NGR, r. 74(1).
3 NGR r. 74(2).
4 NGR r. 72(1)(f).

8.3.1 Earlier access arrangement

Envestra underspent its allowed opex in the earlier access arrangement period by five per cent. There is a 12 per cent divergence between actual opex and expenditure proposed to the QCA in the previous access arrangement review.

Table 8.1 disaggregates these expenditures by category, showing that Envestra's underspend was driven principally by significant underspends in the categories of full retail contestability (FRC) of 20 per cent, and UAG of 30 per cent. These categories outweighed the overspends recorded for the categories of administration and general, operating and maintenance and network development.

Table 8.1: Envestra's historic opex (allowed vs incurred), ($m, 2010-11)[5] [6]

		2006–07	2007–08	2008–09	2009–10	2010–11	Total
Operating & maintenance	Allowed	14.5	14.0	13.7	13.6	13.5	69.4
	Incurred	13.7	12.6	13.5	13.4	13.6	66.8
	Variance (%)	-5.7	-10.3	-1.3	-1.3	0.4	-3.7
Administration & general	Allowed	2.3	2.5	2.8	2.9	2.9	13.3
	Incurred	2.3	1.6	2.6	3.4	3.4	13.3
	Variance (%)	2.0	-34.4	-7.2	18.0	18.8	0.3
Network development	Allowed	1.0	1.0	1.0	1.0	1.0	5.1
	Incurred	1.0	1.0	1.0	1.2	1.2	5.3
	Variance (%)	-2.3	-3.9	-6.1	17.2	20.4	4.9
FRC operating costs	Allowed	0.1	1.8	1.5	1.5	1.5	6.3
	Incurred	0.0	1.9	1.1	1.0	1.0	5.0
	Variance (%)	-100.0	5.6	-24.7	-30.3	-29.8	-20.0
Unaccounted for gas	Allowed	1.5	1.4	1.3	1.2	1.1	6.6
	Incurred	1.7	1.7	0.4	0.4	0.5	4.6
	Variance (%)	12.2	18.7	-71.0	-66.7	-59.5	-30.1
Total operating expenditure	Allowed	19.5	20.7	20.3	20.2	20.0	100.6
	Incurred	18.7	18.7	18.6	19.4	19.6	95.1
	Variance (%)	-3.7	-9.5	-8.6	-3.7	-1.6	-5.5

Source: Envestra, *Qld access arrangement information*, October 2010, p. 30; and Envestra, *Email to the AER, re: Envestra – Opex categories AER EN 02 Response 101020.doc*, 20 October 2010.

8.3.2 Forecasting method

For the access arrangement period, Envestra forecast opex by applying the base year roll forward method. It submitted that there is a core of opex that is generally static and recurrent in nature. Given the incentive nature of the regulatory regime in the

[5] The AER has converted 2009–10 real dollars into 2010–11 real dollars.

[6] Envestra's access arrangement proposal reported allowed figures with two additional opex categories (total material changes and network management fee). However, to allow for meaningful comparisons with incurred expenditures, Envestra advised the AER of the appropriate allocation of these opex categories.

earlier access arrangement period, the latest year of verifiable costs should reveal a service provider's efficient core opex.[7] Envestra's method involved:[8]

1. selecting an efficient base year (2009–10) using actual data from the earlier access arrangement period. Network development and UAG were removed from the base and forecast on a year by year basis
2. rolling forward the base year costs (that is, operating and maintenance, administration and general) by applying various escalators to account for changes in network growth (scale), input costs (labour and materials) and inflation
3. forecasting certain costs on a year by year basis. These are costs for which the base year is not reflective of costs expected to be incurred over the access arrangement period, including:
    a. network development
    b. UAG
    c. Non–base year costs:
        i. Opex related to capex
        ii. Ad hoc opex programs
        iii. Step changes – for permanent increases/decreases in costs.

Envestra submitted that the base year does not include any non-recurrent expenditure.[9] Further, while submitting that the base year of 2009–10 represents the most recent year for which the AER will have full year results when conducting its review, Envestra submitted that it had been necessary to rely on nine months of actual data and three months of forecast data. It submitted that the three month forecast represents the best estimate of costs to be incurred during that period and that it would submit regulatory accounts to confirm the accuracy of the numbers.[10]

8.3.3 Forecast operating expenditure

Envestra's forecast opex for the access arrangement period is set out in figure 8.1. It shows that Envestra has in this access arrangement proposal, like its previous proposal to the QCA for the earlier access arrangement, proposed a significant step increase in total opex. Envestra's proposal represents a 15 per cent increase on actual opex and 9 per cent increase on allowed opex in the earlier access arrangement period.

Table 8.2 disaggregates Envestra's proposal by opex categories, showing that sizeable increases on actual opex in the earlier access arrangement are proposed across all categories of opex. The most notable increases relate to the categories of network development (61 per cent), UAG (31 per cent) and administration and general (51 per cent).

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7 Envestra, *Qld access arrangement information*, October 2010, p. 74.
8 Envestra, *Qld access arrangement information*, October 2010, pp. 74–75.
9 Envestra, *Qld access arrangement information*, October 2010, p. 80.
10 Envestra, *Qld access arrangement information*, October 2010, pp. 77–78.

Table 8.2: Envestra's forecast opex for the access arrangement period ($m, 2010-11)[11] [12]

	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Operating & maintenance	14.2	14.5	13.8	13.7	13.5	69.6
Administration & general	3.5	3.9	4.1	4.2	4.3	20.0
Network development	1.7	1.7	1.8	1.8	1.8	8.8
Unaccounted for gas	1.7	1.5	1.2	0.9	0.6	6.0
Full retail contestability	1.0	1.0	1.1	1.1	1.1	5.3
Total forecast opex	**22.2**	**22.7**	**21.9**	**21.7**	**21.3**	**109.7**

Source: Envestra, Email to the AER, *Envestra – Opex categories AER EN 02 Response 101020.doc*, 20 October 2010; and Envestra, *Attachment 1-2 – RIN Template, Proforma 6 (revised 101020).xls*.

While Envestra proposed that debt raising costs be included as an opex item, it has excluded this cost category from all tables in its proposal that present previous and proposed opex. The AER has followed Envestra's approach in this chapter by presenting opex without debt raising costs. However, the total revenue figures set out in chapter 9 present opex inclusive of debt raising costs. The AER's consideration of debt raising costs is set out in appendix F.

8.4 Submissions

The AER received a submission from Origin Energy questioning the reasonableness of Envestra's proposed network development expenditure. Origin noted that past marketing expenditure had little or no impact on customer growth or consumption. In addition, according to Origin, Envestra has not justified the increased costs of its future development projects or explained how they differ to current projects. Origin questioned whether Envestra as the distributor was best placed to deliver such programs.[13]

8.5 Consultant review

The AER engaged Wilson Cook, engineering consultants, to review whether the technical aspects of Envestra's proposed opex are prudent and efficient. Wilson Cook reviewed Envestra's opex in the earlier access arrangement period in order to contextualise the forecast opex and to assess the selection of the base year as well as the forecast opex as proposed.

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[11] The AER has converted 2009–10 real dollars into 2010–11 real dollars.

[12] Envestra in its access arrangement proposal included non-base year costs and incremental growth as separate cost categories in the forecast expenditure. To enable meaningful comparisons with historical expenditures, Envestra has advised the AER as to the appropriate allocation of these costs across other opex categories.

[13] Origin, *Submission on Envestra (Qld) and APT Allgas access arrangement proposals*, 26 November 2010, pp. 2-3.

Wilson Cook noted that actual opex in the earlier access arrangement period was approximately 5.5 per cent less than its approved level, with variances in all opex categories.[14]

In regard to the base year, Wilson Cook considered it to not be efficient, based on reported productivity levels and analysis of comparative opex benchmarks. Wilson Cook recommended that a productivity improvement adjustment be applied to the base year throughout the access arrangement period.[15] In regard to forecast opex, Wilson Cook made the following key recommendations:[16]

- Adjustments are required to several proposed step changes and other non-base year costs, including a reduction in Envestra's proposed savings attributable to reduced leak repairs. The latter was recommended in conjunction with its recommended reduction in the mains replacement capex proposal.

- That UAG levels be set at the level that Envestra presently measures, being 0.5 per cent of gas input for its networks as a whole.

The AER has had regard to these recommendations in applying the NGR and NGL.

8.6 AER's consideration

8.6.1 Base year selection

Envestra proposed 2009–10 as being an efficient base year for the purpose of forecasting the operating and maintenance and the administration and general opex categories.[17]

The starting point when applying a base year roll forward method of forecasting expenditure, also commonly referred to as the 'revealed efficient cost method', is the selection of a base year from a series of actual expenditures. The general rationale behind the adoption of this method is that many opex items are largely of a recurring nature—requiring only escalation for expected changes in input costs or scale, or step changes for regulatory or business environment alterations.

However, the rationale is based on various assumptions. Firstly, that previous expenditure can be used as an indicator of likely future expenditure. Secondly, that the selected base year actually reflects efficient expenditure in a previous period. To test these assumptions, consistent with previous regulatory decisions, a number of conditions are to be considered, including:

- The base year should not include non-recurrent expenditure—such expenditure would not be reflective of that to be incurred over the forecast period. Further, it would be a form of double counting if a business also proposed opex related to non-base year costs of a non-recurrent nature.

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14 Wilson Cook, *Review of expenditure of Queensland & South Australian gas distributors: Envestra Ltd (Queensland)*, December 2010, p. 1.
15 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 2.
16 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 2.
17 Envestra, *Qld access arrangement information*, October 2010, p. 76.

- The expenditure should reflect actual rather than forecast or unrealised expenditure—to reduce the possibility of artificially inflated expenditure figures.

- The base year should be as close as possible to the forecast period—to present an accurate reflection of a business' current operating and organisational circumstances.

Further, and importantly, the AER needs to be confident that the expenditure realised in the base year was efficient. This can be done by comparing its level with that realised in other years of the earlier access arrangement period, and between businesses if such data is available.

These conditions need not all be met, but rather considered on balance as a basis on which to assess the base year's consistency with the requirements of r. 91 of the NGR.

While accepting that 2009–10 is sufficiently representative of Envestra's current business and operational circumstances, the AER does not consider that the actual level of expenditure is an efficient base for forecasting opex as required under r. 91 of the NGR. The AER requires that the base year be amended, via an annual efficiency adjustment to forecast opex.

In accepting that 2009–10 should be set as the base year, rather than any other year of the earlier access arrangement, the AER considered the following matters:

- the advice of Wilson Cook that when compared to the preceding years and expenditure approved by the QCA, the base year represents Envestra's present costs in the opex categories for which the roll-forward method has been applied[18]

- 2009–10 is sufficiently close to the access arrangement period to be an indicator of current business and operational circumstances

- total opex in the earlier access arrangement period is forecast to be below that approved by the QCA.

However, while Envestra will underspend in relation to its approved opex in the earlier access arrangement period, the AER has identified concerns with the actual efficiency of these expenditures, having had regard to a number of comparative analyses submitted by Envestra and the advice of Wilson Cook. These analyses suggest that Envestra's opex performance has deteriorated over the course of the earlier access arrangement period.

Wilson Cook indicated that the comparative analyses reports submitted by Envestra demonstrated a concerning trend in Envestra's efficiency performance. Firstly, from a productivity perspective, the report prepared by Economic Insights for Envestra concludes that Envestra's productivity has declined over recent years.[19] Its productivity performance is inferior to that of other gas distribution businesses, even

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[18] Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 45.

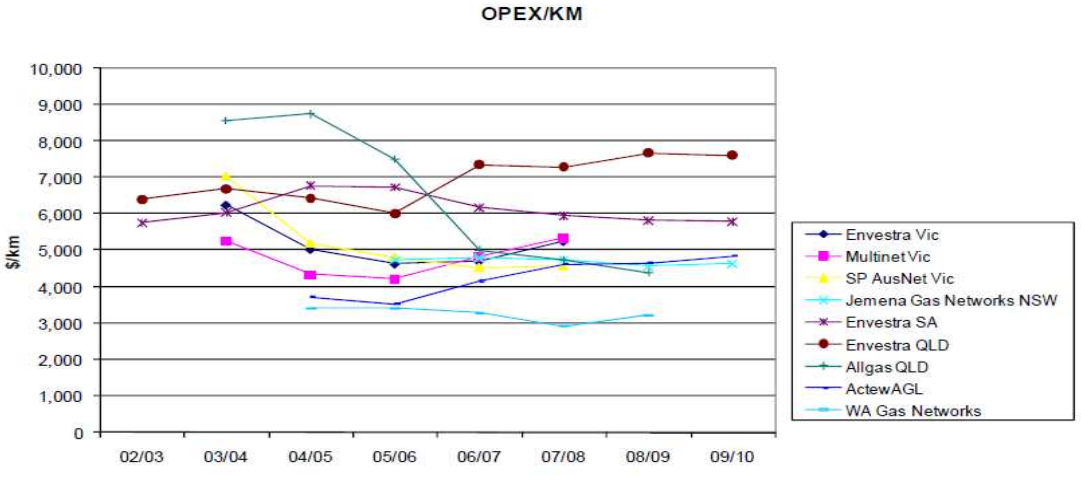
[19] Envestra, *SA access arrangement information – Attachment 5-7: Economic insights – The productivity performance of Envestra's South Australian and Queensland Gas distribution systems*, October 2010, pp.38-39.

if the comparative businesses are larger in most cases and have higher customer and energy densities.[20]

Further, from a cost benchmarking perspective, Wilson Cook noted that the data presented in the report undertaken by Marksman for Envestra did not appear to support the conclusions set out in that report.[21] The Marksman report benchmarked Envestra's opex against nine other gas distributors in Australia using a range of performance indicators, and for a time-series from 2002-2003 to 2009-2010.[22] The report suggested that it was difficult to draw meaningful conclusions in regard to the efficiency of Envestra's historical opex as its operating conditions are so different. The most comparable business was APT Allgas. The report concluded that Envestra's opex has historically been commensurate with that of APT Allgas.[23]

However, as noted by Wilson Cook, the data in the Marksman report supports a different conclusion. The data indicates that particularly since 2006–07, Envestra has recorded higher opex than all other gas distributors in the sample, including APT Allgas. The only indicator in which Envestra recorded a figure less than another business was for 'opex as a percentage of RAB', in which only Actew AGL recorded a higher cost. Envestra's opex on a per kilometre, customer, GJ, and percentage of revenue basis is markedly higher than any other gas distributor in the sample. Since 2006–07, the divergence has increased over the course of the earlier access arrangement period as can be seen from figures 8.2 and 8.3.[24]

Figure 8.2: Comparative performance—opex per kilometre, Marksman



Source: Envestra, *SA access arrangement information – Attachment 5-8: Marksman*, p.6.

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20 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 46.

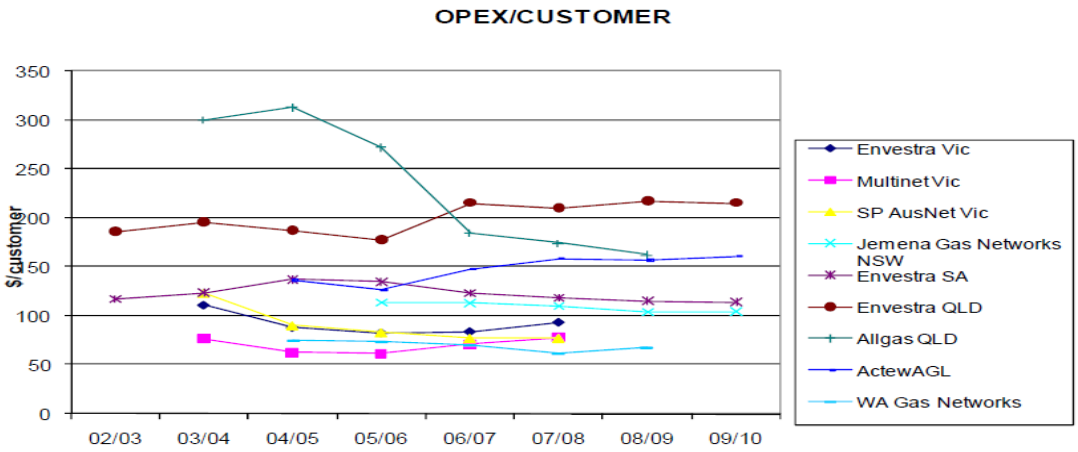
21 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp.43-44.

22 These included: opex per kilometre; opex per customer; opex as a percentage of the RAB; opex as a percentage of revenue; and, opex per GJ.

23 Envestra, *SA access arrangement information – Attachment 5-8: Marksman Consulting Services – Gas distributor benchmarking report Envestra South Australia and Queensland*, October 2010, p.17.

24 Data for all other indicators has been set out in the Marksman report. Envestra, *SA access arrangement information - Attachment 5-8: Marksman*, October 2010, pp.5-8.

Figure 8.3: Comparative performance—opex per customer, Marksman



Source: Envestra, *SA access arrangement information - Attachment 5.8: Marskman*, October 2010, p. 7.

The Marksman report also compared Envestra's opex performance using a composite indicator, that is, an indicator comprising of various elements including length of mains, customer numbers and sales volume. All distributors were plotted against a straight line of best fit, with Envestra lying below the line. The Marksman report concluded that this result demonstrated that Envestra's opex was consistent with that of other gas distributors.[25]

Given that the individual indicators in the Marksman report suggested that Envestra's performance has not been consistent with that of other distributors, particularly since 2006–07, Wilson Cook undertook its own comparisons. Using data from the Marksman report, Wilson Cook separated out data for 2008–09 for all gas distributors in the sample. It concluded that Envestra's opex has been relatively higher than other distributors when considered both on a per kilometre and per customer basis, as can be seen from figures 8.4 and 8.5.[26]

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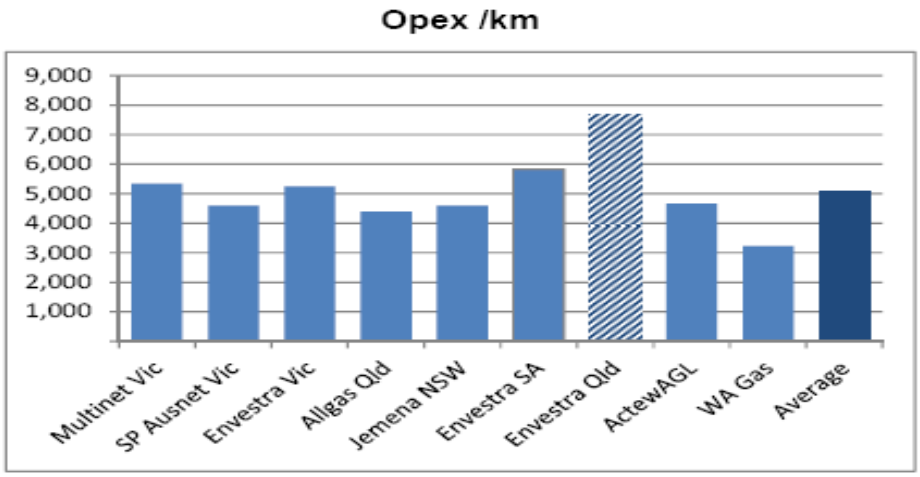
[25] Envestra, *SA access arrangement information – Attachment 5-8: Marksman*, October 2010, p. 15.

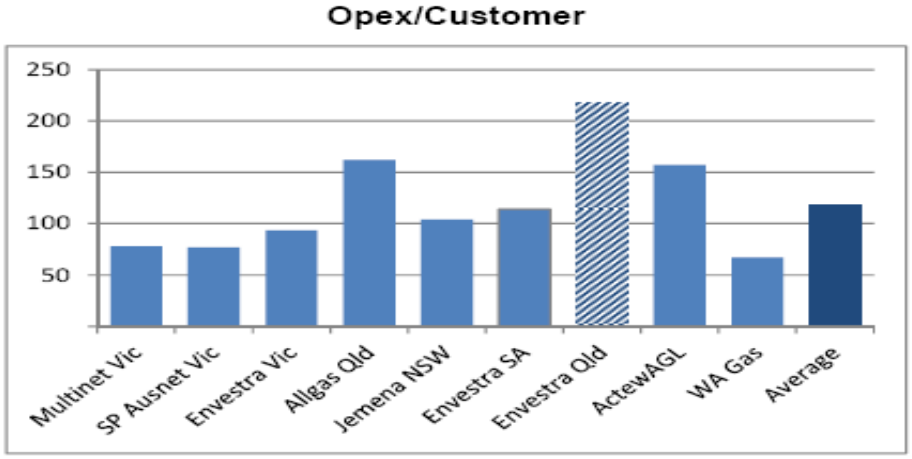
[26] 2008–09 was chosen as this represented the most recent year for which data from all distributors was available and is a year close to the year chosen by Envestra as the base year. Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 46.

Figure 8.4: Comparative performance—opex per kilometre (2008-09)



Source: Wilson Cook, *Report – Envestra (Qld)*, December 2010, p.44.

Figure 8.5: Comparative performance – opex per customer (2008-09)

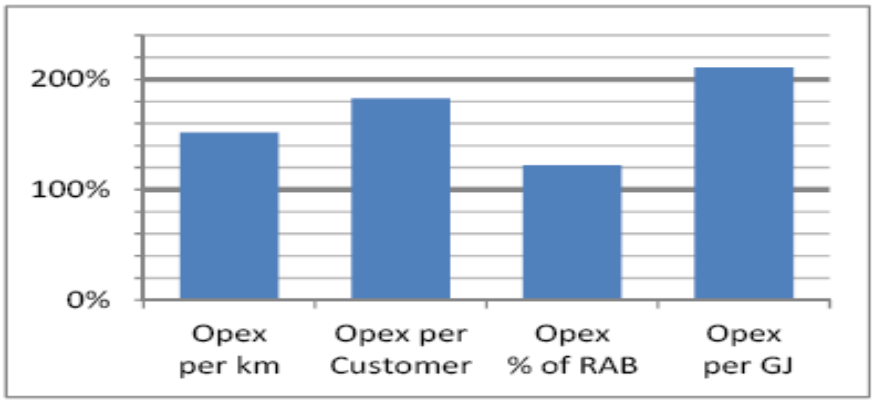


Source: Wilson Cook, *Report – Envestra (Qld)*, December 2010, p.44.

Further, given the identified concerns with the composite indicator in the Marksman report, Wilson Cook undertook its own calculations using the same indicators, but presenting these as a percentage of average cost of all distributors in the sample. As shown in figure 8.6, the analysis demonstrates that Envestra's performance is above the mean on all measures by between 20 and 105 per cent.[27]

[27] Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 44.

Figure 8.6: Comparative performance—composite indicator (2008-09)



Source: Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 45.

Finally, in addition to its consideration of the analyses comparing Envestra with other distributors, Wilson Cook's own comparison of unit rates for calculating the cost of adding new customers to the network revealed rates that are double those that Envestra incurs in South Australia.[28]

The AER considers that as 2009–10 is representative of Envestra's current operating and organisational circumstances, this year rather than any other in the earlier access arrangement period should be set as the base year. 2009–10 is more likely to lead to the best forecast possible in the circumstances, and therefore lead to an efficient expenditure level.

However, the AER has considered cost and productivity comparisons with other distributors which suggest that Envestra's opex performance has been deteriorating markedly since 2006–07. The AER considers that Envestra's 2009–10 base year level of expenditure cannot be considered to be efficient.

Given the deteriorating performance across all years of the previous access arrangement period, and that years prior to 2009–10 are not sufficiently close to the access arrangement period to be representative of Envestra's circumstances, simply selecting a different year as the base would not resolve the concern. Therefore, the AER considers it necessary to apply an efficiency adjustment to the base year level of expenditure, consistent with the recommendation of Wilson Cook.[29]

A number of approaches could be employed to determine the adjustment. The AER considers applying an annual compounding adjustment to the base year level throughout the access arrangement period is preferable to the alternative of providing a sudden change to one year.[30] With regard to the actual adjustment values, the AER accepts Wilson Cook's advice that the adjustment to the base year should be set at 2.5 per cent per annum, compounding to a total reduction to the base year roll forward of 16 per cent. The adjustment results in an average base year expenditure level for the access arrangement period that is consistent with its average in the earlier access

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28 Wilson Cook, *Report – Envestra (Qld*), December 2010, p. 46.
29 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 46.
30 Wilson Cook, *Report – Envestra (Qld*), December 2010, p. 46.

arrangement period, that is, $17 million ($2010–11). It also brings Envestra closer to the mean derived by Wilson Cook from the distributor comparative data contained in the Marksman report.[31] The AER considers that this adjustment would produce a forecast that is arrived at on a reasonable basis, producing the best forecast possible in the circumstances consistent with r. 74 of the NGR, and lead to expenditure that is efficient and consistent with r. 91 of the NGR.

The amendments required to be made to Envestra's proposed base year roll forward forecasts are set out in table 8.3.

Table 8.3: AER amendments to Envestra's base year roll forward ($m, 2009-10)

	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Adjustment (%)	5.1	7.7	10.4	13.1	16.0	
Operating & maintenance	0.7	1.1	1.4	1.9	2.3	7.3
Administration & general	0.2	0.3	0.4	0.5	0.6	1.9
Full retail contestability	0.1	0.1	0.1	0.1	0.2	0.5
Total adjustment	0.9	1.4	1.9	2.5	3.1	9.7

8.6.2 Roll forward forecasts

Envestra has forecast its 'administration and general' and its 'operating and maintenance costs' using the roll forward method.[32] The AER accepts the advice of Wilson Cook that Envestra's application of cost escalators to roll these costs forward is appropriate, having reviewed the applied proportions of labour and materials.[33] However, the AER has itself separately considered the actual cost escalators applied by Envestra and considers that these should not be accepted as they have not been arrived at on a reasonable basis and for this reason they cannot provide for the best forecast in the circumstances.[34]

Further, and in relation to Envestra's proposed operating and maintenance opex, the AER considers that the proposal for opex related to Envestra's Network Management Fee within its operating and management agreement with the APA Group is not consistent with the NGR and NGL. As such the AER considers that these costs need to be removed from the opex forecast for the access arrangement period.

31 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 46.
32 Envestra, *Qld access arrangement information*, October 2010, p. 73.
33 Wilson Cook, *Report – Envestra (Qld*), December 2010, p. 47.
34 NGR, r. 74(2).

8.6.2.1 Outsourcing and margins

Envestra outsources its network operating activities to the APA Group under its operating and management agreement (OMA 2007).[35] Envestra makes a number of payments to the APA Group under the OMA, including:[36]

- re-imbursement of reasonable costs incurred by the APA Group
- a network management fee (NMF)—which includes a cost recovery component, a margin and an incentive payment
- incentive payments—one for opex, based on per GJ reductions in opex, and one for capex, based on reductions in capex associated with new connections.[37]

Envestra proposed that the NMF be set at three per cent of total revenue derived by Envestra across its networks, totalling [c-i-c] million ($2010-11) for the access arrangement period and incorporated into Envestra's opex forecast. No incentive payment is proposed for the access arrangement period.[38]

In submitting that the costs incurred under the OMA are consistent with the NGR, Envestra advanced the following rationale:[39]

- the relevant consideration under the NGR is whether the expenditure is likely to lower overall costs compared to alternative arrangements, that is, in-house service provision. Having regard to r. 91 of the NGR, Envestra submitted that it does not need to show that expenditure is in fact the lowest sustainable cost achievable.
- outsourcing via the OMA enables Envestra to obtain significant scale and scope efficiencies
- were it not to pay the NMF, Envestra would not be able to access these efficiencies, with the alternative being to undertake all operating activities in-house, at greater cost.

In support of its rationale Envestra submitted reports by:

- KPMG (peer reviewed by Worley Parsons[40]) that compares OMA expenditure with that which would be incurred were Envestra to perform the services in-house[41].

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35 Envestra, *Qld access arrangement information*, October 2010, p. 44.
36 Envestra, *Qld access arrangement information*, October 2010, p. 46.
37 For the access arrangement period, Envestra is not proposing to include expenditure associated with incentive payments associated. Envestra, *Email AER.EU.07*, November 2010.
38 Envestra, *Qld access arrangement information*, October 2010, p. 46; and, Envestra, *Email AER.EU.07*, November 2010.
39 Envestra, *Qld access arrangement information*, October 2010, pp. 44–57.
40 Envestra, *Qld access arrangement information - Attachment 5-6: Worley Parsons - The cost of gas distribution service – Review*, October 2010 pp. 1–20.
41 Envestra, *Qld access arrangement information - Attachment 5-6: KPMG – The cost of gas distribution service when capabilities are retained internally*, October 2010, pp. 1–180.

- Marksman and Economic Insights, benchmarking Envestra's costs and productivity, suggesting that Envestra's overall expenditure compares well with other gas businesses and that its overall expenditure and therefore the OMA and NMF is efficient.[42]

- NERA Consulting, which concludes that Envestra's NMF compares well with other margins in comparable industries.[43]

AER's consideration

Envestra's opex and capex forecasts include expenditures for activities outsourced to the APA Group. In terms of opex, Envestra's access arrangement proposal also includes expenditures to cover an above cost margin which Envestra submits is required to access the outsourced activities.

A service provider's decision to outsource or provide services in-house is a matter for a service provider to evaluate taking into consideration the relevant potential efficiencies. The AER recognises that there is a body of economic literature that in some cases supports outsourcing as being efficient.[44] Where significant economies of scale, scope and low transaction costs exist, firms such as Envestra might well find it more efficient to outsource particular operational activities to a much larger firm such as the APA Group. The literature indicates that in such situations, the decision to outsource not only allows the contractor to perform the outsourced activities more efficiently, but allows the firm to obtain efficiencies from specialising in what it does best.[45] In support of its proposal Envestra has also submitted evidence, including affidavits from senior management, outlining the range of efficiencies that it asserts it receives by outsourcing to the APA Group.[46]

The AER is concerned only with the consistency of expenditures incurred via this outsourcing with the NGR and NGL. The AER must have regard to whether proposed expenditure is 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 as required under r. 91 of the NGR. In response to the latter part of this requirement, the AER does not agree with Envestra's claim that the passage "achieve the lowest sustainable cost" should be interpreted as a form of best endeavours rather than an absolute requirement.

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42 Envestra, *Qld access arrangement information - Attachment 5-8: Marksman Consulting Services – Gas distributor benchmarking report Envestra South Australia and Queensland*, October 2010, pp. 1–33; and, Envestra, *Qld access arrangement information - Attachment 5-7: Economic insights – The productivity performance of Envestra's South Australian and Queensland Gas distribution systems*, October 2010, pp. 1–49.

43 Envestra, *Qld access arrangement information - Attachment 5-9: NERA – Benchmark study of contractor profit margins*, October 2010, pp. 1–47.

44 Coase, R.H., *The nature of the firm*, Economica, 1937, pp.386-405; Williamson, O.E., *Markets and Hierarchies*, Free Press 1975; *the economic institutions of Capitalism*, Free Press, 1985; *Transaction Cost Economics*, in Holstrom and Tirole, 1989, Handbook for Industrial Organisation, Ch.3, p. 135.

45 Prahalad, C.K. and Hamel, G, *The core competence of the corporation*, Harvard Business Review (v. 68, no. 3), 1990, pp. 79–91.

46 Envestra, *Qld access arrangement information*, October 2010, pp. 54–55; and, *Qld access arrangement information – Attachment 5-2: Affidavit of John Ferguson*, October 2010.

Where outsourcing is obtained through competitive market processes, the AER is able to presume that the price paid for such services is efficient. However, where this is not the case, particularly where services are accessed via non-arms length transactions, the AER cannot assume that prices within such agreements are efficient. The AER considers that such circumstances might influence a service provider to artificially inflate expenditures, particularly via the addition of profits/margins on top of expenditures for pure direct and indirect cost recovery.[47]

To assess the consistency of Envestra's proposed NMF with these requirements, the AER has applied the conceptual framework set out in the AER's Victorian electricity distribution decision.[48] This multi-step framework investigates the circumstances surrounding the manner in which the contract was entered into, and then, if required, the economic rationale behind the payments within this contract.[49]

Given the AER's concerns with contracts sourced on a non-competitive basis, the AER considers it necessary to investigate the circumstances in which such contracts are sourced and the relationship between the contractor and the service provider. To this end, the AER's assessment begins with the first step of this framework, a presumption threshold test. By investigating matters of potential concern, the test does not replace the NGR criteria but rather assists the AER in determining whether such contracts and the payments therein are consistent with the NGR, and in particular r. 91.

Step 1 - Presumption threshold test

The AER considered whether Envestra had an incentive to agree to non-arms length terms at the time the contract (that is, the OMA) was negotiated. The notion that a test be applied to investigate circumstances which could lead to incentives for artificially inflated prices has not only been accepted but also proposed previously by consultants NERA.[50]

Circumstances in which the AER considered there might be an incentive to agree to non-arms length terms include where:[51]

- the outsourcing is with a related party;
- the outsourcing contract is not determined independently from the negotiations of some other contract or agreement; and
- some other side payment or benefit is conferred to the service provider in exchange for accepting an artificially inflated price.

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47 AER, *Victorian Electricity Distribution Network Service Providers – Final decision 2011-2015*, October 2010 p. 150.

48 AER, *Victorian Final decision 2011-2015*, October 2010, p. 152.

49 A detailed description of the steps within this conceptual framework is set out in the AER's decision on the Victorian electricity distribution businesses. AER, *Victorian Final Decision 2011-2015*, October 2010, p. 152.

50 These comments were contained in a report commissioned by Multinet as part of its gas access arrangement review (2008-12) by the Essential Service Commission of Victoria. NERA, *Treatment of outsourcing arrangements – Multinet gas distribution*, October 2007, pp. 34–40.

51 AER, *Victorian Final decision 2011-2015*, October 2010, p. 164.

The APA Group is the largest shareholder in Envestra, owning a significant interest of 30.6 per cent, with the Cheung Kong Infrastructure (CKI) group being the second largest shareholder with 19.97 per cent.[52] These ownership levels afford both groups a presence on the board of Envestra. Despite Envestra's submission that the OMA is managed in an independent manner and subject to strict management protocols[53], the APA Group is a party related to Envestra. The AER is cautious that such situations might minimise incentives to reduce the cost of the outsourcing, given that the value of the contract charge has minimal effect due to ownership interests.[54] The AER acknowledges that the CKI group's ownership level and presence on the board of Envestra may counter balance the possible influence that the APA Group can exert over Envestra.

The AER is also aware that, at the time the APA Group became the outsource service provider to Envestra, it was in the process of acquiring from Origin Energy a 17 per cent equity interest in Envestra.[55] The AER considers that in circumstances where an outsourcing contract is not determined independently from the negotiations for some other arrangement, then a service provider may not have an incentive to minimise the cost of the outsourcing contract. This is because the price that service provider is willing to pay under the outsourcing contract will depend on the outcome of the second arrangement.[56]

Similarly, the 1997 divesture of the Envestra network by Boral (later, Origin) and the agreement under which Boral's subsidiary, Boral Energy Asset Management (BEAM) (later, Origin Energy Asset Management, OEAM) became the outsource operations provider to Envestra, occurred as part of the same broader transaction. Under such circumstances, it is not possible to presume that the contract reflected arms length terms.

Given the simultaneous nature of these transactions in 1997 and then in 2007, and significantly, given that the agreement between Envestra and the APA Group was not the result of a competitive open tender process, the AER considers that it cannot presume that the terms of the agreement are efficient. The AER considers that the agreement does not pass the presumption threshold. However, this does not mean that the AER considers that the expenditures therein should not be recovered, but rather that more detailed scrutiny of the merits behind the expenditures is required.

Step 2 – Economic rationale

The AER questions the economic rationale behind an above-cost margin and whether this is consistent with the requirements of r. 91 of the NGR and the national gas objective.[57] Such margins in effect allow Envestra and the APA Group to withhold from consumers, the benefits of the efficiencies derived from their outsourcing agreement for an indefinite time which the AER considers contradicts the intention of the regulatory framework.

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52 Envestra, *SA access arrangement information*, October 2010, pp. 48–51.
53 Envestra, *SA access arrangement information*, October 2010, pp. 53–55.
54 AER, *Victorian Final decision 2011-2015*, October 2010, p. 164.
55 Envestra, *Qld access arrangement information*, October 2010, p. 52.
56 AER, *Victorian final decision 2011-2015*, p. 165.
57 Section 23 of the NGL.

The regulatory framework's intent is such that monopoly service providers are provided with incentives to ensure that price outcomes are consistent with what would be expected to be realised in a workably competitive market. This intention was noted by NERA, in its overview of the decision by the Supreme Court of Western Australia in the matter *Re Michael*, and indeed by the AEMC in its final rule determination in relation to chapter 6A of the NER.[58]

Consistent with this intent, the AER has reviewed the prudence and efficiency of Envestra's proposed opex for an access arrangement period. Should Envestra achieve efficiencies of any form, whether through outsourcing or any other administrative, operational or technological improvement, over the course of the access arrangement period it is permitted to retain the benefits of these efficiencies, but only for a period of time. The earlier access arrangement period provided for an opex efficiency incentive mechanism. For the access arrangement period an efficiency mechanism would continue to reward Envestra for any historical efficiencies obtained, including via its outsourcing arrangement, and allow it to retain associated benefits for a period of time.[59]

The scheme operates such that, consistent with the AER's EBSS in electricity, after 6 years from the time in which the efficiencies are realised, the service provider is required to share these benefits with consumers. At the commencement of a new access arrangement period, expenditures realised in the earlier period are used as the basis on which to forecast expenditures.[60] This process attempts to replicate what would be expected to occur in a competitive market, where premiums cannot be charged for indefinite periods of time, unless one assumes continuous service improvements.[61]

The AER considers that to allow Envestra and the APA Group to indefinitely withhold from consumers the benefits of efficiencies they derive, through additional costs for margins is at odds with the intention of the regulatory framework to replicate a workably competitive market. For this reason, such expenditures would generally not be characterised as consistent with the lowest sustainable cost, as set out in r. 91 of the NGR, or for that matter, efficient. Neither would this be in the long term interests of consumers with respect to price, as set out in the national gas objective.[62]

However, unlike its South Australian network, Envestra's access arrangement for the earlier access arrangement period in Queensland did not contain an efficiency carryover mechanism for any expenditure. Therefore, while maintaining concerns over efficiency retention, the AER acknowledges that this argument does not hold

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58 NERA, *Treatment of outsourcing arrangements – Multinet gas distribution partnership*, October 2007, pp. 5–10; Re: Michael, ex parte EPIC Energy (WA) Nominees Pty Ltd & Anor (2002) WASCA 231, August 2002 and, AEMC, *Rule Determination – National electricity amendment (Economic regulation of transmission services) rule 2006 No.18*, November 2006, p. 93.

59 As set out in chapter 7, while the AER's draft decision is to not approve the carryover mechanism as proposed by Envestra, the AER considers such a mechanism can be approved subsequent to Envestra undertaking required amendments.

60 This process is generally referred to as the 'revealed cost method'.

61 Consistent with economic theory, a firm's ability to charge above market premiums can only be sustained by delivering continuous improvements in the product or service that it provides to a market.

62 NGL, s. 23.

with regard to Envestra's Queensland network and that a case for inclusion of some compensation is appropriate. As no such scheme was in place, the efficiency gains which Envestra submits have resulted from the economies of scale and scope accessible under its OMA with the APA Group, have not been retained by Envestra for any period of time. The AER came to a similar conclusion with regards to alternative control services in its Victorian electricity distribution decisions.[63]

For this reason, the AER under r. 71 of the NGR, has inferred that due to the lack of an operative incentive mechanism in the earlier access arrangement period, Envestra's proposal for expenditure to cover its NMF is compliant with r. 91 of the NGR, and should be allowed in the forecast opex.

While the AER's draft decision is to not approve the carryover mechanism as proposed by Envestra, the AER considers such a mechanism can be approved subsequent to Envestra undertaking required amendments. Therefore, for the access arrangement period, an efficiency mechanism will be in place to reward Envestra for any efficiencies obtained, including via its outsourcing arrangement, and allow it to retain associated benefits for a suitable period of time. As such, at the time of the next access arrangement review, the AER intends to revisit the legitimacy of the NMF and its recoverability under the NGR and NGL.

AER conclusion

The AER maintains its general concerns regarding the recovery of the NMF, where such margins permit a service provider to indefinitely withhold from consumers the benefits of derived efficiencies. However, the AER accepts that as Envestra has not operated under an efficiency incentive mechanism for opex in the earlier access arrangement period, it has not been provided with an opportunity to retain the benefits of efficiencies derived from its outsourcing for any period of time. For this reason, the AER considers it is appropriate to include the expenditures associated with the proposed NMF in Envestra's forecast opex, having under r. 71 of the NGR inferred that it is consistent with r. 91 of the NGR.

8.6.2.2 Growth escalators

Envestra proposed adjustments to its level of opex over the access arrangement period to account for changes in forecast growth in the size of the operation (that is, incremental growth escalators). It submitted that while the majority of its opex is fixed in the short term, an incremental cost of $38.57 per additional customer will be required.[64]

Wilson Cook noted that the sum estimated by Envestra included $17.60 for periodic meter changes (PMC) costs, which it considered to be a capex item. Wilson Cook recommended that the PMC costs therefore be removed from the calculation.[65]

Wilson Cook also noted that costs associated with operations and maintenance were double the unit costs that Envestra incurs in South Australia. Wilson Cook accepted that there would be additional costs but recommended that the same efficiency

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63 AER, *Victorian final decision 2011-2015*, p. 225.
64 Envestra, *Qld Access arrangement information*, October 2010, p.84.
65 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p.54.

adjustment be applied to the incremental growth expenditure that was applied to the base year expenditure.

The AER considers that Envestra's growth escalation needs to be amended to remove the inclusion of the PMC capex costs and to apply the efficiency adjustment of 2.5 per cent to incremental growth. The result of the AER's amendment to Envestra's growth escalation is set out in table 8.4.

Table 8.4: AER conclusion on incremental growth escalator ($m, $2010–11)

Incremental growth escalator	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Envestra proposed	**0.10**	**0.21**	**0.31**	**0.51**	**0.62**	**1.74**
Amendment to PMC	0.05	0.10	0.16	0.22	0.27	0.79
Efficiency adjustment	0.00	0.01	0.02	0.03	0.05	0.11
Total AER amendment	**-0.05**	**-0.11**	**-0.18**	**-0.25**	**-0.32**	**-0.91**

8.6.2.3 Input cost escalators

Envestra engaged BIS Shrapnel to produce forecasts of real cost escalators. Envestra proposes to apply three types of labour cost escalators and two for the costs of materials, as set out in table 8.5. All of these escalators have been adopted from BIS Shrapnel's forecasts.

Envestra's proposed approach to their application has been to apply the Electricity Gas and Water (EGW) labour, general labour and network materials escalators to its opex items, based on submitted application rates for each real cost escalator.

Table 8.5: Envestra's proposed real cost escalators (per cent)[66]

Escalator category	Escalator	2011–12	2012–13	2013–14	2014–15	2015–16
Labour	EGW Labour	1.6	1.7	2.3	2.5	2.1
	General Labour	1.2	2.7	3.3	3.0	2.3
	Construction (capex only)	1.8	2.1	3.9	3.2	2.0
Materials	Network materials	2.5	1.5	-0.2	-3.1	-2.4
	General materials	0	0	0	0	0

The AER has had regard both to Envestra's method of deriving input cost escalation forecasts (including the data sources and the index measures) and the method of applying these escalators to its opex and capex, and whether these met the NGR requirements. The AER considers that for it to be satisfied that forecast opex or capex

[66] Envestra, *Qld access arrangement information*, October 2010, p. 85.

meet the requirements of r. 91 and r. 79(1) of the NGR, any real cost escalation must be forecast on a reasonable basis, represent the best possible forecast or estimate in the circumstances and be supported by a statement of the basis of the forecast.[67]

The NGR do not require that real cost escalation be applied to a business. Under the control mechanism applied to Envestra, X-factor elements reflect the path of real costs and CPI is used to transform real costs into nominal values. Where the AER does not accept real cost escalation, input costs are escalated in line with CPI under the control mechanism.

The AER has reviewed Envestra's proposed method of applying escalators and the escalators themselves for both labour costs and materials costs.

Application of escalators

Envestra proposed applying its escalators based on its derived cost allocations for each opex and capex category. It submitted that these allocations were calculated using historical averages where available, and otherwise by using reasonable estimates.[68]

Wilson Cook reviewed Envestra's method for deriving cost escalator application rates and considered the rates to be reasonable for both opex and capex, having reviewed the applied proportions of labour and materials.[69] The AER accepts Wilson Cook's advice that Envestra's proposed method for cost escalator application is reasonable.

Labour cost escalators

The AER does not accept that Envestra's proposed labour cost escalators allow for a forecast to be arrived at on a reasonable basis, as required under r. 74(2)(a) of the NGR. The AER does not agree with the method chosen by Envestra, in particular the index measure used to forecast labour price growth and the method's exclusion of productivity effects on escalation.

Index measure

The AER considers that the Labour Price Index (LPI) is the appropriate measure on which to forecast labour prices for the purpose of real cost escalation. The AER's reasons for this were set out in detail in its decision for the Victorian electricity distribution businesses.[70] In contrast, Envestra has proposed escalators based on the Average Weekly Ordinary Time Earnings (AWOTE) measure of wage growth. The basic construction and purpose of the two indexes are critical in determining their appropriateness for use in forecasting labour cost escalators, as noted in both the Victorian electricity distribution final decision and in several reports prepared by Access Economics.[71]

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67 r.74 of the NGR.

68 Envestra, *Qld access arrangement information*, October 2010, p. 85.

69 Wilson Cook, *Report – Envestra Qld*, December 2010, pp. 33 and 39.

70 AER, *Victorian Final Decision 2011-2015 - Appendix K*, October 2010, p. 246.

71 Access Economics, *Forecast growth in labour costs – Queensland and South Australia*, November 2010, p.86-91., and, Access Economics, *Forecast growth in labour costs, update of March 2010 report*, September 2010, pp.74-79., and, AER, *Victorian Final Decision 2011-2015*, Appendix K, October 2010, pp. 245–248.

The AWOTE index is designed to reflect the average wages earned by a worker in a segment of the economy, in this case by state and by sector. As noted by BIS Shrapnel, the primary difference between AWOTE and the LPI is the influence of compositional shifts in employment.[72] Changes in the composition of the workforce in terms of seniority, occupations within an industry sector or gender distribution are all reflected in the AWOTE index. By comparison the LPI reflects the growth in the price of labour based on costs of fixed levels of 'skill' and is unaffected by compositional shifts. The AER considers that the sensitivity of AWOTE to compositional effects is problematic in the context of forecasting labour cost escalators—as can be seen from figure 7.

Figure 8.7: Growth in AWOTE and LPI, Australian utilities sector[73]

Figure 7 sets out the progression of LPI and AWOTE in the national EGW sector over time. The volatility shown in figure 8.7 is likely to be exaggerated even further at the state-sectoral level as the sample sizes in the surveyed businesses decrease. In its report, Access Economics noted that the analysis of compositional shifts is sometimes relevant when analysing the wage progression of the whole Australian economy.[74] However, at this level of disaggregation, the AER considers the benefits from this analysis are clearly outweighed by the volatile series it produces. In highlighting the marked deviation between the two indexes in 2009–10. Access Economics stated: [75]

> It is therefore worth calculating the degree of compositional change that would explain the current divergence in the AWOTE and LPI assessments of the pace of wage growth in the utilities sector over the past year – that is, generating 10.7% growth instead of 4.4% growth.
>
> Say the compositional change that other commentators are concerned about involving firing 1% of the workforce, and then hiring replacements. Further, for the sake of simplicity of the example, assume that the average wage in the sector is $100,000 a year.

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72 BIS Shrapnel, *Real Cost Escalation Forecasts to 2015-16 – Queensland and South Australia*, August 2010, p.A.1.

73 ABS and AER analysis.

74 Access Economics, *Forecast growth in labour costs (Qld & SA)*, November 2010, p. 89.

75 Access Economics, *Forecast growth in labour costs (Qld & SA)*, November 2010, pp. 88–89.

> To get a gap in wage growth equal to that evident currently (10.7% growth instead of 4.4% growth) as a result of such compositional change, then the past year would have to have seen 1% of the workforce (some 1,300 people) earning only half the average ($50,000) being sacked, with their replacements earning an average of almost fourteen times that ($680,000).

The AER accepts the advice of Access Economics that using AWOTE is unlikely to provide a reasonable reflection of the true movements in the price of labour faced by Envestra. Further, the AER considers that the pronounced volatility associated with the AWOTE is unlikely to represent a reasonable basis for a forecast, or to produce the best forecast possible in the circumstances. As such, the AER considers that Envestra's forecast is not representative of the efficient costs it is likely to face, and the AER is not satisfied that the labour cost escalators meet the requirements of r. 74 of the NGR, and by extension, r. 79(1) and r. 91 of the NGR.

Productivity effects

In line with BIS Shrapnel and Access Economics, the AER agrees that productivity is a key driver of relative wages.[76] However, BIS Shrapnel did not explicitly adjust for the effect of productivity on per unit of output labour costs. Access Economics accounts for the effect of productivity in its wage forecasting model by assuming that more productive workers will be compensated with higher wages.[77] It also accounts for productivity effects on the cost of labour per unit of output. To do so, Access Economics applies post-forecast adjustments, to reflect the assumption that a more productive workforce will produce the same unit of output of labour at a lower cost.

The AER is of the view that the assumptions made by Access Economics reasonably reflect the offsetting impacts of productivity on wages and overall unit costs of labour. The AER considers that Access Economics' forecasts of real state-sectoral LPI growth with productivity adjustments are arrived at on a reasonable basis and represent the best forecast possible in the circumstances.

Disaggregation and application of labour cost escalators

The AER accepts Envestra's proposal to apply real cost escalation to disaggregated labour expenditure categories. Envestra has proposed separate forecast indexes to escalate EGW labour costs, general labour costs and construction labour costs. This is consistent with previous decisions approved by the AER.[78] The AER considers that this level of disaggregation produces a more accurate estimation of real labour cost growth, considering the diversity of occupations within Envestra's pool of labour.

Envestra stated that the types of workers included in the 'general labour' category were 'mainly clerical-administration, professionals and managerial staff providing mainly administration and corporate services'.[79] The 'general labour' escalator forecasts labour price growth in the Property and Business Services (PBS) sector

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76 BIS Shrapnel, *Real Cost Escalation Forecasts to 2015-16 – Queensland & South Australia*, August 2010, p. 13; and, Access Economics, *Forecast growth in labour costs (Qld & SA)*, November 2010, p. 103.

77 Access Economics, *Forecast growth in labour costs (Qld & SA)*, November 2010, p. 103.

78 AER, *Victorian Final Decision 2011-2015 - Appendix K*, October 2010, p.255; and AER, *Queensland Final Decision 2010-2015*, p. 413.

79 Envestra, *Qld Access Arrangement Information*, October 2010, p.85.

using the ANSIC 1993 classification scheme.[80] However, Access Economics provided forecasts based on the 'administrative and support services' (ASS) ANZSIC 2006 industry classification. The AER used a weighted average of EGW labour and ASS sector labour to forecast the rate of internal labour cost escalation in its Victorian electricity decisions.[81] The AER notes that Envestra has provided detailed separate weightings for its EGW labour, and general labour. The AER considers the ASS classification reasonably reflects the type of labour in Envestra's 'general labour' workforce.

Materials cost escalators

Envestra's proposed 'network materials' cost escalator is similar to the 'polyethylene' escalator developed by the Competition Economics Group (CEG) that has to date not been accepted by the AER. Such escalators were proposed by Jemena, Country Energy and Actew AGL in their current period access arrangement reviews.[82] [83] The AER did not accept the proposed plastics escalators in any of these reviews.[84] The AER understands that BIS Shrapnel:

1. derived a historical relationship between crude oil prices and thermoplastic resin prices, both converted into $AUD
2. created a weighted average of network pipe prices faced by Envestra, from data provided by Envestra
3. derived a historical relationship between crude oil, thermoplastic resin and network pipe prices faced by Envestra
4. used forecast movements in crude oil and thermoplastic resin prices to forecast movements in plastic prices, using the relationship determined in 3.

Under r. 74(2) of the NGR, the AER must be satisfied that forecasts are arrived at on a reasonable basis, and are the best forecast possible in the circumstances. The AER considers that the BIS Shrapnel report provided insufficient detail on the methodology, approach to, and computation of the above steps. The report sets out the general underlying relationships but does not demonstrate whether the variables were regressed, which variables were assessed or included, or any quantitative assessment of the models' predictive success. Due to this lack of detail and substantiation in the BIS Shrapnel report, the AER considers that the forecast based on the proposed 'network materials escalator' does not meet the requirements of rule 74(2). In addition the AER considers that a reasonable alternative method of forecasting network materials does not exist, and therefore considers network materials expenditure should

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80 BIS Shrapnel, *Real Cost Escalation Forecasts to 2015-16 – Queensland & South Australia*, August 2010, p. 1.

81 AER, *Victorian Final Decision 2011-2015 - Appendix K*, October 2010, p. 251.

82 For example: For example: CEG, *Escalation factors affecting expenditure forecasts, A report for ActewAGL*, March 2010, pp. 10–12.

83 JGN, *Letter to the AER, JGN access arrangement revision proposal: JGN further response to the draft decision, 28 April 2010, attachment 2, JGN, Plastics cost escalators*, April 2010, pp. 2–3 (public version); and Country Energy, *Access arrangement information, appendix F: CEG, Escalation factors affecting expenditure forecasts, a report for Country Energy*, June 2009, pp. 17–18; and ActewAGL, *Revised access arrangement information*, January 2010, pp. 25–26.

84 AER, *JGN Final decision*, June 2010, p. 85; and AER, *Country Energy Draft decision*, November 2009, p.28.; and, AER, *ActewAGL Final decision*, March 2010, p. 26.

not be escalated in real terms. As such, network material input costs will be escalated in line with CPI under the control mechanism.

Envestra proposed zero real cost escalation for all other materials. BIS Shrapnel stated that the general materials escalator included 'a range of items common to most businesses and organisations such as stationary, office furniture, electricity, water, fuel, rent etc'.[85] The AER considers that prices for a diverse basket of goods as described would reasonably be expected to move in line with CPI. The AER notes that CPI is the rate of inflation applied under the control mechanism. As such, the AER accepts Envestra's proposal that no other material input costs should be escalated in real terms.

AER conclusion on input cost escalators.

The AER considers that Envestra's proposed real cost escalators have not been estimated on a reasonable basis nor produce the best forecast in the circumstances faced by Envestra. In particular, the AER considers:

- the labour cost escalators are not based on the most appropriate method—it uses the AWOTE index rather than the LPI index, and fails to effectively account for the effects of productivity on the cost of labour
- insufficient substantiation has been provided by Envestra to suggest that its network materials escalator produces an accurate reflection of materials costs.

The AER does not approve of Envestra's real cost escalators and requires that amendments be made such that:

- the labour cost escalators be replaced with Access Economics forecast
- the "network materials" escalator be removed.

The results of these amendments are set out in table 8.6

Table 8.6: AER's conclusion on Envestra's real cost escalators (per cent)

Escalator category	Escalator	2011–12	2012–13	2013–14	2014–15	2015–16
Labour	EGW Labour	-0.3	0.1	0.2	-0.8	-1.6
	General Labour	-1.1	-0.7	-0.2	-1.0	-1.7
	Construction - capex only	0.7	0.6	0.5	-0.4	-1.2
Materials	Network materials	0	0	0	0	0
	General materials	0	0	0	0	0

[85] BIS Shrapnel, *Real Cost Escalation Forecasts to 2015-16 – Queensland and South Australia*, August 2010, p. 43.

8.6.3 Specific year by year forecasts

8.6.3.1 Network development

The AER does not accept that sufficient evidence has been provided by Envestra to suggest that particular components of Envestra's forecast network development opex have been estimated on a reasonable basis as required by r. 74(2)(a). The AER requires that this program be amended.

Envestra proposed a total network development program of $8.8 million ($2010–11) over the access arrangement period. The overall program comprises of two sub-programs each with various distinct projects, including:[86]

1. operations support ($4.1 million, $2010–11) – expenditure to physically manage the connection of a new customer to the network
2. market development ($4.3 million, $2010–11) – incentive payments, advertising, website and IT management, development and deployment of new technologies and other marketing operating costs.

Envestra submitted that the program is necessary to attempt to reverse the declining average residential consumption of natural gas in Queensland, and also increase customer numbers.[87]

AER's consideration

Envestra's proposed network development expenditure ($8.8 million, $2010-11) represents a considerable step increase in costs when considered alongside its previous actual expenditure of $5.3 million ($2010–11) and its allowed expenditure of $5.1 million ($2010–11). In its submission to the AER, Origin raised concerns about the level and subsequent merits of this expenditure, particularly for a distribution business.[88]

While the AER acknowledges that in general, some forms of market development can be experimental or prospective in nature, expenditure proposals need to be adequately justified in terms of their expected efficiency. In particular, proposals for projects involving forecasts of uptake numbers or estimates as to required incentive payments need to be reasonably based on sound economic judgement. The AER has had regard to these matters in assessing the particular components of Envestra's network development program for consistency with r. 74 and r. 91 of the NGR.

Wilson Cook reviewed the operations and support component and noted that the expenditure is predominantly related to the labour involved in the planning of new connections. Wilson Cook considered this expenditure was consistent with previous, only escalation was applied, and it is prudent and efficient. Based on Wilson Cook's

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86 Envestra, *Qld access arrangement information – Attachment 6-5 – Network Development Plan*, October 2010, p. 25.
87 Envestra, *Attachment 6-5*, October 2010, p. 1.
88 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, pp. 2–3.

assessment, the AER accepts that the $4.1m in operations support expenditure be accepted as being consistent with r. 74 and r. 91 of the NGR.[89]

The market development component was not specifically a technical engineering matter and was reviewed by the AER. The AER identifies concerns with three components of Envestra's proposed market development program. These are considered in turn.

Incentive payments
Envestra proposed to spend $1.1 million ($2009–10) to provide an incentive of [c-i-c] to the uptake of gas hot water systems in Queensland. The program and its positive business case has been linked to an uptake number of 440 additional units per year, submitted as being based on the results of previous programs in central heater units and hot water units in 2005 and 2006.[90] The AER reviewed the uptake number forecast for this program and does not find sufficient evidence that the program will lead to an uptake of 440 units per year. It is not evident how Envestra has extrapolated the results of previous programs to arrive at its submitted figure. As such, the AER considers that contrary to r. 74(2) Envestra has not demonstrated that the estimate has been arrived at on a reasonable basis nor represents the best estimate.

Further, the AER does not consider that Envestra has adequately explained the level of incentive payment that is required to induce uptake. Such an assessment necessarily needs to demonstrate how the level of incentive payment is economically efficient and consistent with the lowest sustainable cost, as required under r. 91 of the NGR.

Website & IT management
Envestra proposed $0.3 million ($2009–10) in total over the access arrangement period to develop a website to provide a range of information, including: promotion of natural gas; informing customers on how to connect and arrange for appliance installation; and, collating market research information.[91]

While in general, such programs may have some merits, the AER considers that Envestra has not submitted sufficient information to indicate if the website is to be in addition to Envestra's current website, and if so, why the proposed features cannot be accommodated in its current website. Further, the AER is concerned that expenditure on website development for the purpose of market development could be double counting on other information technology related costs that are already included in Envestra's base year costs. A case has not been set out as to how the proposed expenditures differ and are in addition to those in the base year, and that those in the base year would still be required. As such, the AER considers that the proposed expenditure for website and IT management is neither prudent nor efficient as required under r. 91 of the NGR.

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89 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 48.
90 Envestra, *Attachment 6-5*, October 2010, p. 26.
91 Envestra, *Attachment 6-5*, October 2010, p. 27.

Development & deployment
Envestra proposed $1.3 million ($2009–10) over the access arrangement period to establish a role in facilitating the deployment of evolving new technologies in the Queensland market.[92]

The AER is generally supportive of efforts to develop the market for pipeline services where these can lead to increases in demand that in effect disperse the individual impact of tariffs to recover network costs. While accepting that such efforts can have lagged effects, the AER needs to be satisfied that the expenditures are efficient and prudent. The activities proposed within Envestra's development and deployment project appear to go some way beyond market promotion activities and into activities of a more developmental nature. Origin in its submission to the AER, has questioned the reasonableness of Envestra's proposed network development expenditure. It submitted that it was not aware of any new gas technologies in the medium term that could lead to an increase in gas consumption in homes likely to have below average consumption. It further considered that it was not apparent that Envestra as the gas distributor is best placed to develop the market for the relevant technologies.[93]

The AER has considered these concerns in the context of the NGR and NGL requirements and with regard to the business case advanced by Envestra. The AER considers that Envestra has not sufficiently demonstrated how the efficiency of this project has been assessed, nor the resulting estimates of efficiency improvements. Further, while the benefits have loosely been described in the context of mitigating falling average consumption in Queensland, the AER cannot find evidence to suggest that a link has been advanced by Envestra as to the likely impact of these programs on its demand forecast.

As such, the AER considers that there is insufficient evidence to support the proposed expenditure on development and deployment as efficient under the terms set out in r. 91 of the NGR.

8.6.3.2 Unaccounted for gas

The AER does not accept that Envestra's forecast of UAG volume is arrived at on a reasonable basis and is the best forecast in the circumstances as required under r. 74(2) of the NGR. The AER considers that the forecast should reflect a lower volume of UAG across the access arrangement period. Further, the AER considers that Envestra has not established a reasonable basis for its gas price assumption within the UAG forecast.

UAG is defined by Envestra as the difference between the amount of gas injected into the network and the amount billed to customers.[94] Envestra submitted that an estimated 80 per cent of UAG volume is associated with leaking cast iron and unprotected steel mains.[95] Envestra proposed a total of $5.9 million ($2009–10) in opex over the access arrangement period in order for it to purchase gas to compensate

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92 Envestra, *Attachment 6-5*, October 2010, pp. 27–28.
93 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, pp. 2–3.
94 Envestra, *Qld access arrangement information*, October 2010, p. 77.
95 Envestra, *Qld access arrangement information*, October 2010, pp. 27–28.

for gas losses in the network.[96] Envestra's forecast is based on certain assumptions as to the forecast price of gas and the likely volume of UAG, as set out in table 8.7.

Table 8.7: Envestra's proposed UAG opex assumptions ($2009–10).[97]

	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Volume (GJ)			[text removed – c-i-c]			
Price ($)			[text removed – c-i-c]			
Total UAG opex ($m)	1.70	1.46	1.20	0.92	0.62	5.89

AER considerations

Envestra's proposed UAG opex represents a substantial increase on its allowed expenditure in the earlier access arrangement period. The AER has reviewed both the volume and price assumptions within this forecast, with Wilson Cook engaged to provide the AER with its engineering advice on the volume.

UAG volume

Wilson Cook was not satisfied that the projected levels of UAG in the access arrangement period were consistent with the declining trends reported by Envestra. Wilson Cook considered that there was not evidence to support a forecast that suggests that the level of UAG in the access arrangement period should be any greater than that which Envestra measured in 2009–10—being 0.6 per cent or 92.3 TJ.[98]

The AER accepts the advice of Wilson Cook that Envestra's forecast UAG volume is not a reasonable estimate given the historical trend, and therefore, given the requirements of r. 74(2)(b), does not approve the volume as proposed by Envestra.[99] The AER requires that Envestra's volume assumption of UAG be amended as set out in table 8.8.

UAG price

Envestra's proposed UAG opex assumes a forecast constant gas price of [c-i-c] for every year of the access arrangement period.[100] Envestra submitted that it has previously contracted for the supply of gas for UAG and that it is in the process of tendering for another similar contract for the access arrangement period. As this process is not complete, Envestra sought the expert advice of the Core Energy Group (Core) to produce a forecast price of gas.[101]

The Core report forecasts a gas price based on a certain type of individual contract with unique and specific characteristics and terms and conditions that it considers

96 Envestra, *Qld access arrangement information*, October 2010, p. 73.
97 Envestra, *Qld access arrangement information: Attachment 6-2 Queensland networks opex forecast – UAFG*, October 2010, p. 1
98 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 48–49.
99 Wilson Cook, *Report – Envestra (Qld)*, December 2010, pp. 48–49.
100 Envestra, *Attachment 6-2 Queensland networks opex forecast – UAFG*, October 2010, p. 1.
101 Envestra, *Attachment 6-2*, October 2010, p. 1.

Envestra would require for the purpose of UAG.[102] Importantly, the forecast contract price is comprised of an estimate as to the cost of gas delivered into Brisbane (that is, a wholesale plus transmission cost), but with additional assumptions as to required contract premiums and retailer margins.[103] The AER has had regard to both of these factors.

Approving premiums on gas prices for the purpose of UAG opex would be inconsistent with the AER's approach to date. In previous gas distribution decisions such as for Jemena Gas Networks and ActewAGL, the businesses have only proposed, and the AER only accepted, a forecast delivered gas price (that is, wholesale plus transmission costs).[104] The AER considers that Envestra has not submitted sufficient evidence to support an alternative approach in these circumstances.

The AER acknowledges the difficulty in sourcing public data on individual contract prices and premiums, but considers that the Core report does not advance sufficient evidence to indicate that the significant premiums and margins proposed are consistent with market practice. These amount to [c-i-c] per cent of the total contract price forecast by Core.[105] Therefore, the AER considers that the forecast is not arrived at on a reasonable basis and is not the best forecast in the circumstances. In addition to not meeting these requirements under r. 74 of the NGR, the AER considers that the resulting UAG opex cannot be determined to be efficient, consistent with r. 91 of the NGR.

Further, the AER notes that Core's estimate of a forecast wholesale delivered gas price into Brisbane of [c-i-c] is substantially higher than other current market forecasts.[106] In a recent report for the Queensland Government Annual Gas Review, McLennan Magasanik Associates (MMA) forecast prices of wholesale delivered gas into Brisbane.[107] These prices, shown in figure 8.8, have been derived on similar assumptions, but produced figures significantly less than those proposed by Envestra. As such, the AER considers that the forecast has not been demonstrated to be arrived at on a reasonable basis and represent the best forecast in the circumstances. Further, the AER considers that the forecast would not achieve the lowest sustainable cost of delivering pipeline services as r. 91 of the NGR requires.

Figure 8.8: Comparative forecasts of wholesale (delivered Brisbane) gas prices ($/GJ)

[figure removed – c-i-c]

The AER requires that Envestra's UAG opex forecast be amended such that it incorporates only a delivered cost, in this case as derived by MMA. The AER requires

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102 Core Energy Group, *Eastern Australia Natural Gas Market – Market overview & price outlook to 2016*, September 2010, p. 35.

103 Core Energy Group, *Market overview & price outlook to 2016*, September 2010, p. 45.

104 AER, *Final decision: Jemena Gas Networks – access arrangement proposal for the NSW gas networks 1 July 2010 – 30 June 2015*, June 2010, p. 275; and AER, *Final decision: Access arrangement proposal ACT, Queanbeyan & Palerang gas distribution network 1 July 2010 – 30 June 2015*, March 2010, p. 85.

105 Core Energy Group, *Market overview & price outlook to 2016*, September 2010, p.45

106 Core Energy Group, *Market overview & price outlook to 2016*, September 2010, p. 45.

107 MMA, *Report to DEEDI: Annual gas market review*, June 2010, p. 63.

that Envestra's proposal be amended such that it incorporates the volume and price assumptions set out in table 8.8.

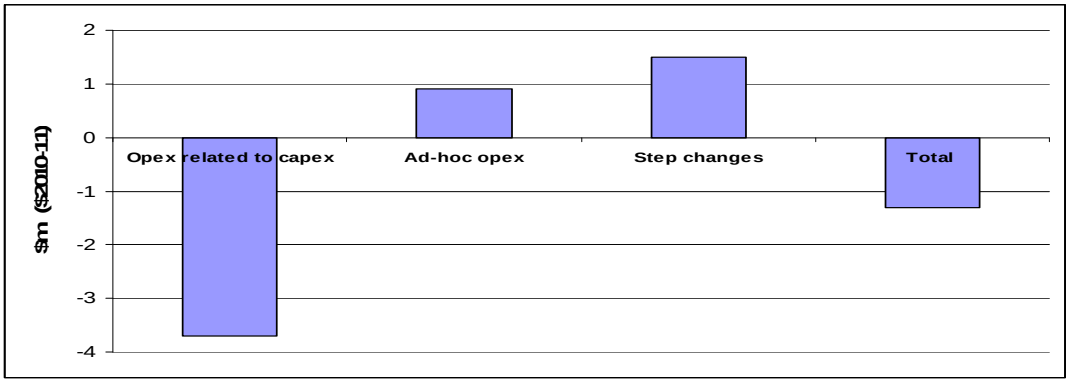
Table 8.8: AER conclusion on UAG ($2009–10)

	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Volume (GJ)			[text removed – c-i-c]			
Price ($)			[text removed – c-i-c]			
Total UAG opex ($m)	0.43	0.47	0.54	0.54	0.55	2.53

8.6.3.3 Non-base year costs

Envestra proposed nine items as being non base year costs. These were proposed as being either opex related to capex, ad-hoc opex, or step changes, in total representing a decrease of one per cent of total opex, or $1.3 million ($2010–11).

Figure 8.9: Envestra's proposed non-base year costs



Envestra submitted that these are required in order to provide services that are not included in the base year.[108] With specific regard to step changes, Envestra stated that they should be justified and therefore considered on a case by case basis and included in the forecast if the cost meets the criteria of r. 91 of the NGR.

The AER agrees with Envestra to the extent that any proposal for opex, whether it be contained in a base year or as a step change, needs to be assessed against the NGR, in particular, r. 91 and r. 74 of the NGR, and s. 24 of the NGL. However, the AER would expect that as Envestra has chosen to apply a base year roll forward method, any expenditures proposed as non base year costs should reflect certain circumstances and allow the AER to determine if they are indeed reasonable additions.

Firstly, as an auditing exercise, the AER needs to assure itself that the expenditures are to reflect changes in costs that are not reflected in the base year. Secondly, with specific regard to step changes, these should relate to exogenous changes in costs associated with either changes in the operating environment, or changes resulting

[108] Envestra, *Qld access arrangement information*, October 2010, pp. 81–84.

from new or modified regulatory obligations. Both of these matters would reflect circumstances in which it is not reasonable to assume that a business's base year expenditures will be reflective of future requirements or pressures.

However, the AER has also considered whether any of Envestra's proposed step changes, that do not have the characteristics of the second point, are otherwise required in order for Envestra to provide pipeline services in a prudent and efficient manner, consistent with the NGR and the NGL.

The AER sought the expert advice of Wilson Cook in relation to whether Envestra would be a prudent service provider acting efficiently with respect to its non base year costs. The AER's considerations of each of the individual business cases for these items against the NGR and NGL, having regard to the advice of its consultant are set out in table 8.10. Overall, the AER considers that six of the nine non base year costs require either amendment or are not approved as being consistent with the NGR. The AER's required amendments are summarised in table 8.9 and detailed in table 8.11.

Table 8.9: AER conclusion on Envestra's non base year costs ($m, $2010-11)

Non base year costs	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Total proposed	0.3	0.6	-0.4	-0.7	-1.1	-1.3
Amendment to opex related to capex	0	-0.11	-0.08	-0.06	0.02	-0.28
Amendment to ad-hoc opex	-0.05	-0.01	-0.01	-0.01	-0.01	-0.09
Amendment to step changes	-0.05	-0.23	-0.25	-0.28	-0.32	-1.16
Total approved	0.20	0.47	-0.58	-1.05	-1.41	-2.83

Table 8.10: AER consideration of Envestra's non-base year costs ($m, $2010-11)

Item of expenditure	Envestra proposal	Wilson Cook recommendation	AER consideration
Opex related to capex			
IT costs - opex associated with the "roadmap" capex project[109]	0.66	Envestra has not demonstrated or quantified the claimed efficiency improvements associated with the project, therefore the expenditure has not been demonstrated to be efficient.[110]	The AER accepts Wilson Cook's advice that Envestra has not demonstrated the expenditure to be efficient as required under r. 91 of the NGR.
Fringe point pressure - maintenance of new equipment to install additional pressure monitoring data loggers[111]	0.02	The costs have been estimated in accordance with established schedules for similar assets. The work is prudent asset management and the expenditures are efficient.[112]	The AER accepts Wilson Cook's recommendation that the work be considered prudent asset management and the expenditure efficient, as required by r. 91 of the NGR.
Leak repair cost saving- reduction to opex associated with leak repairs due to reduction of leaks resulting from the mains replacement program[113]	-4.38	The basis of the calculation is reasonable, but the leak repair savings should be reduced by 8.5 per cent commensurate with the recommended reduction to the mains replacement program. [114]	The AER accepts the basis as reasonable consistent with r. 74(2)(a). However, the AER considered that the mains replacement capex program be reduced. Consistent with this reduction, which represents the best estimate in the circumstances as required by r. 74(2)(b), the associated leak repair savings should be reduced. The AER considers that the leak repair savings be reduced by 8.5 per cent.
Adhoc opex			
Brisbane River crossing inspection - integrity assessment of Brisbane River crossing pipeline[115]		Australian Standard AS2885.3 requires the pipeline MAOP and risk assessment be reviewed every 5 years including an inspection of pipeline integrity. The work is prudent as it was designed to comply with an external obligation. Envestra's response to the	The AER accepts Wilson Cook's recommendation that the expenditure represents a prudent and efficient response to an external obligation and is therefore consistent with r. 91 of the NGR.

109 Envestra, *Qld access arrangement information – Business case Q22*.
110 Wilson Cook, Report – Envestra (Qld), December 2010, p. 52.
111 Envestra, *Qld access arrangement information – Business case Q17*, pp. 1–8.
112 Wilson Cook, *Report – Envestra (QLD)*, December 2010, p. 52.
113 Envestra, *Qld access arrangement information – Business case Q60*, pp. 1–2.
114 Wilson Cook, *Report – Envestra (QLD)*, December 2010, p. 52.
115 Envestra, *Qld access arrangement information – Business case Q49*, pp. 1–4.

		standard was likewise efficient, with costs being based on previous work undertaken by the APA Group.[116]	
Nil gas consumption[117] - attendance, maintenance and making safe properties registering no consumption	0.09	The work is a prudent response to a safety risk, but the proposed expenditures are not efficient. No allowance was made for the increased revenue or reduced UAG that will result from finding and replacing faulty meters. Industry experience of such programs is that the costs are typically more than offset by savings.[118]	On the basis of the NGR and NGL requirements, including r. 91, the AER accepts Wilson Cook's recommendation that no additional allowance be made for the costs of this program.
Step changes			
Knowledge management[119] -	0.62	Usually such projects result in significant business efficiency improvements and this is given as one of the project's benefits. The expenditure was not demonstrated to be efficient as no allowance was made for such efficiency improvements. Therefore, the expenditure should be rejected.[120]	The AER agrees with Wilson Cook's advice that efficiencies for such a project need to be demonstrated. As this has not been done, the AER does not approve Envestra's proposed opex on knowledge management as it does not comply with r. 91 of the NGR.
Meter change notification – advance notification of interruptions from periodic testing and meter replacement	0.21	The direct notification costs are reasonable and there would be additional administration time required. However, the productivity loss could be eliminated by good planning and by providing a notification "window" to customers to allow flexibility on when the work can be done. The costs are inefficient and only the allowance to cover direct costs and administration should be accepted.[121]	The work is a response to numerous customer complaints about the lack of suitable notifications. The AER accepts that the work is prudent but does not accept that the costs are efficient. The AER therefore considers that the costs do not meet the requirements of r. 91 of the NGR and should be amended to include only the direct and administration costs.
Gas market administration[122] - employing an additional FTE to support participation in the gas Short Term Trading Market	0.31		The STTM has placed greater emphasis on the quality and reliability of the metering data that participants are to provide to the market daily. The AER accepts that the cost arises from the imposition of a new external obligation on Envestra and is therefore prudent and efficient as required under r. 91 of the NGR.

116 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 53.
117 Envestra, *Qld access arrangement information – Business case Q38*, October 2010, pp. 1–4.
118 Wilson Cook, *Report – Envestra (QLD)*, December 2010, p. 53.
119 Envestra, *Qld access arrangement information – Business case Q45*, October 2010, pp. 1–12.
120 Wilson Cook, *Report – Envestra (Qld)*, December 2010, p. 54.
121 Wilson Cook, *Report – Envestra (QLD)*, December 2010, pp. 53–54.
122 Envestra, *Qld access arrangement information – Business case Q20*, October 2010, pp. 1–7.

Real increase in insurance[123] - proposal supported by Marsh report.[124]	0.39	The Marsh report applied several general assumptions for forecasting a five year outlook for premiums of various insurance types (including property, public liability, and directors and officers). It used market cycle premium forecast percentages to account for rate fluctuations over the access arrangement period.[125] The AER considers the report does not demonstrate a sufficient correlation between the general forecasting assumptions and the year by year forecast market cycle premiums for property, and directors and officers insurance. The Marsh report noted that property insurance market rates did not increase during 2009 due to various factors.[126] While these factors give an indication as to historical trends in property insurance market prices, the AER considers that this information doesn't support the forward looking market cycle premium forecasts. No supporting information was provided in relation to the market cycle premium forecasts for directors and officers insurance.[127] Further, in regard to public liability insurance, the Marsh report noted that it expected flat market conditions over the short term, but with year on year increases of up to 10 per cent into 2013.[128] The AER considers that the Marsh report does not provide sufficient detail to demonstrate how an annual increase of 10 per cent is consistent with the expectation of flat market conditions over the short term. For these reasons, the AER considers that Envestra has provided insufficient evidence to suggest that the access arrangement period will necessitate a step increase in insurance costs. As such, the AER does not consider that the forecast has been arrived at on a reasonable basis as required under r. 74(2)(a) of the NGR

123 Envestra, *Qld access arrangement information – Business case Q62*, October 2010, p. 2.
124 Marsh, *Envestra SA & Qld access arrangement review – insurance forecast,* August 2010, pp. 1–7.
125 Marsh, *Insurance forecast*, August 2010, pp. 1–7.
126 Marsh, *Insurance forecast*, August 2010, p. 7.
127 Marsh, *Insurance forecast*, August 2010, p. 10.
128 Marsh, *Insurance forecast*, August 2010, p. 7.

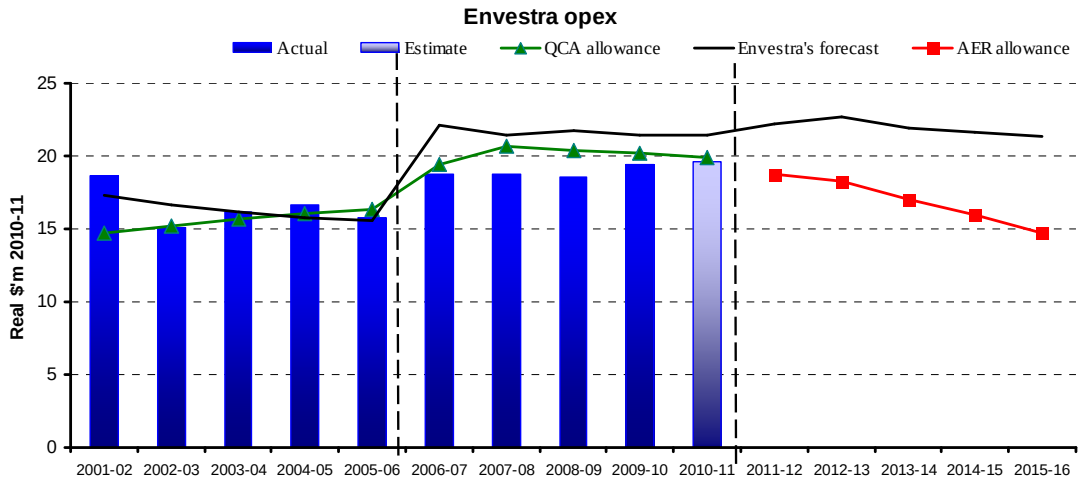
8.7 Conclusion

The AER proposes to not approve Envestra's proposed opex as it does not comply with the relevant requirements of the NGR and as such is not consistent with the national gas objective of the NGL. The AER requires Envestra to make the amendments set out in section 8.8 of this draft decision.

Overall, the AER approves $85 million in opex over the access arrangement period as consistent with the NGR, which represents a 23 per cent reduction on proposed expenditures. The total approved opex against that proposed is set out in figure 8.10.

At the subsequent access arrangement review, the AER will require that Envestra demonstrate that the non-base year costs accepted for this access arrangement period have been removed from the year proposed as being the base year.

Figure 8.10: Envestra's historic opex vs forecast and allowed



8.8 Required amendments

Amendment 8.1: amend the access arrangement proposal and access arrangement information as necessary to reflect the adjustments made to proposed opex for the access arrangement period set out in table 8.11 and in appendix F.

Table 8.11: AER required amendments to Envestra's forecast opex

	2011-12	2012-13	2013-14	2014-15	2015-16	Total
Total Envestra proposed operating expenditure	22.2	22.7	21.9	21.7	21.3	**109.7**
Base year efficiency adjustment	-0.92	-1.44	-1.95	-2.56	-3.18	**-10.05**
Growth escalation	-0.05	-0.11	-0.18	-0.25	-0.32	**-0.91**
Network development	-0.53	-0.53	-0.53	-0.53	-0.53	**-2.67**
UAG	-1.30	-1.01	-0.68	-0.39	-0.07	**-3.45**
Opex related to capex						
IT road map	0.00	-0.15	-0.15	-0.17	-0.17	**-0.66**
Leak repair cost saving	0.00	0.04	0.07	0.11	0.15	**0.38**
Ad hoc opex						
Nil gas consumption	-0.05	-0.01	-0.01	-0.01	-0.01	**-0.09**
Step changes						
Meter change notification	-0.03	-0.03	-0.03	-0.03	-0.03	**-0.15**
Knowledge management	0.00	-0.15	-0.15	-0.15	-0.15	**-0.62**
Real increase in insurance	-0.02	-0.05	-0.07	-0.10	-0.14	**-0.39**
Total specific amendments	**-2.91**	**-3.45**	**-3.69**	**-4.09**	**-4.46**	**-18.60**
Forecast operating expenditure less specific amendments	19.23	19.20	18.25	17.54	16.86	**91.20**
Effect of input cost escalator amendments	-0.47	-0.89	-1.24	-1.57	-2.15	**-6.44**
Total AER approved operating expenditure	**18.76**	**18.31**	**17.01**	**15.97**	**14.71**	**84.76**

9 Total revenue

The AER has calculated a total revenue requirement for Envestra over the access arrangement period of $297 million, compared to $362 million proposed by Envestra. The main reasons for this difference are the reductions required by the AER to Envestra's proposed WACC, forecast capex and forecast opex over the access arrangement period.

Based on the AER approved revenues and demand forecasts, the tariffs for haulage services for both volume and demand customers are expected to rise in real terms by about 2.6 per cent per annum (on average). The tariffs for ancillary services will increase each year only by the rate of change in CPI.

9.1 Introduction

This chapter provides the AER's estimation of annual revenue requirements for Envestra for the provision of pipeline services for each year of the access arrangement period. It draws on the adjustments to Envestra's proposed building block components discussed in the preceding chapters. No submissions were received on Envestra's proposed revenue requirement.

9.2 Regulatory requirements

Rule 72(1)(m) of the NGR provides that the access arrangement information for a full access arrangement proposal must include the total revenue to be derived from pipeline services for each regulatory year of the access arrangement period.

Rule 76 of the NGR provides that total revenue is to be determined for each regulatory year of the access arrangement period using the building block approach. The building block components are:

- a return on the projected capital base for the year
- depreciation on the projected capital base for the year
- forecast operating expenditure for the year
- the estimated cost of corporate income tax for the year (if applicable)
- any penalty/reward from the operation of an incentive mechanism.

9.3 Access arrangement proposal

Envestra proposed a total revenue requirement of $362 million over the access arrangement period.[1] The break down of this amount (including the amount related to ancillary services) is provided in table 9.1. This table also provides information on Envestra's proposed smoothing of these revenues and the resulting X factors for both haulage and ancillary services. The same X factors (that is, a single price path) were

[1] Envestra, *Qld access arrangement information*, October 2010, pp.170–172.

proposed by Envestra to apply to all volume and demand customers of haulage services. Envestra made an error in the 2010–11 tariffs included in its model. The commercial and demand customer tariffs did not include the existing charges associated with full retail competition. Envestra corrected for this error and provided an updated model, which has a revised X factor for haulage services in the first year of the access arrangement period and resmoothed revenues.[2] These corrections have also been reflected in table 9.1.

Table 9.1: Envestra's proposed annual revenue requirement and X factors ($m, nominal)

	2011–12	2012–13	2013–14	2014–15	2015–16
Return on capital	33.1	36.8	41.0	44.7	48.3
plus regulatory depreciation[a]	1.9	2.4	2.9	3.5	4.0
plus operating and maintenance	23.2	24.3	24.1	24.5	24.8
plus corporate income tax	4.1	4.3	4.4	4.6	4.7
Total revenue	**62.3**	**67.9**	**72.5**	**77.2**	**81.9**
less ancillary services revenue	0.5	0.5	0.6	0.6	0.6
Total haulage services revenue	**61.7**	**67.3**	**72.0**	**76.7**	**81.3**
Smoothed haulage services revenue[c]	**56.6**	**66.5**	**74.5**	**79.1**	**84.1**
X factors[b]					
Haulage reference services (%)	-13.35[c]	-12.00	-9.00	-3.00	-2.00
Ancillary service fees (%)	0	0	0	0	0

Source: Envestra, *Qld access arrangement information*, October 2010, pp.170–172 and Envestra, Email to the AER, *AER.EN.1 - Questions on tariffs in the PTRM*, 1 November 2010.

(a) Regulatory depreciation includes the negative depreciation impact of inflation on the capital base.

(b) Negative values for X indicate real price increases under the CPI–X formula.

(c) Corrected figures, compared to initial proposal.

9.4 AER's consideration

In making this draft decision, the AER has had regard to the national gas objective and the revenue and pricing principles in ss. 23 and 24 of the NGL respectively. The AER has examined the various components of Envestra's proposed revenue requirement against these provisions as well as the requirements of the NGR. The assessment of the various revenue components (both the service provider's proposal

[2] Envestra, *Email to the AER, AER.EN.1 - Questions on tariffs in the PTRM*, 1 November 2010.

and any alternative value determined by the AER) are presented in the various chapters of this draft decision.

One outstanding matter not discussed in other chapters is the ancillary services revenues (for special meter reads, disconnections and reconnections) forecast by Envestra. The AER reviewed Envestra's calculation of these figures and considers them to be reasonable. The forecasts are based on Envestra's proposed ancillary services tariffs for 2010–11, historical demand and the expected increases in these tariffs over the access arrangement period.[3]

Bringing the various revenue components together, the AER's draft decision results in a total revenue requirement over the access arrangement period of $297 million, compared to $362 million proposed by Envestra. The main reasons for this difference are the reductions required by the AER to Envestra's proposed:

- WACC for the access arrangement period
- capex for the access arrangement period
- opex for the access arrangement period.

The total revenue requirement is smoothed and converted to tariffs using the forecast demand figures approved by the AER. The annual revenue requirements and annual price changes (as indicated by the X factors) are summarised in table 9.2. The AER accepts that the same X factors will apply to all volume and demand customers, as discussed in chapter 12.

[3] Envestra, *Qld access arrangement information*, October 2010, p. 195.

Table 9.2: AER's conclusion on Envestra's annual revenue requirement and X factors ($m, nominal)[a]

	2011–12	2012–13	2013–14	2014–15	2015–16
Return on capital	31.5	33.9	36.6	38.8	40.9
plus regulatory depreciation[b]	2.8	3.4	3.8	3.6	4.0
plus operating and maintenance	19.4	19.5	18.6	17.9	16.9
plus corporate income tax	1.8	1.8	1.7	1.6	1.6
Total revenue	**55.6**	**58.6**	**60.7**	**61.9**	**63.5**
less ancillary services revenue	0.5	0.5	0.6	0.6	0.6
Total haulage services revenue	**55.1**	**58.0**	**60.1**	**61.3**	**62.9**
Smoothed haulage services revenue	**52.1**	**56.5**	**60.0**	**63.3**	**67.2**
X factors[c]					
Haulage reference services (%)	-3.26	-3.00	-3.00	-2.00	-2.00
Ancillary service fees (%)	0	0	0	0	0

(a) Numbers may not add correctly due to rounding.
(b) Regulatory depreciation includes the negative depreciation impact of inflation on the capital base.
(c) Negative values for X indicate real price increases under the CPI–X formula.

The X factors indicate there will be real increases of about 2.6 per cent per annum (on average) in haulage reference service tariffs over the access arrangement period. There are no real price changes for ancillary services fees, which will be indexed by the change in CPI each year.

9.5 Conclusion

The AER does not approve the annual revenue requirements proposed by Envestra as these do not comply with r. 76 of the NGR.

9.6 Required amendments

Before its access arrangement proposal can be accepted, Envestra must make the following amendment:

Amendment 9.1: make all amendments necessary in the access arrangement proposal and access arrangement information in order to incorporate the values noted in table 9.2 of this draft decision.

Part B – Tariffs

10 Demand forecasts

Demand forecasts are used to calculate the reference tariffs and also influence forecast capital and operating expenditure linked to network growth.

The AER considers Envestra's general approach to demand forecasting is reasonable. The forecast models were developed based on appropriate key drivers of future gas demand, and the consumption data was normalised where necessary to remove weather factors that might cause bias in the forecasts.

However, the AER considers that the proposed residential (Tariff R) consumption forecast needs to be adjusted to reflect a more realistic rate of decline in average residential consumption in line with the historical trend. The adjusted forecast is set out in section 10.8, and represents a 5.4 per cent upward revision to the proposed forecast.

10.1 Introduction

This chapter sets out the AER's consideration of the gas demand forecasts submitted by Envestra to apply over the access arrangement period.

10.2 Regulatory requirements

Rules 72(1)(a)(iii) and 72(1)(d) of the NGR provide that the access arrangement information for a full access arrangement proposal for a distribution pipeline must include:

- usage of the pipeline over the earlier access arrangement period showing, for a distribution pipeline, minimum, maximum and average demand, and customer numbers in total and by tariff class

- to the extent that it is practicable, a forecast of pipeline capacity and utilisation of pipeline capacity over the access arrangement period and the basis on which the forecast has been derived.

Rule 74(1) of the NGR provides that any information in the nature of a forecast or estimate must be supported by a statement explaining the basis of the forecast or estimate.

Rule 74(2) of the NGR provides that a forecast or estimate must be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances

10.3 Access arrangement proposal

Envestra engaged the National Institute of Economic and Industry Research (NIEIR) to prepare its demand forecasts.[1]

[1] Envestra, *Qld access arrangement information*, October 2010, p. 174; NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, September 2010.

Envestra proposed to divide its customers into three tariff classes. Customers with annual consumption less than 10TJ have been allocated either to the domestic (residential) customer class or commercial and small industrial (C&I) customer class. The demand customer class (Tariff D) consists of large business customers with annual consumption greater than 10TJ, charged on the basis of their contracted maximum daily quantity (MDQ).[2]

NIEIR and Envestra identified the following factors which will influence gas demand over the next access arrangement period[3]

- performance of the Queensland economy
- dwelling and population growth and demographic factors (ageing population)
- more stringent building code improving the energy efficiency of new dwellings
- Envestra marketing programs
- government policy initiatives and efficiency gains in gas appliances
- introduction of Carbon Pollution Reduction Scheme (CPRS) and retail gas price increases

A bottom up approach was adopted to forecast residential consumption.[4] NIEIR constructed the model to forecast residential consumption based on input assumptions made in relation to the penetration, market composition, efficiency gains and lifecycle of gas appliances, real retail gas price forecasts, and the projected impacts of government energy saving initiatives.[5]

For Tariff D and C&I customers, consumption was forecast by NIEIR using an econometric approach.[6] NIEIR included real business retail gas prices (both current and lagged terms) and gross product by industry as key driver variables in its econometric regressions.[7]

NIEIR used dwelling stock as the key driver for forecasting residential customer numbers. Customer numbers for the Tariff D and C&I classes were based on the division of total consumption forecasts by historical average consumption per customer for each industry. The MDQ forecast for Tariff D customers was derived by applying the historical load factor to the total consumption forecast at industry level.[8]

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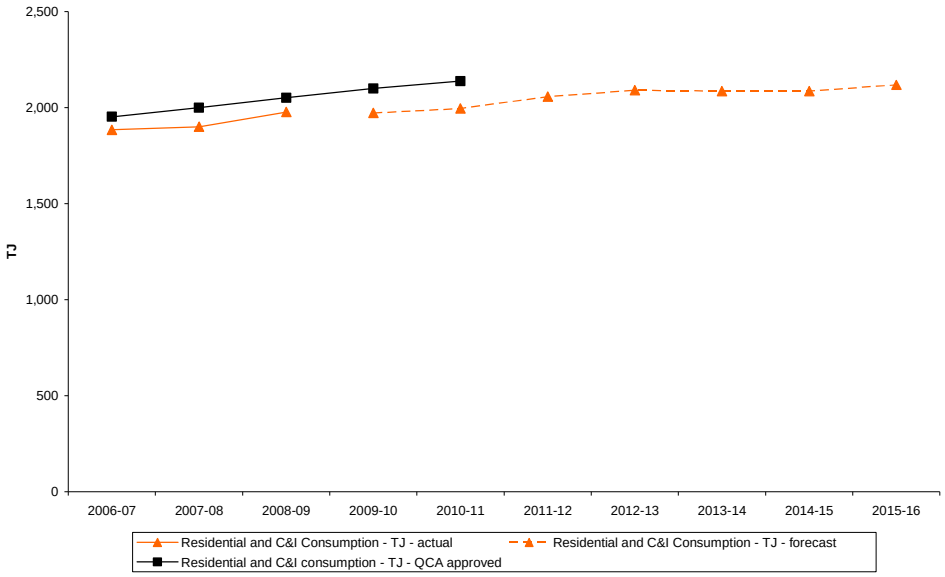
2 Envestra, *Qld access arrangement information*, October 2010, pp. 191–195.
3 Envestra, *Qld access arrangement information*, October 2010, pp. 180–188.
4 NIEIR, *Natural gas forecast for the Envestra Queensland distribution region to 2019-20*, September 2010, p. 24.
5 NIEIR, *Natural gas forecast for the Envestra Queensland distribution region to 2019-20*, September 2010, pp. 33–40.
6 NIEIR, *Natural gas forecast for the Envestra Queensland distribution region to 2019-20*, September 2010, p. 24.
7 Envestra, Email to the AER, *AER.EU.05 - Questions on the demand forecasts*, 9 November 2010.
8 Envestra, Email to the AER, *AER.EU.05 - Questions on the demand forecasts*, 9 November 2010.

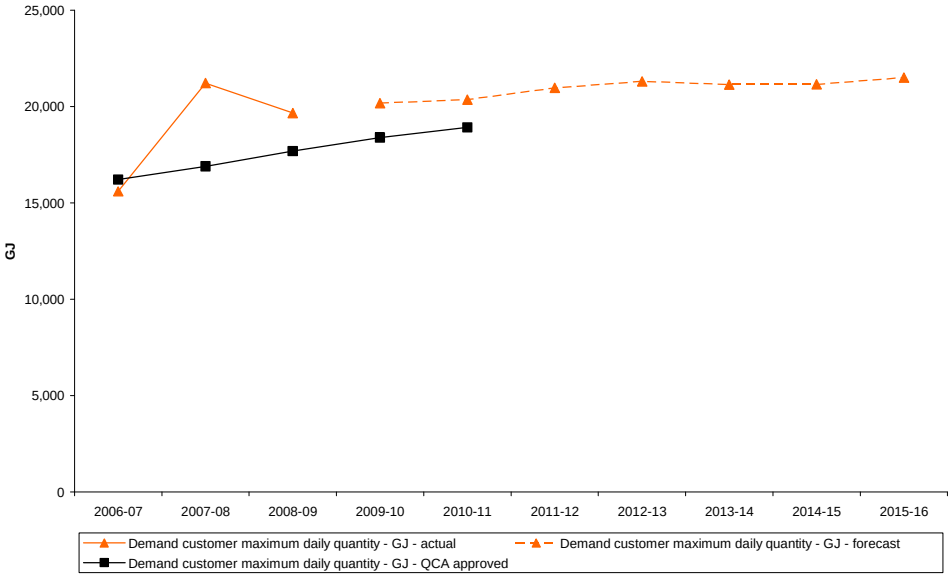
The Queensland Competition Authority (QCA) approved, Envestra actual and forecast of residential and C&I consumption, and demand customer MDQ are presented in figure 10.1 and figure 10.2.

Figure 10.1: Volume customer consumption, QCA approved, Envestra actual and forecast, 2006–07 to 2015–16



Source: Envestra, *Qld access arrangement information*, October 2010, p. 189, Table 13.2; NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, September 2010, p. 53, Table 6.1; and QCA, *Final Decision Revised Access Arrangement for Gas Distribution Networks: Envestra*, May 2006, p. 139.

Figure 10.2: MDQ, QCA approved, Envestra actual and forecast, 2006–07 to 2015–16



Source: Envestra, *Qld access arrangement information*, October 2010, p. 189, Table 13.2; NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, September 2010, p. 53, Table 6.1; and QCA, *Final Decision Revised Access Arrangement for Gas Distribution Networks: Envestra*, May 2006, p. 139.

10.4 Submissions

Submissions were received from Origin Energy (Origin) and AGL Energy (AGL):

- Origin submitted that additional information should be provided in relation to the approved, actual and forecast levels of gas consumption for Envestra's domestic and non domestic customers.[9]

- Origin and AGL noted the declining trend in average consumption per domestic (residential) customer forecast by Envestra.[10]

10.5 Consultant review

The AER engaged ACIL Tasman Pty Ltd (ACIL Tasman), demand forecasting consultants, to provide an independent assessment of the reasonableness of Envestra's proposed demand forecasts.[11] ACIL Tasman's assessment included:

- comparison of actual and forecast demand in the earlier access arrangement period

- comparison of forecasts with historical trends and confidence intervals

- an assessment of NIEIR's input assumptions and key driver variable forecasts

- a review of NIEIR's methodologies for forecasting customer numbers, consumption, and MDQ.

The ACIL Tasman noted the following:[12]

- NIEIR's forecasting approach in general appears to be reasonable

- key driver forecasts for C&I and Tariff D customer demand forecasts are reasonable

- input assumptions regarding the quantitative impacts attributed to particular factors such as appliance efficiency gains and government policies in the residential consumption forecasting model are generally not explained

- notwithstanding the discrepancies between different sources of information on average residential consumption, all sources show that average consumption has risen since 2007 and therefore recent evidence does not point to a sustained downward trend in average consumption as forecast by NIEIR.

ACIL Tasman recommended that the proposed residential consumption forecast should be adjusted to reflect the historical rate of decline from 1998–99 to 2008–09.[13]

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9 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 1.
10 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 1; and AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 1–2.
11 ACIL Tasman, *Review of demand forecasts for Envestra Qld for the access arrangement period commencing 1 July 2011*, December 2010.
12 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, pp 32–33.

10.6 AER's consideration

10.6.1 Introduction

The AER considers the forecast methodology adopted by Envestra in preparing its demand forecast and as set out in its proposal has been arrived at on a reasonable basis. The AER also accepts that Envestra's customer numbers, C&I consumption and Tariff D MDQ forecasts are reasonable. However, the AER does not accept the proposed consumption forecast for residential customers. The AER considers that Envestra was unable to provide adequate support for a number of input assumptions underpinning these forecasts. The AER considers better values are available and requires that Envestra to adopt these values for forecasting demand.

10.6.2 Forecast methodology

Envestra proposed to allocate C&I customers with annual consumption less than 10 TJ to a new tariff (Tariff C), charged based on their consumption. This represents a departure from current tariff policy, where all customers with annual consumption less than 10 TJ, or volume customers, are allocated to a single tariff class (Tariff V). The AER does not accept the proposed split of volume customers to two tariff classes.[14] However, the AER considers the separation of volume customers into residential and C&I customer groups is appropriate for the purpose of forecasting demand. This is consistent with the approach previously adopted by the QCA, and is based on the fact that demand for each customer group is linked to different driver variables.[15]

The AER considers the demand forecast methodology adopted by Envestra appears reasonable for the following reasons:

- it is appropriate to separately forecast demand for residential, C&I and large demand customers, as demand for each customer group is based on different driver variables
- key driver variables selected to develop the C&I customer group and Tariff D demand forecast models are reasonable
- it is appropriate to forecast residential consumption using two components, customer numbers and average consumption. The former largely depends on dwelling stock growth, while government policies and appliance efficiency gains are expected to have a material impact on the latter.

10.6.3 Residential customer numbers forecast

The AER considers Envestra's methodology for forecasting residential customer numbers based on dwelling stock forecast is reasonable. Figure 10.3, which shows historical data, demonstrates a reasonable degree of correlation between residential customer growth and growth in dwelling stock. The forecast growth in customer

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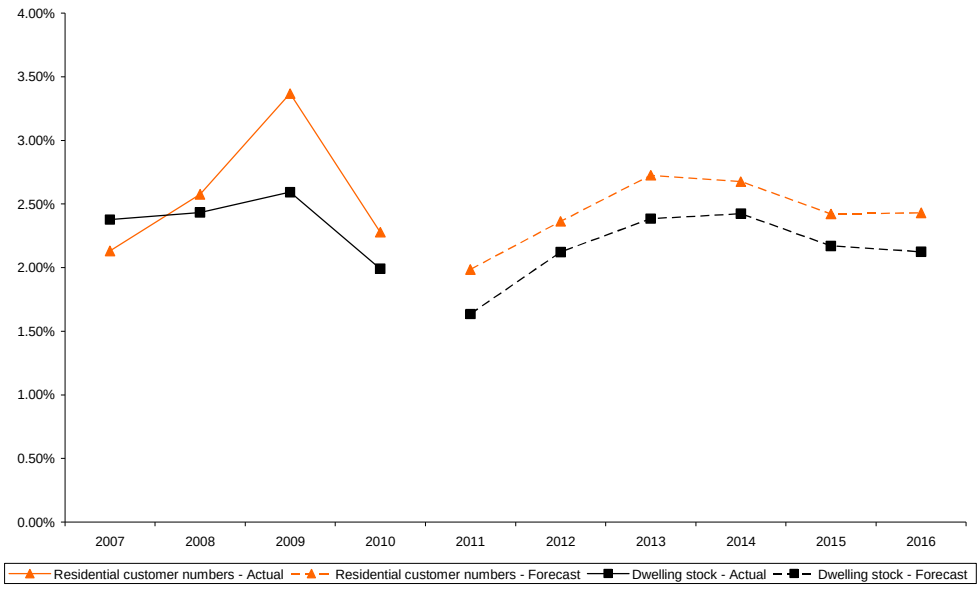
13 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 33.
14 See Chapter 11 of this draft decision.
15 MMA, *Final report to Queensland Competition Authority, Demand forecasts for Envestra*, November 2005, pp. 31–34.

numbers is higher than dwelling stock growth, but broadly in line with the differences observed in most recent years.

Figure 10.3: NIEIR historical and forecast residential customer numbers and dwelling stock growths



Source: NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, p. 44 and p. 56.

The forecast annual average residential customer growth of 2.4 per cent over the period from 2010–11 to 2015–16 is slightly lower than annual average growth of 2.6 per cent observed over the period from 2006–07 to 2009–10. The decline in forecast growth is linked to the lower household growth forecast in 2010–11 and 2011–12 due to a steady recovery of private dwelling investment from the sharp decline observed in 2009–10.[16] The AER accepts this assumption is not unreasonable, as the projection is broadly consistent with Housing Industry Association (HIA) dwelling start forecasts.[17]

Overall, NIEIR's dwelling stock forecast is in line with forecasts prepared by Access Economics,[18] and is comparable to dwelling stock and household numbers projections released by the Queensland Office of Economic and Statistical Research (OESR).[19] Given the close link between numbers of dwelling and residential customer numbers, the AER accepts Envestra's residential customer numbers forecast is reasonable and represents the best forecast possible in the circumstances.

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16 NIEIR, *Natural gas forecasts for the Envestra South Australia distribution region to 2019-20* September 2010, pp. 22–23.

17 HIA, *State outlook, Queensland*, pp. A28–29, March 2010.

18 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010 pp. 6–7.

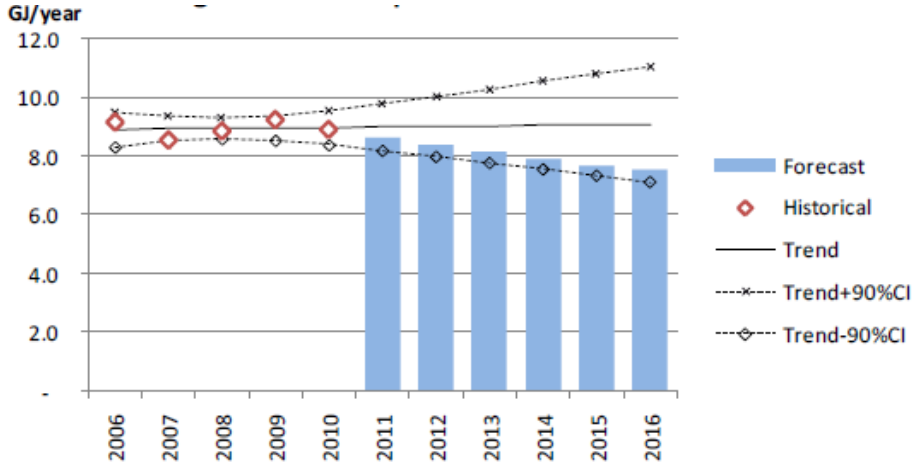
19 OESR, *Household projections by household type by region, 2006 to 2031*, 2008, viewed at http://www.oesr.qld.gov.au/products/tables/household-proj-household-type-region/index.php; and *Household and dwelling projections Queensland local government areas*, 2008 viewed at http://www.oesr.qld.gov.au/products/publications/household-dwel-proj-qld-lga/index.php.

10.6.4 Residential customer consumption

Forecasts of average, or per customer consumption, combined with customer numbers are the basis on which residential gas consumption forecasts are calculated. While the AER accepts Envestra's forecast customer numbers, the AER does not accept the average customer consumption forecasts proposed by Envestra.

The proposed forecasts show average consumption declining on average by 2.6 per cent per year over the access arrangement period. The AER found that, contrary to views expressed by Envestra in the proposal, historical data over recent years shows no clear trend of decline in average residential consumption.[20] The short term trend in average residential consumption is shown in figure 10.4.

Figure 10.4: Actual and NIEIR forecast average gas consumption per residential customer



Source: ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 20.

The AER considers that the average consumption forecast adopted by Envestra will tend to understate residential consumption. ACIL Tasman recommended that forecast residential consumption should be adjusted to reflect the long run historical rate of decline in average consumption of 1.5 per cent per year.[21] The AER agrees that the historical rate is more appropriate, and considers the revised residential consumption forecast derived on this basis, shown in table 10.1, represents the best forecast possible in the circumstances.[22] Figure 10.5 compares the consumption forecast for residential customers as proposed by Envestra and approved by the AER.

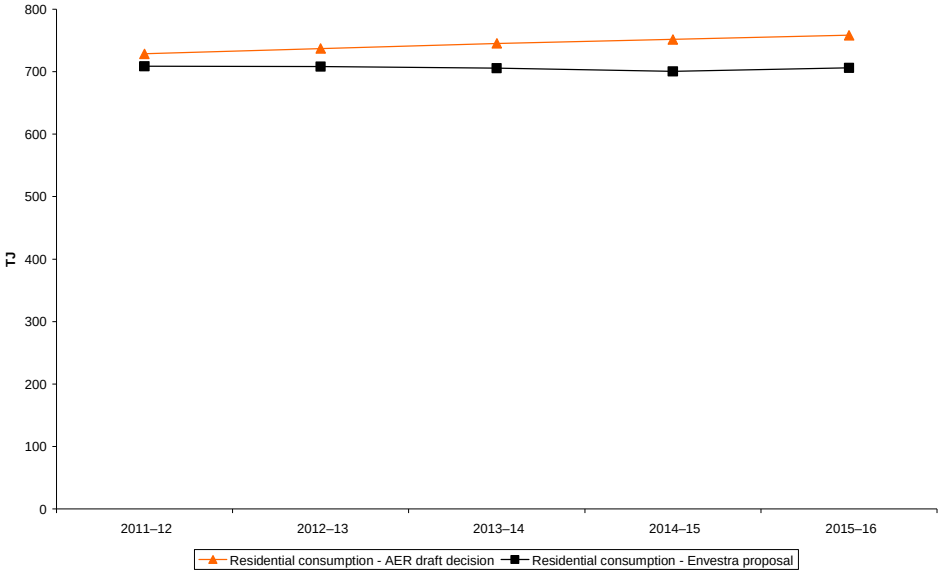
[20] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 23.
[21] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 24.
[22] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 33.

Table 10.1: AER approved residential (Tariff R) demand forecasts

		2011–12	2012–13	2013–14	2014–15	2015–16
Average annual consumption - GJ	AER draft decision	8.65	8.52	8.39	8.26	8.14
	Envestra proposal	8.41	8.18	7.94	7.70	7.58
Customer numbers	AER draft decision	84 221	86 517	88 833	90 984	93 196
Total consumption - TJ	AER draft decision	728.5	737.0	745.2	751.6	758.1
	Envestra proposal	708.3	708.0	705.7	700.4	706.0

Source: NIEIR, *Natural gas forecasts for the South Australia Envestra distribution regions to 2020*, pp. 63 and 64.
Note: The AER approved forecast was derived based on applying the long run trend decline in average consumption to the final year of actual data (2008–09). Therefore the proposed and approved forecast diverged starting from 2009–10.

Figure 10.5 Envestra proposed and AER draft decision total residential consumption forecasts



Source: Envestra, *Qld access arrangement information*, October 2010, p. 189.

The AER reached this view based on the following reasons.

- Although there are significant discrepancies between different sources of information on average residential consumption presented in the access arrangement information and NIEIR's report,[23] the AER agrees with ACIL Tasman that all sources show that average consumption has risen since 2007.[24]

[23] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, pp. 21–22.
[24] See ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 23.

The AER considers that recent evidence does not support a strong and sustained downward trend in average consumption as forecast by NIEIR.[25]

- Envestra has used average consumption forecast based on analysis by NIEIR. In its report, NIEIR provided limited references to key source materials and provided little substantiation regarding the calculation of the numeric values used in the input assumptions.[26] In the absence of adequate supporting information provided by Envestra, the AER is not satisfied that Envestra has demonstrated these input assumptions have been arrived at on a reasonable basis.

During the review, the AER queried Envestra in relation to the observed discrepancies in information on average residential consumption data from difference sources. Envestra responded:[27]

> …In reviewing this data it became apparent that there were some very large customers that were classed as domestic. Envestra has now applied a "filter" to the data so that any domestic customer who uses more than a 0.27GJ per day (100GJ pa, or around 10 times the average domestic consumption) are classified as non domestic.

Envestra has subsequently provided updated historical data to the AER, but due to the lengthy delay in Envestra's response,[28] ACIL Tasman did not review this information.[29] The AER found that the updated data is significantly different from that submitted as part of the access arrangement proposal as detailed in table 10.2.

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25 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 23.

26 Envestra did not respond to the AER's request for further substantiation and source materials used by NIEIR to develop its forecasts.
AER, Email to Envestra, *AER.EN.13 - Questions on demand forecasts*, 18 November 2010.
The AER understands Envestra's ability to provide a timely response regarding demand forecasts may be restricted by the confidential nature of the NIEIR model.

27 Envestra, Email to the AER, *Revised Queensland History*, 2 December 2010.

28 Envestra indicated in its initial response that it expected to provide updated historical demand data for Qld by 25 November 2010 and updated demand forecasts shortly thereafter: Envestra. *Email to the AER, RE: Questions from ACIL Tasman on the demand forecasts, attachment 101122-AER EN 09 Response to AT Questions.docx,* 24 November 2010.
Envestra provided updated historical data on 2 December 2010 and updated forecasts on 22 December 2010: Envestra, Email to the AER, *Revised Queensland History*, 2 December 2010; Envestra, Email to the AER, *FW: Revised Queensland History, attachment, Revised Tab6 QLD DEC 2010.docx,* 22 December 2010.

29 Envestra, Email to the AER, *Revised Queensland History, attachment QLD History for AER.xlsx,* 2 December 2010.

Table 10.2: Differences between updated historical data and access arrangement proposal data

	Difference in customer numbers		Difference in consumption (TJ)	
	Residential	C&I	Residential	C&I
2006	-2126	2159	-29.36	34.64
2007	-2182	2181	-25.11	24.61
2008	-1455	1455	-60.84	69.79
2009	-1491	1492	-90.41	86.07
2010	-1243	1564	-72.12	41.67

Source Envestra, Email to the AER, *Revised Queensland History, attachment QLD History for AER.xlsx*. 2 December 2010.
NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, pp. 53–54.

The adjustments made by Envestra to the underlying data can not be verified as insufficient material was provided to clearly demonstrate how and where the adjustments were made. Examination of the aggregated data indicates that the annual average consumption for customers removed from the residential class and added to the C&I class ranged from 11.3 GJ to 57.7 GJ over the period 2005–06 to 2009–10. This does not appear to be consistent with Envestra's intention to remove customers with annual consumption of 100GJ from the residential demand data.[30] It is also unclear why the numbers of customers removed from the residential sector decreased over time, while the level of adjustment to consumption increased over time.

Envestra's updated data indicates that the average annual residential consumption for the whole of 2009–10 is around 8.2 GJ or 22.3 MJ per day. This represents a reduction of around 2.1 MJ in average daily consumption when compared to data presented in the regulatory proposal.[31]

The AER analysed the consumption data from a sample of around 2000 residential MIRNs (meter installation reference number) submitted by Envestra for the tariff variation mechanism section of the access arrangement proposal.[32] The data provides information on average daily consumption for individual customers over the billing period from June 2009 to June 2010. As an indirect evaluation of Envestra's calculation, the AER applied a filter to exclude customers with average daily consumption of 270 MJ in the sample data as proposed by Envestra.

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30 Calculated based on Envestra, Email to the AER, *Revised Queensland History, attachment, QLD History for AER.xlsx*, 2 December 2010.

31 Calculated based on Envestra, Email to the AER, *Revised Queensland History, attachment, QLD History for AER.xlsx*, 2 December 2010.
NIEIR, *Natural gas forecasts for the Queensland Envestra distribution regions to 2020*, pp. 53–54.

32 Envestra, *Qld access arrangement information*, October 2010, p. 207.
Data sourced from Envestra, *Qld access arrangement information*, October 2010, attachment 15-1, *QLD AAI Attach 15-1 Calculation of Queensland Residential B*.

The AER found that the sample average (in another words the sample mean) daily consumption reduced from 25.4 MJ to 24.0 MJ. This reduction in sample average daily consumption of 1.4 MJ is significantly less than the 2.1 MJ decrease (from 24.4 MJ to 22.3 MJ) in the average daily consumption (or the population mean) for all residential customers observed in data provided by Envestra. The sample represents around 2.5 per cent of the total numbers of residential customers, and is considered a sufficient size to allow comparison of the sample and population means based on statistical inference.

Using the sample standard deviation, the AER derived the 99 per cent confidence interval for the population mean,[33] resulting in the average daily consumption for all residential customers being between 23.3 MJ to 24.7 MJ. This indicates that the average daily consumption calculated by Envestra appears to be statistically inconsistent with the estimate based on the sample data. Therefore, in the absence of further supporting material from Envestra to address these issues, the AER does not consider it is appropriate to use the updated data for forecasting demand.

10.6.5 Commercial and small industrial and demand customer consumption forecasts

The C&I customer group consists of small business customers with annual consumption less than 10 TJ, charged on the basis of consumption. Tariff D consists of large business customers with annual consumption greater than 10 TJ, charged based on their contracted maximum daily quantity (MDQ).[34]

The AER and ACIL Tasman reviewed the key driver variable forecasts prepared by NIEIR on which Envestra based its C&I customer and Tariff D consumption forecasts. The AER considers these forecasts are reasonable for the following reasons:

- ACIL Tasman advised that the quantum and timing of the forecast increase in gas prices due to the potential introduction of a carbon pricing scheme are reasonable.[35]

- The AER observed that NIEIR's GSP forecast is broadly in line with Queensland Treasury's 2010 budget projection.[36] Overall, NIEIR's GSP forecast over the period 2010–11 to 2015–16 is lower compared to alternative forecasts from other sources as presented in table 10.3. Nevertheless, the AER considers NIEIR's GSP forecast is conservative but not unreasonable.

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33 Assuming the 2000 residential customers are randomly and independently drawn from all residential customers, the 99% confidence interval can be constructed using the sample mean, and the multiplication of sample standard deviation by the corresponding critical value from a one tailed t-distribution.

34 Envestra, *Qld access arrangement information*, October 2010, pp. 191–195.

35 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 11.

36 ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, p. 6–7.

Table 10.3: Queensland GSP growth forecasts from various sources

	NIEIR	State budget	BIS Shrapnel	KPMG Econtech	Access Economics	Average of forecasts other than NIEIR
2010–11	3.13%	3.75%	2.90%	5.20%	3.78%	3.91%
2011–12	5.53%	4.50%	3.80%	4.60%	4.37%	4.32%
2012–13	4.29%	4.00%	4.60%	3.40%	4.86%	4.21%
2013–14	2.77%	4.00%	4.30%	4.30%	4.32%	4.23%
2014–15	3.19%	NA	4.60%	4.60%	4.38%	4.53%
2015–16	3.91%	NA	4.40%	3.50%	4.70%	4.20%
Average growth 2011–16	3.80%		4.10%	4.27%	4.40%	4.23%

Source: NIEIR, *Natural gas forecast for the Envestra Queensland distribution region to 2019-20*, September 2010, p. 45; Queensland Government, *Budget strategy and outlook 2010-11*, September 2010, p. 30; BIS Shrapnel, *Real Cost Escalation Forecasts to 2015/16 – Queensland and South Australia*, August 2010, p. 12; KPMG Econtech, *ANSIO report*, December 2010, p. 108; and Access Economics, *Forecast growth in labour costs: Queensland and South Australia*, December 2010, p. 8.

Note: Average of alternative forecasts other than NIEIR presented for comparison purposes only.

The AER accepts that the resultant C&I customer and Tariff D consumption forecasts developed based on NIEIR's forecast of driver variables are reasonable.[37] Given the direct relationship between customer numbers and total consumption for these customer classes as discussed in section 10.3, the AER considers the customer numbers forecasts for these tariff classes are reasonable and represent the best forecasts possible in the circumstances.[38] The AER also considers the MDQ forecast for Tariff D customers, derived by applying the historical load factor at industry level to the total consumption forecasts by industry, is reasonable and represents the best forecast possible in the circumstances.[39]

10.6.6 Minimum, maximum and average demand

Rule 72(1)(a)(iii) of the NGR requires that the access arrangement information for a distribution pipeline must include minimum, maximum and average demand for the earlier access arrangement. The AER considers the data provided by Envestra in its access arrangement information, and reproduced in table 10.4 below, meets the requirements of r. 72(1)(a)(iii) of the NGR.

[37] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, pp. 24–33.
[38] ACIL Tasman, *Review of demand forecasts for Envestra Qld*, December 2010, pp. 32–33.
[39] Envestra, Email to the AER, *AER.EN.05 - Questions on the demand forecasts*, 9 November 2010.

Table 10.4: Minimum, maximum and average demand 2005–06 to 2010–11 (TJ per day)

	2006–07	2007–08	2008–09	2009–10	2010–11
	Actual	Actual	Actual	Actual	Estimate
Minimum demand	33.44	27.87	26.90	22.83	19.56
Maximum demand	57.22	55.13	58.26	58.46	58.98
Average demand	45.40	45.75	45.50	43.62	43.67

Source Envestra, *Qld access arrangement proposal*, October 2010, RIN pro forma (confidential)

10.6.7 Forecast pipeline capacity and utilisation

Rule 72(1)(a)(iii) of the NGR requires that, to the extent practicable, the access arrangement information should include forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period. Envestra provided no information on pipeline capacity and utilisation. The AER understands that a distribution network is a meshed network made up of interconnected pipes and that there are a number of practical considerations governing why the calculation of utilisation is not straightforward, and so therefore may not be practicable.

10.7 Conclusion

The AER does not approve Envestra's proposed demand forecasts as they do not meet the requirements of r. 74 of the NGR.

The AER accepts NIEIR's forecasting approach in general appears reasonable and accepts NIEIR's customer numbers, C&I consumption and demand customer MDQ forecasts are reasonable.

The AER considers that Envestra was unable to provide adequate information to justify the forecast above trend decline in forecast average residential consumption. As a result, the AER considers the historical rate of decline is more appropriate. The AER considers the revised residential consumption forecast derived on this basis, as shown in table 10.1, represents the best forecast possible in the circumstances.

Overall, the AER's amendments to the proposed demand forecast will lower the X-factor by 0.22 per cent on average over the access arrangement period. In another words, the maximum allowed increase in weighted average prices for all customers is reduced by approximately 0.22 per cent on average over the access arrangement period.

10.8 Required amendments

Before the access arrangement proposal can be accepted, Envestra must make the following amendment:

Amendment 10.1: amend the access arrangement information to delete table 13.2 and replace it with the following table:

Table 10.5: AER draft decision on Envestra's demand forecasts

30 June end	2011–12	2012–13	2013–14	2014–15	2015–16
Residential consumption - TJ	729	737	745	752	758
C&I consumption - TJ	1349	1382	1380	1386	1412
Residential customer numbers	84 221	86 517	88 833	90 984	93 196
C&I customer numbers	2964	3011	3008	3015	3050
Demand customer numbers	69	71	70	70	71
MDQ Demand Customers - GJ	20 975	21 319	21 155	21 156	21 514

11 Reference tariffs

An access arrangement is required to set out how a service provider intends to charge for reference services. The NGR requires that the basis for setting reference tariffs be explained. This is done by defining the tariff classes and comparing the revenue to be raised by each reference tariff with the cost of providing each individual reference services.

Envestra has proposed separate tariffs for domestic and commercial customer classes to replace the single tariff covering these customers previously. Envestra also proposed tariffs for three ancillary services instead of only one previously. The demand tariffs proposed by Envestra, offered across six regions, remain the same as in the earlier access arrangement. Envestra also provided a range of information in support of its proposed tariffs in order to meet NGR requirements about the formulation of reference tariffs.

The AER considers that the tariffs proposed by Envestra meet many of the requirements of the NGR. However, the AER considers that Envestra has not provided adequate support for its proposals to split domestic and commercial customers into separate tariff classes, and to categorise demand customers based on their maximum demand. The AER also considers that Envestra did not adequately address NGR requirements on the allocation of revenue between reference services, and between reference services and other services. In addition, Envestra did not include ancillary services in its demonstration of transaction costs and customer responses, and long run marginal costs. Finally, the AER considers that Envestra did not provide sufficient information to support the prudent discounts it proposed for eight customers.

In revising its reference tariffs to address matters in this chapter, Envestra is also required to incorporate the various amendments required by the AER in other chapters of this draft decision.

11.1 Introduction

This chapter sets out the AER's consideration of Envestra's proposals about the structure of tariffs and allocation of revenue, rather than the level of tariffs against the requirements of the NGR. Envestra's access arrangement proposal addressed the key aspects of its proposed tariff structure, including:

- the number of tariff classes, tariffs, and charging parameters
- the share of total revenue to be recovered from each tariff class
- the cost-reflectiveness of tariffs and charging parameters.

11.2 Regulatory requirements

With respect to reference tariffs, the NGR requires Envestra to:

- specify the tariffs for each reference service (r. 48(1)(d)(i) and (ii))

- demonstrate that total revenue is allocated between reference and other services on the basis of costs allocated according to certain principles (r. 93(1) and (2))

- divide reference service customers into tariff classes (r. 94(1)) that are economically efficient and avoid unnecessary transaction costs (r. 94(2))

- describe the proposed approach to the setting of tariffs, including the method used to allocate costs, and demonstrate the relationship between tariffs and costs and provide a description of any applicable pricing principles (r. 72(1)(j))

- demonstrate that revenue expected from each tariff class is within certain lower and upper thresholds (r. 94(3))

- demonstrate that each tariff and its charging parameters must take into account long run marginal costs, and are determined with regard to transaction costs and customer responses to price signals (r. 94(4))

- demonstrate that prudent discounts offered to customers are necessary for competition or efficiency reasons and will likely lead to lower tariffs for other customers (r. 96).

11.3 Access arrangement proposal

Envestra's tariff proposal is summarised in table 11.1. Envestra proposed two domestic tariffs, two commercial tariffs, eight demand tariffs across six regions, and three ancillary services.[1] The tariff classes proposed by Envestra directly reflect the reference services it proposed, as discussed in chapter 2 of this draft decision.

Envestra's general approach to tariffs in its access arrangement proposal is mostly unchanged from the earlier access arrangement, with some refinements in terms of the number of customer classes and the structure of tariffs. In particular, Envestra split the previously combined domestic and commercial tariff classes and proposed three ancillary service tariffs instead of only one previously. The number and structure of demand tariffs remained unchanged and the thresholds at which different consumption charges apply remain unchanged.

[1] Envestra, *Qld access arrangement proposal*, October 2010, Annexure B.

Table 11.1: Envestra's proposed tariff classes, tariffs and tariff parameters

Tariff classes	Tariffs	Tariff parameters
Domestic services	Domestic tariffs for: Brisbane and Riverview zone Northern zone	Fixed base charge Stepped variable consumption charge
Commercial services	Commercial tariff for: Brisbane and Riverview zone Northern zone	Fixed base charge Stepped variable consumption charge
Demand services	Demand tariffs for: Brisbane zone Northern zone Riverview zone	Fixed base charge (based on customer's demand) Stepped variable demand charge
Ancillary services	Special meter read Disconnection Reconnection	Fixed charge

Source: Envestra, *Qld access arrangement information*, October 2010, p. 193.

In addition to the changes in tariff structures proposed by Envestra, the relative magnitude of tariff parameters has changed from the earlier access arrangement period. Specifically, Envestra has slightly re-balanced charges, with more revenue to be recovered by fixed base charges and low levels of consumption and demand. Also, Envestra proposed categorising customers as demand customers based on their consumption and maximum demand levels, as opposed to just their consumption levels in the earlier access arrangement period.[2]

Envestra included in its access arrangement information a detailed description of the cost allocation method it used to develop tariffs for reference services, with the exception of ancillary services.[3] Envestra's proposal did not include any information regarding the relationship between costs and tariffs.

[2] Envestra, *Qld access arrangement information*, October 2010, p. 41.
[3] Envestra, *Qld access arrangement information*, October 2010, Attachment 14.1, pp. 11–17.

Table 11.2: Envestra expected revenue compared to avoidable and stand alone costs for domestic, commercial and demand tariffs, 2011-12 ($m, nominal)

	Avoidable cost	Expected revenue	Stand alone cost
Tariff R: Brisbane and Riverview	6.24	18.92	60.39
Tariff R: Northern	0.25	0.70	35.37
Tariff C: Brisbane and Riverview	0.24	14.23	35.04
Tariff C: Northern	0.04	2.41	34.33
Tariff D: Brisbane	1.48	11.48	34.33
Tariff D: Northern	0.16	0.60	34.33
Tariff D: Riverview	0	0.63	34.33

Source: Envestra, *Qld access arrangement information*, October 2010, p. 198.

11.4 Submissions

Submissions were received from AGL and Origin.

AGL[4] and Origin[5] raised a range of concerns with Envestra's proposal to divide volume customers into domestic and commercial customers. AGL queried whether the change aligned with AEMO procedures, whether Envestra would reclassify all of its existing volume tariff customers, and whether classifications would occur via the agreed industry business-to-business systems. AGL also stated that the change would place an unnecessary burden on industry and potentially require significant system changes to network users. For these reasons AGL stated that the existing classification of volume and demand customers be retained.[6] Origin stated that the proposal would cause problems with business-to-business systems and raise questions about how sites would be identified as domestic. For these reasons Origin stated that the volume category should not be split into domestic and commercial sub-groups.[7]

AGL[8] and Origin[9] also raised concerns with Envestra's proposal to categorise demand customers on the basis of maximum daily quantity instead of annual consumption levels, as in the earlier access arrangement period. AGL stated that the new definition was not in the interests of network users and end-use consumers.[10] Origin stated that it was unclear whether customers with annual consumption less than 10 TJ but with maximum daily quantity (MDQ) greater than 50 GJ will be moved onto interval metering and, if they are, whether network users will be able to pass on the cost of the

4 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 2–3.
5 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5.
6 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 2–3.
7 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5.
8 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 2.
9 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5.
10 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 2.

new meter. Origin also stated that these customers would not be easily identified in current business systems, which would cause billing problems. Finally, Origin stated that it was not convinced there was a sufficient benefit in cost reflective pricing to justify the change for a very small group of customers.[11]

11.5 AER's consideration

The following outlines the AER's consideration of Envestra's proposal for its compliance with the NGR. The AER has taken into account the submissions received. The AER has identified those elements of Envestra's proposal that meet the NGR requirements and those elements that require amendments in order to sufficiently demonstrate that certain tariff characteristics comply with the NGR requirements. In addition, the tariffs need to be amended to reflect the adjustments made to revenue and demand, as discussed in chapters 9 and 10.

11.5.1 Tariff classes and tariffs

Envestra proposed to divide customers for its reference services into four tariff classes.[12] The AER considers that this is in accordance with the requirements of r. 48(1)(d)(i) and r. 94(1) of the NGR to specify tariff classes.

Envestra considered a range of factors that the AER considers relevant to the economic efficiency of providing reference services and the associated transaction costs, including for example:

- bases for grouping customers, such as usage profiles and location
- customers' changing behaviour and response to price signals
- customers' impact on connection and pipeline costs.[13]

The AER considers that Envestra has not adequately addressed requirements on economic efficiency and transaction costs in r. 94(2) of the NGR in proposing to categorise customers as volume or demand customers based on their maximum demand levels. For example, Envestra has proposed to impose an additional criterion of 50 GJ per day for its demand haulage reference service customers. Envestra noted that its proposed 'daily demand' criterion for demand reference services was previously in place, but was dropped in its earlier access arrangement period in order to simplify administrative arrangements. Envestra stated that it was now clear that capacity management will be an increasingly important issue for the network. Envestra noted that from time to time, there may be a small number of customers that may not meet the annual 10 TJ threshold but may draw large volumes of gas over a short period of several hours, with such a peak load eclipsing that of some smaller demand customers.[14]

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11 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5.
12 This meets the requirements of r. 94(1) of the NGR for customers to be divided into tariff classes.
13 Envestra, *Qld access arrangement information*, October 2010, pp. 191–195, 202–203; Envestra, *Qld access arrangement information*, October 2010, Attachment 14.1, pp. 24–25.
14 Envestra, *Qld access arrangement information*, October 2010, p. 41.

The AER considers that if capacity management is an issue, then extending demand charges to more customers seems to be a sensible approach as proposed by Envestra. However, Envestra did not provide any evidence to support this claim. Also Envestra has not discussed the administrative implications of re-introducing this approach. The AER notes that Origin and AGL have raised a number of concerns regarding the implementation of Envestra's proposed approach.[15] Origin was concerned that customers with annual consumption less than 10 TJ but with MDQ greater than 50 GJ would not easily be identified in its current business systems, which would cause billing problems. Also, it was unclear to Origin whether such customers would be moved onto interval metering and, if they were, whether network users would be able to pass on the cost of the new meter.

The AER also notes the submission from ECCSA that suggested Envestra's tariffs should be as close as possible to being cost reflective. The AER disagrees with the Origin's submission that there was not a sufficient benefit in cost reflective pricing to justify the change for a very small group of customers. For the reasons outlined above the AER considers that the tariff classes proposed by Envestra do not meet the requirements of r. 94(2) of the NGR.

11.5.2 Allocation of total revenue and costs to tariff classes

The NGR includes requirements at two levels of revenue and cost allocation – the first between reference services and non-reference services[16] and the second between reference services.[17]

11.5.2.1 Allocation of revenue and costs between reference services and other services

Envestra stated that it will provide negotiated services that are different to reference services.[18] Envestra also stated that it does not allocate costs that are not attributable to reference services in its cost allocation model.[19] This suggests Envestra incurs costs for reference services that may be attributable to non-reference services. The AER considers therefore that r. 93 has not been satisfied. That is, Envestra has not adequately demonstrated that total revenue is allocated between reference and other services in the ratio in which costs are allocated (r. 93(1)) or that costs have been allocated between reference and other services according to r. 93(2) of the NGR. [20]

11.5.2.2 Allocation of revenue and costs between reference services

Envestra included in its access arrangement information a detailed description of the cost allocation method it used to develop tariffs for reference services.[21] The AER considers this description meets the requirements of the NGR, except that it omits ancillary services. Ancillary services are reference services and therefore must be included in Envestra's response to r. 72(1)(j)(i) of the NGR. In its revised access arrangement proposal, Envestra should include ancillary services.

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15 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5 ; and AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 2.
16 NGR, r. 93.
17 NGR, r. 72(1)(j)(i).
18 Envestra, *Qld access arrangement information*, October 2010, p. 42.
19 Envestra, *Qld access arrangement information*, October 2010, Attachment 14.1, p. 17.
20 Envestra, *Qld access arrangement information*, October 2010, Attachment 14.1, p. 17.
21 Envestra, *Qld access arrangement information*, October 2010, Attachment 14.1, pp. 11–17.

Also, Envestra did not include any information to demonstrate the relationship between costs and tariffs, as required under r. 72(1)(j)(i) of the NGR. In its revised access arrangement proposal, Envestra should demonstrate this relationship. The AER considers Envestra could do so by quantifying the step-by-step cost allocation process for calculating tariffs that Envestra provided in its access arrangement information (amended to include ancillary services).

11.5.3 Tariff class revenues and parameters

Rule 94 of the NGR imposes limits on the revenue that can be recovered for each reference tariff class and includes requirements related to the nature of tariffs and tariff parameters.

11.5.3.1 Tariff class revenue limits

For each tariff class, the NGR requires that tariff revenue lies between the stand alone cost of supplying customers and the avoidable cost of not supplying them. The AER has reviewed Envestra's definitions of avoidable and stand alone costs for domestic, commercial and demand tariff classes and considers they are acceptable for assessing compliance with the NGR. As shown in table 11.2, Envestra calculated avoidable and stand alone costs for domestic and commercial tariff classes, and for each tariff within the demand tariff class, and showed that expected tariff revenue lies between these values.

Compared to the earlier access arrangement, the tariffs Envestra proposed included slightly re-balanced charges, with a greater share of revenue to be recovered from fixed base charges and low levels of consumption and demand. This re-balancing is permissible under the revenue limits imposed on tariff classes under the NGR. As shown in table 11.2, the revenue Envestra expects to recover from domestic, commercial and demand customers lies well within the broad range of avoidable and stand alone costs for each tariff class. As a result, the AER is satisfied that Envestra has complied with r. 94(3) of the NGR in relation to stand alone and avoidable costs for the domestic, commercial and demand tariff classes.

11.5.3.2 Tariffs and charging parameters

The NGR requires that each tariff and its charging parameters must take into account long run marginal costs, and must be determined having regard to transaction costs and customer responses to price signals.[22] As discussed in section 11.5.1, the AER considers that Envestra has not adequately addressed requirements on transaction costs in proposing two tariff classes in place of the current tariff V and in categorising customers as volume or demand customers based on their maximum demand levels. Aside from these issues, the AER considers that Envestra's formulation of tariff classes[23] shows adequate consideration of transaction costs and customer responses for domestic, commercial and demand services but not for ancillary services. This is because ancillary services were not included in Envestra's discussions of transaction costs[24] and customer responses.[25]

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22 NGR, r. 94(4).
23 See section 11.5.1.
24 Envestra, *Qld access arrangement information*, October 2010, p. 202–203.

The AER also considers that Envestra appropriately accounted for long run marginal costs in constructing domestic, commercial and demand tariffs and tariff parameters, based on its review of section 14.6 of the access arrangement information. However, Envestra did not address how tariffs for ancillary services take account of long run marginal costs and is therefore required to address this omission in its revised access arrangement proposal.

11.5.4 Prudent discounts

The AER has considered the prudent discounts Envestra proposed for eight of its demand customers are not acceptable.[26] All but one of these customers has received discounted prices in the earlier access arrangement period, and some in the period prior to the earlier access arrangement. One customer has been connected relatively recently. The AER reviewed the confidential information provided by Envestra against the requirements for approving prudent discounts under r. 96 of the NGR. Based on this review, the AER considers that half of the proposed discounts appear to be in response to the potential bypass of Envestra's network in favour of another pipeline service provider or energy source, as required by r. 96(2)(i) of the NGR. However, for four customers (grouped as "project specific agreements"), Envestra did not indicate the reason for the discounted prices so that it was not possible for the AER to assess the necessity of the discount under r. 92(2) of the NGR. In addition, Envestra has not demonstrated how any of the eight discounts are likely to lead to reference tariffs being lower than otherwise, as required by r. 96(2)(b) of the NGR. The AER requires Envestra to demonstrate, on a confidential basis if need be, that the revenue expected to be recovered from a discounted tariff exceeds the variable costs of servicing each customer.

11.6 Conclusion

The AER considers that the tariffs proposed by Envestra meet many of the requirements of the NGR, including r.48(1)(d)(i) and r. 94(1). However, the AER proposes not to approve the following aspects of Envestra's access arrangement proposal and requires Envestra to make the amendments set out in section 11.7.

- all reference tariffs—all reference tariffs require amendment to reflect amendments to total revenue and demand set out in chapters 9 and 10

- new tariff classes (tariff R and tariff C) to replace the current tariff V—Envestra's access arrangement proposal does not comply with the requirements regarding transaction costs in r. 94 of the NGR

- definitions of demand and volume customers based on consumption and demand—Envestra's access arrangement proposal does not comply with r. 94(2) of the NGR

- allocation of revenues and costs to reference and other services—Envestra's access arrangement does not comply with r. 93(1) and 93(2) of the NGR

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25 Envestra, *Qld access arrangement information*, October 2010, p. 203.
26 Envestra, *Qld access arrangement information*, October 2010, Attachment 12-1 (confidential).

- allocation of revenue and costs between tariff classes—Envestra's access arrangement proposal does not comply with r. 72(1)(j)(i) of the NGR

- other factors influencing tariffs and charging parameters—Envestra's access arrangement proposal does not comply with r. 94(4) of the NGR

- prudent discounts—Envestra's access arrangement proposal does not comply with r. 96 of the NGR.

11.7 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments.

Amendment 11.1: amend the access arrangement information to:

- demonstrate that Envestra has had regard to economic efficiency and transaction costs in proposing the new basis for categorising volume and demand customers

- demonstrate that revenue is allocated between reference and other services in the ratio in which costs are allocated between reference and other services

- demonstrate that costs are allocated between reference and other services according to r. 93(2) of the NGR

- include discussion of ancillary services in the cost allocation description

- demonstrate the relationship between costs and tariffs, including for ancillary services

- include consideration of transaction costs and customer responses for ancillary services

- address how tariffs for ancillary services take account of long run marginal costs

- explain why prices for "project specific agreements" are discounted (having regard to r. 96(2)(a) of the NGR) and demonstrate how all proposed discounted prices are likely to lead to reference tariffs being lower than otherwise.

12 Tariff variation mechanism

An access arrangement is required to set out how tariffs may be varied during the access arrangement period. Envestra has proposed a tariff variation mechanism that allows tariffs to be adjusted by inflation and, where applicable, an 'X' factor each year. In addition, Envestra has proposed a mechanism for adjusting tariffs in the event of an approved cost pass through.

The purpose of the tariff variation mechanism is, amongst other things, to permit the building block revenues to be recovered over the access arrangement period smoothly and to take account of actual inflation.

The AER considers that Envestra's tariff variation formula in principle complies with r. 92(2) of the NGR. However, the AER considers that the initial reference tariffs for reference services and 'X' factors must be amended to reflect the changes to the forecast total revenue identified in other chapters of this draft decision.

The AER does not propose to approve the cost pass through mechanism as Envestra's proposed cost pass through events are not defined clearly enough and does not comply with r. 97 of the NGR. The AER also does not accept Envestra's proposed specific cost pass through events and quantum of materiality threshold. The AER has applied a preferable set of defined events and a materiality threshold of one per cent of smoothed revenue.

12.1 Introduction

This chapter sets out the AER's consideration of Envestra's tariff variation mechanism. The purpose of the tariff variation mechanism is to permit tariffs to be adjusted during the access arrangement period. These adjustments are to account for actual inflation whilst maintaining the proportion of revenue to be recovered from different reference services. The mechanism also accommodates any other tariff adjustments that may be required, such as for an approved cost pass through event. The tariff variation mechanism also sets administrative procedures for the approval of any proposed changes to tariffs.

12.2 Regulatory requirements

Rule 72(1)(k) of the NGR requires that the access arrangement information for a full access arrangement proposal must include the service provider's rationale for any proposed reference tariff variation mechanism.

Rule 92(1) of the NGR requires that a full access arrangement must include a mechanism for variation of a reference tariff over the course of an access arrangement period. Rule 92(2) of the NGR provides that the reference tariff variation mechanism must be designed to equalise in present value terms forecast revenue from reference services over the access arrangement period and the portion of total revenue allocated to reference services for the access arrangement period.

Rule 97(1) of the NGR requires that a reference tariff variation mechanism may provide for variation of a reference tariff in accordance with a schedule of fixed tariffs; or in accordance with a formula set out in the access arrangement; or as a

result of a cost pass through for a defined event; or a combination of 2 or more of these operations.

Rule 97(2) of the NGR provides that a formula for variation of a reference tariff may (for example) provide for variable caps on the revenue to be derived from a particular combination of reference services; or tariff basket price control; or revenue yield control; or a combination of all or any of these factors.

In deciding whether a particular reference tariff variation mechanism is appropriate to a particular access arrangement, the AER must have regard to the various factors in r. 97(3) of the NGR including the need for efficient tariff structures; and the possible effects of the reference tariff variation mechanism on administrative costs; and the regulatory arrangements (if any) applicable to the relevant reference services; and the desirability of consistency between regulatory arrangements for similar services; and any other relevant factor.

Rule 97(4) of the NGR requires that a reference tariff variation mechanism must give the AER adequate oversight or powers of approval over variation of the reference tariff.

12.3 Access arrangement proposal

Envestra has proposed two reference tariff variation mechanisms as part of its access arrangement proposal:

- an annual tariff variation formula mechanism consistent with the formula applied in the earlier access arrangement period, other than the value of X.
- a cost pass though reference tariff variation mechanism.[1]

12.3.1 Annual tariff variation mechanism

Envestra has proposed to maintain the tariff basket annual tariff variation mechanism in the form of a weighted average price cap (WAPC) formula as in the earlier access arrangement. This approach relies on historical quantities from two years prior to the tariff variation year and allows the price control to rely on actual rather than estimated quantity data. Envestra stated that the tariff basket annual tariff variation mechanism is allowed under r. 97(2)(b) of the NGR.[2]

$$(CPI_t)((1-X_t) \geq \frac{\sum_{i=1}^{n}\sum_{j=1}^{m} p_t^{ij} \bullet q_{t-2}^{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{m} p_{t-1}^{ij} \bullet q_{t-2}^{ij}}$$

1 Envestra, *Qld access arrangement information*, October 2010, pp. 204–209.
2 Envestra, *Qld access arrangement information*, October 2010, pp. 204–209.

where:

CPI_t is calculated as the CPI for the year ending 31 March immediately preceding the start of year t, divided by the CPI for the year ending 31 March immediately preceding the start of year *t-1*

X_t is -0.12 for 2012–13

X_t is -0.09 for 2013–14

X_t is -0.03 for 2014–15

X_t is -0.02 for 2015–16

n is the number of different reference tariffs

m is the different components, elements or variables comprised within a reference tariff

p_t^{ij} is the proposed component *j* of reference tariff *i* in year *t*

p_{t-1}^{ij} is the prevailing component *j* of reference tariff *j* in year *t–1*

q_{t-2}^{ij} is the quantity of component *j* of reference tariff *i* that was sold in year *t–2*.

Envestra has also proposed a rebalancing control formula consistent with the formula applied in the earlier access arrangement period, other than the side constraint which it has increased from 2.5 per cent to 10 per cent (that is, Y value increased from 0.025 to 0.10). Envestra suggested that the increase in the side constraint to 10 per cent will enable greater flexibility for it to respond to changes in customer gas usage profile.[3] Envestra also noted that a 10 per cent side constraint is consistent with the tariff rebalancing control formula approved by the AER for Jemena's access arrangement for the NSW gas networks (JGN).[4]

Envestra has stated that the CPI definition has been altered to a comparator of indices, consistent with Envestra's South Australian access arrangement as opposed to the current definition which is the change in CPI over a year. The change in the CPI definition has no effect on the values calculated by the formula, but the formula shifts from having $(1+CPI_t)$ to CPI_t.[5]

Envestra has proposed to maintain its reference tariffs for ancillary reference services in real terms over the access arrangement period. Envestra has submitted that subject to AER approval, it will have the right to vary the reference tariffs for ancillary

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3 Envestra, *Qld access arrangement information*, October 2010, pp. 204–209.

4 AER, *Draft decision, Jemena access arrangement proposal for the NSW gas networks*, 1 July 2010–30 June 2015, February 2010.

5 Envestra, *Qld access arrangement information*, October 2010, pp. 204–206.

reference services on 1 July 2011, and thereafter annually during the access arrangement period.[6]

12.3.2 Cost pass through tariff mechanism

Envestra has proposed to include a cost pass through mechanism in its access arrangement, in order to recover incremental costs resulting from material unforeseen or uncontrollable events.[7] Envestra has proposed five defined 'trigger events'[8], being:

- change in impost
- network user failure event
- compliance obligation event
- business continuity event
- carbon pollution reduction scheme event.

Envestra has proposed that a materiality threshold of $0.1 million net of third party payments, including proceeds from insurance, apply to all individual trigger events.[9]

12.3.3 Annual tariff variation approval

Envestra has proposed that it will notify the AER in respect of any reference tariff variations at least 35 business days before the date of implementation. The notification will include an explanation and details of how the proposed variations have been calculated. Envestra has proposed that the AER have 20 business days to approve or reject the proposed variations. This allows market participants 15 business days to prepare for the implementation of the new tariffs. Envestra has submitted that the tariff variation process satisfies requirements of r. 97(4) of the NGR.[10]

12.4 AER's consideration

12.4.1 Annual tariff variation formula mechanism

12.4.1.1 Revenue equalisation

The purpose of the annual tariff variation mechanism over the access arrangement period is, amongst other things, to equalise in present value terms the building block costs associated with reference services and the portion of total revenue allocated to reference services.[11]

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6 Envestra, *Qld access arrangement information*, October 2010, pp. 204–209.
7 Envestra, *Qld access arrangement information*, October 2010, pp. 208–209.
8 For the purposes of this access arrangement, the AER considers the terms 'trigger event' and 'cost pass through event' can be used interchangeably. For consistency with past determinations and r. 97 of the NGR, the AER will refer to the 'cost pass through' mechanism.
9 Envestra, *Qld access arrangement information*, October 2010, p. 209.
10 Envestra, *Qld access arrangement information*, October 2010, October 2010, pp. 204–209.
11 NGR, r. 92(2).

The AER considers that Envestra's annual tariff variation formula mechanism in principle complies with r. 92(2) of the NGR. However, the AER considers that the initial reference tariffs from reference services must be amended as set out in amendment 12.1. This is required to reflect the changes to forecast total revenue and forecast demand. The changes in total revenue are outlined in the total revenue chapter 9 and changes to forecast demand are outlined in the demand chapter 10 of this draft decision.

12.4.1.2 Annual tariff variation formula

The AER's consideration of the Envestra's proposed annual tariff variation formula is discussed below.

Side constraints

Since the release of its decision for the JGN, the AER has reviewed its position on side constraints in its recent decisions for the Victorian electricity distribution network service providers distribution determination (Victorian DNSPs).[12] Under r. 97(3) and r. 97(4) of the NGR, the AER must have regard to the regulatory arrangements reflected in the previous tariff variation mechanism;[13] and the desirability of consistency in the mechanism, within and beyond the relevant jurisdiction.[14] Further, the AER notes that large stakeholders deal with both gas and electricity networks businesses and it is appropriate to have consistency across these businesses.

The AER considers that consistent with the approach it took for its determination for the Victorian DNSPs, a side constraint of 2 per cent is appropriate for Envestra to respond to changes in the customer gas usage profile. . Envestra has freedom to rebalance tariffs at the start of the access arrangement period as the NGR does not provide for side constrains at that time. The AER considers that within the access arrangement period, it is important for customers to have a reasonable degree of certainty to facilitate investments. The AER considers that 10 per cent side constraint proposed by Envestra is too high as it allows tariffs to increase up to 50 per cent across the access arrangement period. Consistent with the approach for the Victorian DNSPs, side constraints contained in this draft decision do not apply for the first year of the access arrangement period.[15]

The AER acknowledges that not accepting the 10 per cent side constraint proposed by Envestra is not consistent with its decision to approve a similar side constraint for NSW gas service providers. However, in its final decision for the Victorian DNSPs, the AER notes that, any change in its regulatory approach necessarily results in some inconsistency across jurisdictions for a finite period. This is because regulatory control periods (and applicable distribution determinations) are not concurrent across jurisdictions and do not have uniform commencement dates.[16]

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12 AER, *Draft decision, Victorian distribution network service providers, Distribution determination, 2011–2015*, June 2010, pp. 5970; AER, *Final decision, Victorian distribution network service providers, Distribution determination, 2011–2015*, October 2010, pp. 31–33, 40–57.

13 NGR r. 97(3)(c).

14 NGR r. 97(3)(d).

15 AER, *Draft decision, Victorian distribution determination*, June 2010, p. 60.

16 AER, *Final decision, Victorian distribution determination*, October 2010, p. 795.

The AER requires Envestra to change its proposed rebalancing control formula to reflect the side constraint value of 2 per cent and incorporate the other changes as outlined in amendment 12.2.

The AER notes the side constraints contained in the rebalancing variation formula does not apply for the first year of the access arrangement period. The AER considers that Envestra should consult with its customers on tariff rebalancing in the first year of access arrangement following the release of the AER draft decision. This would ensure customers are not surprised by one off large tariff increases in 2011–12 (changes in tariffs in the following years of the access arrangement period are limited by side constraints).

12.4.1.3 Other technical specification matters

In addition to the matters outlined above, there are some other technical specification issues that the AER requires Envestra to address. These are addressed below.

Envestra has stated that subject to the approval of the AER, it will have the right to vary the reference tariffs for ancillary reference services, initially on 1 July 2011 and thereafter annually during the access arrangement period.[17]

The AER does not consider that a tariff variation mechanism which requires tariffs to be varied on the first day of the access arrangement period (1 July 2011) is practical. This would require a revision to tariffs that had been determined in May 2011 which would result in unnecessary administrative costs as the AER would need to assess the proposed tariffs prior to 1 July 2011.[18] The annual ancillary tariff variation mechanism needs to be amended as outlined in amendment 12.3 so that the first annual tariff variation is made for the year commencing 1 July 2012. As a consequence, all tables in annexure B of the access arrangement must be amended to be indexed in real 2011–12 dollars.[19]

In order for the tariff variation to be estimated consistently each year, the AER considers it appropriate for Envestra to amend its access arrangement proposal as outlined in amendment 12.4(iii) to specify a rounding convention.[20]

Envestra also needs to include a clause in its access arrangement proposal to correct for errors in subsequent years arising from the proposed tariff variation mechanisms as outlined in amendment 12.4(i).[21]

12.4.1.4 Annual tariff variation approval

The AER considers that the proposed 20 business days to assess an annual tariff variation notification does not provide it with adequate time to assess a tariff variation notification.[22] As outlined in amendment 12.4(i) Envestra is required to provide a proposed tariff variation to the AER a minimum 50 business days before the variation

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17 Envestra, *Qld access arrangement information*, October 2010, p. 207.
18 NGR, r. 97(3)(b).
19 Envestra, *Qld access arrangement proposal*, October 2010, pp. 24–25.
20 NGR, 97(3)(e).
21 NGR, 97(3)(e).
22 NGR, r. 97(4).

is to commence on 1 July. This is consistent with other regulatory arrangements for similar services.[23] This means Envestra is required to provide a proposed tariff variation on or around 15 April or the next closest business day. This will provide the AER with approximately 30 business days to assess the tariff notification and users with 20 business days to implement the tariff changes.

However, this is a short period of time for the AER to approve a tariff variation if an application is incomplete or information in it is not substantiated. As a result, the AER considers the access arrangement must be amended as outlined in amendment 12.4(i) to include a requirement to extend the decision making time period when the AER requests further information from Envestra. The arrangements to extend the decision making time is not new and a similar arrangement was allowed under the Code.[24]

The AER accepts Envestra's proposal to use CPI data for the year ending 31 March immediately preceding the start of the year in the annual tariff variation formula mechanism.[25]

An important input in the proposed annual tariff variation mechanism is the use of past gas quantities to weight each tariff components. The AER considers it is appropriate that Envestra be required to provide an independent statement to support the actual gas quantities to allow the AER to verify the quantities used in the tariff variation mechanism, and to ensure it is applied consistently every year.[26] The independent verification statement should provide for audited or verified quarterly and annual quantities for the year consistent with the proposed changes in CPI. This information will likely be collected as part of annual reporting requirements (audit requirement to be set out in RIN). The information to be reported during the access arrangement period is outlined in appendix E. The AER requires Envestra to amend its access arrangement proposal as outlined in amendment 12.4(ii).

Further, the AER considers that Envestra should provide its workings, demonstrating how the proposed tariffs have been calculated in accordance with the tariff variation formula mechanism. This will allow the AER to more easily assess whether the tariff variation mechanism has been applied correctly and to facilitate the administrative efficiency of the approval process.[27] The AER requires Envestra to amend its access arrangement proposal as outlined in amendment 12.4(i).

12.4.2 Tariff variation mechanism for cost pass through

The AER broadly accepts Envestra's approach to a mechanism for cost pass-through. The AER considers a pass through mechanism should appropriately balance the risk of material and unexpected 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

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23 NGR, r. 97(3)(d).
24 Code, annex D, section 8.3D (b)(ii).
25 NGR, r. 97(3)(e).
26 NGR, r. 97(3)(e).
27 NGR, r. 97(4).

symmetric, such that customers will benefit from unexpected events that materially reduce the costs faced by a service provider. The AER also considers that a pass through mechanism should seek to minimise any administrative costs.

12.4.2.1 Defined cost pass through events

Envestra proposed five defined pass through events, referred to in its proposal as 'trigger events'.[28] The AER considers that clearly defined pass through events serve the long term interests of service providers and users of gas distribution networks. In particular, clearly defined events create greater regulatory certainty for service providers and stakeholders by removing any ambiguities about what costs may or may not be passed through to customers during the access arrangement period. To promote the symmetrical distribution of risks, the AER considers that qualifying events should be defined so as to return material savings to customers.

The AER has the following concerns with the definitions of Envestra's proposed cost pass through events.

- Network user failure event— Envestra's proposed network user failure event would fully compensate Envestra for any user insolvency leading to financial loss. The AER considers this risk should be mitigated by Envestra by forming appropriate prudential requirements with users. The AER also considers that event definitions should include a direct reference to the materiality of impact.

- Business continuity event—the AER notes that Envestra's proposed business continuity event includes, but is not limited to, force majeure events. The AER considers that the 'force majeure' event is not clearly defined. The AER also considers that event definitions should include a direct reference to the materiality of impact.

- Carbon pollution reduction scheme (CPRS) event—the AER considers that the form of any future carbon reduction policy is highly uncertain, and that the timing and likelihood of any such scheme is unclear at present. The AER considers that the 'CPRS' event is not clearly defined. As the form and scope of a potential carbon price cannot be firmly defined in advance, it may only be treated as an unforeseeable event. However, the proposed 'CPRS' event is not consistent with the AER's interpretation of an 'unforeseeable' event.[29] The AER also considers that event definitions should include a direct reference to the materiality of impact.

- Change in impost—the AER considers that Envestra's proposed definition covers only a new tax or charge rather than material increase or decrease in cost of providing reference services as a consequence of change in relevant tax. The AER also considers that event definitions should include a direct reference to the materiality of impact.

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[28] Envestra, *Qld access arrangement proposal*, October 2010, pp. 10–12.
[29] AER, *Draft decision, Victorian distribution determination*, June, 2010, p. 707.

- Regulatory change (compliance obligation)—Envestra has defined this as an event where it is obliged to comply with new or changed obligation. The AER considers that Envestra's definition is not clear enough and is not consistent with the AER interpretation of regulatory change event. The AER also considers that event definitions should include a direct reference to the materiality of impact.

In its earlier access arrangement, only one defined event was included: an impost pass through event.[30] The AER has had regard to these previous arrangements under r. 97(3) of the NGR, as well as Envestra's five proposed 'trigger events', and does not consider they provide sufficient protection for Envestra and other stakeholders against unforeseeable and uncontrollable risks. The AER considers that Envestra faces a number of other clearly-definable risks that could threaten Envestra's overall financial viability.

The AER considers the following nominated events, are preferable to Envestra's proposed pass through events, and should apply in place of Envestra's proposed events for the access arrangement period:

- **Regulatory change event**—means:

A change in a regulatory obligation or requirement that:

(a) occurs during the course of a regulatory control period; and

(b) substantially affects the manner in which Envestra provides reference services (as the case requires); and

(c) materially increases or materially decreases the costs of providing those services.

- **Service standard event**—means:

A legislative or administrative act or decision that:

(a) has the effect of:

(i) substantially varying, during the course of a regulatory control period, the manner in which Envestra is required to provide a reference service; or

(ii) imposing, removing or varying, during the course of a regulatory control period, minimum service standards applicable to prescribed reference services; or

(iii) altering, during the course of a regulatory control period, the nature or scope of the prescribed reference services, provided by Envestra; and

(b) materially increases or materially decreases the costs to Envestra of providing prescribed reference services.

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30 Envestra, *Qld access arrangement 2006-2011*, September 2007, p. 6.

- **Tax change event**—means:

A tax change event occurs if any of the following occurs during the course of a regulatory control period for Envestra:

(a) a change in a relevant tax, in the application or official interpretation of a relevant tax, in the rate of a relevant tax, or in the way a relevant tax is calculated;

(b) the removal of a relevant tax;

(c) the imposition of a relevant tax; and

In consequence, the costs to Envestra of providing prescribed reference services are materially increased or decreased.

- **Terrorism event**—means:

An act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of in connection with any organisation or government), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear) and which materially increases the costs to Envestra of providing a reference service.

- **Network user failure event**—means:

A network user failure event means the occurrence of an event whereby an existing network user is unable to continue to supply gas to its customers, and those customers are transferred to another network user, and which materially increases the costs of Envestra providing reference services.

- **Insurer credit risk event—**means:

An event where the insolvency of the nominated insurers of Envestra occurs, as a result of which Envestra:

(a) incurs materially higher or lower costs for insurance premiums than those allowed for in the access arrangement; or

(b) in respect of a claim for a risk that would have been insured by Envestra's insurers, is subject to a materially higher or lower claim limit or a materially higher or lower deductible than would have applied under that policy.

- **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 Envestra must bear the amount of that excess loss. For the purposes of this Trigger Event, the relevant policy limit is the greater of the actual limit from time to time and the limit under Envestra'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 Envestra's negligence, fault, or lack of care. This also excludes all liability arising from the Envestra's unlawful conduct, and excludes all liability and damages arising from actions or conduct expected or intended by Envestra.

- **Natural disaster event**—means:

Any major fire, flood, earthquake, or other natural disaster beyond the control of Envestra (but excluding those events for which external insurance or self insurance has been included within Envestra's forecast operating expenditure) that occurs during the forthcoming regulatory control period and materially increases the costs to Envestra of providing reference services.

The AER considers this framework of events mirrors the framework applied in its decision on the Victorian DNSPs. [31] In that decision, the AER approved all of the above events[32] with regard to the AER's preferred conceptual approach to assessing proposed pass through events.[33] The AER considers that this approach to determining the cost pass through event framework is equally applicable to Envestra, given the similarities in objectives under the NGL and NEL.[34] Under r. 97(3) of the NGR, the AER must have regard to the desirability of consistency between regulatory arrangements for similar services. The AER considers that the functions of gas and electricity distribution service providers are sufficiently similar as to be considered 'similar services' under r. 97(3). Where the events defined in the decision on the Victorian DNSPs promote the fundamental objectives under the NEL, they similarly promote the objectives under the NGL.

The AER notes that the event definitions have been revised—though to the least extent possible—in order to reflect gas distribution services. In particular, the AER notes that the 'network user failure event' is defined to mirror the effect of the retailer of last resort event approved in the Victorian DNSPs final decision,[35] to the extent it applies to Envestra. The AER notes this is consistent with the terminology proposed by Envestra.[36] The AER notes that the 'network users' relevant to Envestra will generally be gas retailers.

For the reasons described, the AER does not accept Envestra's proposed pass through events. The AER notes it has full discretion with regard to the approval of cost pass through arrangements. Under r. 40(3) of the NGR, the AER can withhold approval of a proposed element if it considers a preferable alternative exists that complies with applicable requirements and criteria under the NGL.

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31 AER, *Draft decision, Victorian distribution determination*, June 2010, pp.716-717.
32 With the exception of the 'network user failure event', which is in place of the 'retailer of last resort' event approved in the Victorian final decision.
33 AER, *Draft decision, Victorian distribution determination*, June, 2010, pp. 416-418.
34 In particular, NGL s. 23 and s.24; NEL s. 7 and s. 7A,
35 AER, *Draft decision, Victorian distribution determination*, June, 2010, p. 724.
36 Envestra, *Qld access arrangement proposal*, October 2010, p. 10.

12.4.2.2 Materiality threshold

The AER does not accept Envestra's proposed materiality threshold of $0.1 million for individual pass through events.[37] The fundamental purpose of the cost pass-through mechanism is to offer protection to service providers, where unexpected events place the financial viability of the service provider at risk. It is not intended to recover all costs that a business would otherwise be expected to absorb. The AER considers Envestra's proposed materiality threshold is too low, and would reduce the incentive for Envestra to mitigate the risk and costs of a pass through event. The AER considers this would disproportionately burden end users with risk.

Under r. 97(3), and r. 97(4) of the NGR, the AER must have regard to the regulatory arrangements in place in the previous tariff variation mechanism[38] and the desirability of consistency in the mechanism, within and beyond the relevant jurisdiction.[39] In its recent decision for the Victorian DNSPs, the AER considered the role that pass throughs should play in the regulatory regime.[40] As part of this review, the AER considered the appropriate risk sharing that should occur between customers and service providers, and the extent to which costs from unexpected events need to be recovered by service providers. To summarise, the AER considered that:

- the fundamental function of the pass through regime is that some costs from unexpected events be passed through to network users to protect DNSPs' financial viability

- providing 100 per cent recovery for all costs incurred is not consistent with promoting the national electricity objective, in promoting the long term interests of consumers with respect to price. To permit the annual pass through of all costs incurred would create a price volatility which is undesirable for customers (where non-recovery of those costs does not present a situation where the security or reliability of the network is undermined)

- such a cost of service regime may impact on the efficiency incentives of the DNSPs, because it would remove the incentive for DNSPs to mitigate costs from unexpected events

- full recovery of costs would be inconsistent with the revenue and pricing principles, particularly s. 7A (3) of the NEL, which compels the AER to provide incentives for DNSPs to act efficiently.[41]

The AER considers that the national gas and electricity objectives are very similar.[42] Likewise, the AER considers the revenue and pricing principles under the NGL and NEL are consistent.[43] As such, the AER considers that its reasoning on materiality thresholds in its Victorian DNSPs decision, summarised above, is applicable to this

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37 Envestra, *Qld access arrangement proposal*, October 2010, p. 10.
38 NGR, r. 97(3)(c).
39 NGR, r. 97(3)(d).
40 AER, *Final decision, Victorian distribution determination*, October 2010, p. 763.
41 AER, *Final decision, Victorian distribution determination*, October 2010, pp. 760–775.
42 NGL, s. 23; NEL, s. 7.
43 NGL, s. 24; NEL, s. 7A.

gas access arrangement review. A materiality threshold of one per cent better accommodates the efficiency incentives required under the regulatory regime, and better satisfies the revenue and pricing principles under the NGL.[44]

Envestra's cost pass through events have not previously been subject to a specific materiality threshold.[45] However, the AER considers a defined materiality threshold better serves the long term interests of energy stakeholders by providing greater certainty and consistency for Envestra and its customers. For Envestra and its customers, one per cent materiality thresholds were applied by the QCA, and by IPART in previous energy determinations.[46] Several businesses, including Ergon Energy and Country Energy, have accepted a one per cent materiality threshold for specified cost pass through events.[47] The AER is not aware of any service providers that have failed to meet service obligations due to the operation of the threshold, and the resultant inability to pass through costs to customers.

Under r. 40(3) of the NGR, the AER can withhold approval of proposed cost pass through arrangements where the AER considers a preferable alternative exists. A preferable alternative must comply with applicable requirements and criteria under the NGL. As part of this discretion, the AER is able to set defined cost pass through events, and to set a materiality threshold for those events.[48] The AER does not accept Envestra's proposed materiality threshold, on the basis that a preferable alternative exists that better satisfies the requirements under r. 97 of the NGR, as well as the national gas objective and NGL revenue and pricing principles.[49] For the reasons outlined above, the AER considers that a one per cent revenue threshold should apply to all cost pass through events.

12.4.2.3 Cost pass through assessment criteria

Envestra's proposed description of cost pass through arrangements is not sufficiently clear. The AER considers that the access arrangement proposal should set out factors the AER must take into consideration when assessing whether an event is a cost pass through event. These are:

- the costs to be passed through are for the delivery of pipeline services
- the costs are incremental to costs already allowed for in reference tariffs
- the total costs to be passed through are building block components of total revenue
- the costs to be passed through meet the relevant NGR criteria for determining the building block for total revenue in determining reference services

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44 NGL, s. 24.
45 Envestra, *Qld access arrangement information*, October 2010, p. 226.
46 QCA, *Final decision, Regulation of electricity distribution, April 2005*, p. 50; IPART, *NSW Electricity distribution pricing 2004–05 to 2008–09*, June 2004, p. 29.
47 AER, *Final decision, Queensland distribution determination 2010-11 to 2014-15, May 2010*, p. 312; AER, *Final decision, Wagga Wagga gas distribution network*, March 2010, p.77.
48 NGR, r. 97.
49 NGL, s. 23 and s. 24 respectively.

- any other factors the AER considers relevant and consistent with the NGR and NGL.[50]

Envestra's access arrangement proposal also needs to include a requirement to provide the AER with a statement 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). This is to ensure that only the net financial impact of an event is considered for a pass through event, as the financial impact of some events may be partially or wholly compensated or reimbursed by insurers or third parties as outlined in amendment 12.5.

Envestra stipulated that reference tariff variations as a result of cost pass through events will take effect from the earlier of the following 1 July or 1 January.[51] The AER considers mid-period tariff variations to all users of reference tariffs would be administratively inefficient, and not be as transparent as adjustments at the commencement of a regulatory year. The AER considers the text 'or 1 January' should be removed from the second paragraph of section 4.5 in Envestra's proposed access arrangement.

12.4.2.4 Oversight procedures and powers of approval for the cost pass through tariff variation mechanism

Under r. 97(4), the reference tariff variation mechanism must give the AER sufficient powers of oversight or approval. The AER does not consider Envestra's proposed procedures for cost pass through variations meet this requirement. The AER considers that it must be notified of a pass through event within 90 business days of the costs being incurred, regardless of whether the impact would result in a positive or negative impact on tariffs. The AER considers it should notify Envestra of its decision on any cost pass through application within 90 days, except where the AER considers the pass through application is sufficiently complex as to require an extension. The AER will notify Envestra where this is the case—and of the anticipated duration of the extension—within 90 business days of being notified of the pass through application. Time periods for the notification of cost pass through events are mandated under r. 6.6.1 of the NER. The AER considers that there is no reason to expect that cost pass through applications for electricity service providers should be any less complex than those for gas service providers. The AER considers the time frames described above should balance the need for a timely response, with the flexibility to make a complete and informed assessment of a cost pass through application.

The AER considers that procedures for the variation of reference tariffs due to cost pass through events should be separated from the general discussion of procedures for tariff variation as set out in amendment 12.5. The AER considers this will improve the clarity of the process and requirements for Envestra, and for network users.

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50 AER, *Draft decision, Jemena access arrangement proposal for the NSW gas networks*, February 2010, p. 301; NGR r. 97(3)(e).

51 Envestra, *Qld access arrangement proposal*, October 2010, p. 10.

12.5 Conclusion

The AER does not propose to approve the tariff variation mechanism proposed by Envestra as it does not comply with r. 97 of the NGR and requires Envestra to make the amendments set out in section 12.6.

The AER also does not accept Envestra's proposed cost pass through events. The AER considers that defined cost pass through events should apply to Envestra, all subject to a materiality threshold of one per cent of the smoothed forecast revenue specified in the final decision in the years of the regulatory control period that the costs are incurred. These events are defined in the amendment 12.5.

The AER considers the description of the materiality threshold[52], and the description of the cost pass through mechanism[53] should be defined in the access arrangement as set out in section 12.6.

12.6 Required amendments

Before the access arrangement proposal can be accepted, Envestra must make the following amendments:

Amendment 12.1: amend the access arrangement proposal to delete tables 1–4 of Annexure B and replace with following updated tables:

Table 1: Tariff R (Domestic Haulage Reference Service) for 2011-12 - GST exclusive dollars

Charges	Brisbane & Riverview Zone	Northern Zone
Fixed Charge ($/day)	0.34	0.34
For the first 0.0082 GJ of Gas delivered during a network day	22.24	24.44
For the next 0.0192 GJ of Gas delivered during a network day	15.88	17.44
All additional GJ of Gas delivered during a network day	7.55	8.28

[52] Section 12.4.2.2.
[53] Section 12.4.2.3.

Table 2: Tariff C (Commercial Haulage Reference Service) for 2011-12 - GST exclusive dollars

Charges	Brisbane & Riverview Zone	Northern Zone
Fixed Charge ($/day)	0.31	0.31
For the first 0.2 GJ of Gas delivered during a network day	16.32	17.92
For the next 0.3 GJ of Gas delivered during a network day	14.89	16.39
For the next 0.5 GJ of Gas delivered during a network day	14.45	15.87
For the next 1.0 GJ of Gas delivered during a network day	13.69	15.11
For the next 5.0 GJ of Gas delivered during a network day	11.99	13.05
All additional GJ	8.99	9.88

Table 3: Tariff D (Demand Haulage Reference Service) for 2011-12 - GST exclusive dollars

MDQ at delivery point	Tariff Zone		
	Brisbane	Northern	Riverview
50 GJ or less ($/GJ)	8,452.42	9,103.28	7,963.21
Plus $/GJ of MDQ			
Next 75 GJ	79.61	87.42	8.38
Next 150 GJ	43.85	47.85	8.02
Next 250 GJ	17.52	18.96	7.37
Next 500 GJ	7.99	8.53	7.33
Next 10,000 GJ	4.05	4.43	7.30
Additional GJ	4.05	4.43	7.30

Table 4: Ancillary Reference Tariffs for 2011-12 - GST exclusive dollars

Ancillary Reference Service	Tariff
Special Meter Read	9.40
Disconnection	64
Reconnection	64

Amendment 12.2: amend Annexure E of the access arrangement proposal as follows:

- delete the value of Y_t 0.10 in the rebalancing control formula in Annexure E, Box 2 and replace it with value of Y_t 0.02.

- insert the definition of X_t in tariff control formula in Annexure E, Box 1 and 2:

> X_t is defined by the alignment of the Service Provider's building block revenue requirement with the NPV of its forecast revenues and is determined to be:
>
> – 3 % in 2012/13;
> – 3 % in 2013/14;
> – 2 % in 2014/15;
> – 2 % in 2015/16.

- delete the third paragraph in section 4.4.1 of the access arrangement and replace with:

> The second Reference Tariff Control Formula is designed to ensure that the average revenue (in $/GJ or $/GJ of MDQ) that Envestra receives from any single type of Haulage Reference Service, after any proposed variation to Reference Tariffs, does not increase by more than CPI plus 2.0 per cent.

Amendment 12.3: amend the Annexure B of the access arrangement proposal to include the following statement before Table 1 (on page 23):

> The initial reference tariffs are expressed in real 2011–12 dollars and first annual tariff variation is made for the year commencing 1 July 2012.

Amendment 12.4: amend section 4.6 of the access arrangement as follows:

(i) delete section 4.6 and replace it with following:

> Envestra will notify the Regulator in respect of any Reference Tariff variations, such that variations occur on the first of July of any year. The notification will be made at least 50 business days before the date of implementation and include:
>
> (a) the proposed variations to the Reference Tariffs; and
>
> (b) an explanation and details of how the proposed variations have been calculated.
>
> If Envestra proposes variations to the Reference Tariffs (otherwise than as a result of a Trigger Event) and those various have not been approved by the next 1 July then the Reference Tariffs will be varied with effect from that next 1 July by the same percentage increment or decrement as occurred on the previous 1 July, until such time as variations to Reference Tariffs are approved by the Regulator.
>
> If it appears that any past tariff variation contains a material error or deficiency because of a clerical mistake, accidental slip or omission, miscalculation or misdescription, the AER may change subsequent tariffs to account for these past issues.
>
> Within 30 Business Days of receiving the Service Provider's Variation Notice, the AER will inform the Service Provider in writing of whether or not

it has verified the proposed Haulage Reference Tariff and/or Haulage Reference Tariff Components in the Service Provider's Variation Notice as compliant with the Annual Tariff Variation Mechanism.

The 30 Business Day periods may be extended for the time taken by the AER to obtain information from the Service Provider, 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.

(ii) Envestra will include a statement to support the Gas Quantity inputs in the tariff variation formula. The statement will be independently audited or verified and the Quantity input must reflect the most recent actual annual quantities available at the time of tariff variation assessment. The actual Quantity will be provided as four quarters of Gas Quantity data reconciling to an annual total Quantity of Gas.

(iii) Envestra to include a rounding convention in section 4.6.

Amendment 12.5: add a new section 4.6.1 under section 4.6 in the access arrangement to include procedures for Trigger Event variation processes as follows:

4.6.1 Procedure for Trigger Event Variation in Reference Tariffs

Envestra will notify the AER of Trigger Events within 90 business days of those costs being incurred, whether the costs would lead to an increase or decrease in Reference Tariffs.

When making a notification to the AER, Envestra will provide the AER with a statement, signed by an authorised officer of Envestra, 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 Envestra of its decision to approve or reject the proposed variations within 30 Business Days of receiving the notification. This period will be extended for the time taken by the Regulator to obtain information from Envestra, obtain expert advice or consult about the notification.

The AER will endeavour to make its decision on whether Envestra should vary Reference Tariffs due to the occurrence of a Trigger Event within 90 business days of receiving a notification from Envestra. However, if the AER determines the difficulty of assessing or quantifying the effect of the relevant Trigger Event requires further consideration, the AER may require an extension of a specified duration. The AER will notify Envestra of the extension, and its duration, within 90 business days of receiving a notification from Envestra.

Amendment 12.6: amend the access arrangement proposal to delete section 4.5 in the access arrangement and replace it with the following:

Subject to the approval of the Regulator under the NGR, Reference Tariffs may be varied after one or more Trigger 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 July.

In making its decision on whether to approve the proposed Trigger Event variation, the AER must take into account the following:

- the costs to be passed through are for the delivery of pipeline services
- the costs are incremental to costs already allowed for in reference tariffs
- the total costs to be passed through are building block components of total revenue
- 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
- any other factors the AER considers relevant and consistent with the NGR and NGL.

For the purpose of any defined event, an event is considered to materially increase or decrease costs where that individual 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.

Trigger Events are:

- a regulatory change event;
- a service standard event;
- a tax change event;
- a terrorism event;
- a network user failure event;
- an insurer credit risk event;
- an insurance cap event;
- a natural disaster event;

Where

'**Regulatory change event**' means:

A change in a regulatory obligation or requirement that:

(a) occurs during the course of a regulatory control period; and

(b) substantially affects the manner in which Envestra provides reference services (as the case requires); and

(c) materially increases or materially decreases the costs of providing those services.

'**Service standard event**' means:

A legislative or administrative act or decision that:

(a) has the effect of:

(i) substantially varying, during the course of a regulatory control period, the manner in which Envestra is required to provide a reference service; or
(ii) imposing, removing or varying, during the course of a regulatory control period, minimum service standards applicable to prescribed reference services; or
(iii) altering, during the course of a regulatory control period, the nature or scope of the prescribed reference services, provided by Envestra; and

(b) materially increases or materially decreases the costs to Envestra of providing prescribed reference services.

'**Tax change event**' means:

A tax change event occurs if any of the following occurs during the course of a regulatory control period for Envestra:

(a) a change in a relevant tax, in the application or official interpretation of a relevant tax, in the rate of a relevant tax, or in the way a relevant tax is calculated;

(b) the removal of a relevant tax;

(c) the imposition of a relevant tax; and

In consequence, the costs to Envestra of providing prescribed reference services are materially increased or decreased.

'**Terrorism event**' means:

An act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of in connection with any organisation or government), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear) and which materially increases the costs to Envestra of providing a reference service.

'**Network user failure event**' means:

A network user failure event means the occurrence of an event whereby an existing network user is unable to continue to supply gas to its customers, and those customers are transferred to another network user, and which materially increases the costs of Envestra providing reference services.

'**Insurer credit risk event**' means:

An event where the insolvency of the nominated insurers of Envestra occurs, as a result of which Envestra:

(a) incurs materially higher or lower costs for insurance premiums than those allowed for in the access arrangement; or

(b) in respect of a claim for a risk that would have been insured by Envestra's insurers, is subject to a materially higher or lower claim limit or a materially higher or lower deductible than would have applied under that policy.

'**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 Envestra must bear the amount of that excess loss. For the purposes of this Trigger Event, the relevant policy limit is the greater of the actual limit from time to time and the limit under Envestra'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 Envestra's negligence, fault, or lack of care. This also excludes all liability arising from the Envestra's unlawful conduct, and excludes all liability and damages arising from actions or conduct expected or intended by Envestra.

'**Natural disaster event**' means:

Any major fire, flood, earthquake, or other natural disaster beyond the control of Envestra (but excluding those events for which external insurance or self insurance has been included within Envestra's forecast operating expenditure) that occurs during the forthcoming regulatory control period and materially increases the costs to Envestra of providing reference services.

Materiality threshold is defined as:

For the purpose of any defined event, an event is considered to materially increase or decrease costs where that event has an impact of one per cent of the smoothed forecast revenue specified in the final decision, in the years of the regulatory control period that the costs are incurred.

Amendment 12.7: amend the access arrangement information to reflect amendments 12.1–12.6 as appropriate.

Part C – Other provisions of an access arrangement

13 Non-tariff components

Envestra's access arrangement sets out proposed terms and conditions that are not directly related to the nature or level of tariffs paid by users, but which are important to the relationship between the network service provider and users. Some of the terms and conditions vary from those included in the earlier access arrangement.

The AER proposes to approve some of the terms and conditions of Envestra's access arrangement proposal. However, the AER proposes not to approve a number of the terms and conditions. The AER considers that amended provisions for these terms and conditions better promote the national gas objective in s. 23 of the NGL. The AER considers that the national gas objective requires the AER to balance the interests of the service provider and users.

The AER accepts Envestra's proposals in relation to queuing requirements and the review commencement date proposed by Envestra as both meet the requirements of the NGR and NGL. The AER also proposes to approve Envestra's proposal not to include queuing requirements in its access arrangement proposal.

The AER proposes not to approve a number of the non-tariff components of Envestra's access arrangement proposal, including: capacity trading requirements; extensions and expansions policy; the review submission date; and the lack of a trigger event for the acceleration of the review submission date. The AER considers that amended arrangements for these components better promote the national gas objective in s. 23 of the NGL

13.1 Introduction

This chapter sets out the AER's consideration of the non-tariff components of Envestra's access arrangement proposal. In order to demonstrate compliance with r. 48 of the NGR, Envestra's access arrangement proposal includes:

- the terms and conditions that form the basis of the relationship between Envestra and its customers
- capacity trading arrangements that allow users to transfer contracted capacity to other users
- a policy that addresses whether any extension to, or expansion of, the network will be treated as part of the covered pipeline and what the impact on tariffs will be
- dates for reviewing the proposed access arrangements and commencing the next access arrangements.

13.2 Terms and conditions

13.2.1 Regulatory requirements

Rules 48(1)(d)(i) and 48(1)(d)(ii) of the NGR require a full access arrangement to specify the reference tariff and other terms and conditions on which reference services will be provided.

There are no specific rules in the NGR that guide the AER's assessment of proposed non-tariff terms and conditions.[1] However, in considering Envestra's proposed terms and conditions the AER has had regard to rule 100 of the NGR.

Rule 100 requires that an access arrangement must be consistent with the national gas objective and the rules and procedures in force when the terms and conditions of the access arrangement are determined or revised. 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.[2]

The AER has full discretion in assessing Envestra's proposed terms and conditions. Full discretion means that the AER has discretion to withhold its approval to an element of an access arrangement proposal if, in the AER's opinion, a preferable alternative exists that:

- complies with applicable requirements of the NGL and NGR
- is consistent with applicable criteria (if any) prescribed by the NGL and NGR.[3]

13.2.2 Access arrangement proposal

Envestra's proposed general terms and conditions are contained in annexure G of the access arrangement and form the basis of the access agreement between Envestra and a user.[4]

Envestra submitted that it has aligned the proposed terms and conditions with the terms and conditions for its South Australian distribution network.[5]

Envestra submitted a list of what it considered to be material changes to its terms and conditions (not all changes proposed by Envestra were included in this list). The list included high level reasons for the changes.[6] Envestra outlined four broad reasons for its proposed changes:

- updated for current market conditions
- agreed amendments resulting from negotiations with retailers
- changes for business reasons
- improved wording or clarification.[7]

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1 This contrasts with section 3.6 of the Code, which specifically required the regulator to assess whether the terms and conditions were reasonable.
2 NGL, s. 23.
3 NGR, r. 40(3).
4 Envestra, *Qld access arrangement terms and conditions*, October 2010.
5 Envestra, *Qld access arrangement information*, October 2010, p. 212.
6 Envestra, *Qld access arrangement information*, October 2010, pp. 213–214.
7 Envestra, *Qld access arrangement information*, October 2010, p. 212.

Envestra submitted that its proposed terms and conditions are consistent with good industry practice and are reasonable, as they are:

- essentially the same as those currently applying to users and have previously been approved as reasonable (by the Queensland Competition Authority (QCA))
- sufficiently well defined that the likelihood of a dispute over the terms and conditions of access is minimised
- designed to protect and balance the legitimate business interests of Envestra, users and prospective users.[8]

13.2.3 Submissions

The AER received submissions from AGL and Origin, covering many aspects of Envestra's proposal.[9] Those submissions relate not only to Envestra's proposed revisions, but also to existing terms and conditions for which Envestra proposed no revisions. Envestra made a late submission on 20 December 2010 in response to AGL's submission, but not to Origin's submission.[10]

Both Origin and AGL submitted that they cannot understand the justification for some revisions proposed by Envestra.[11] Origin submitted that the terms and conditions concerning liabilities and indemnities are weighted unequally in favour of Envestra.[12] AGL submitted that Envestra seems to have no liability, while users are responsible for almost everything.[13] For some terms and conditions AGL and Origin submitted that there should be reciprocal arrangements between Envestra and users.[14]

The AER's consideration of the submissions is outlined in detail in appendix D.

To the extent possible given its lateness, the AER has taken into account Envestra's submission in response to AGL's submission. In some instances the AER has not been convinced by the arguments put forward by Envestra. However, as noted in Appendix D, in making its final decision the AER will take into account any additional material that Envestra can provide to support its submission.

13.2.4 AER's consideration

The AER's assessment of Envestra's proposed terms and conditions is set out in detail in Appendix D. Appendix D is divided into two parts. The first part covers those terms and conditions for which Envestra proposed revisions. The second part covers those terms and conditions for which Envestra did not propose revisions. These

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8 Envestra, *Qld access arrangement information*, October 2010, p. 215–216.
9 AGL, *Envestra's Qld gas network access arrangement*, November 2010; Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010.
10 Envestra, *Response to AGL's submission*, December 2010.
11 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 9–10, 12–13, 15, 18, 21–22, 25–26; Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 7.
12 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 6.
13 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 25.
14 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 4; Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 6–7, 9, 10–11.

include terms and conditions that were raised in submissions by AGL and Origin and any terms and conditions that the AER considers need to be amended. The AER considers that Envestra's proposed revisions to its terms and conditions are not minor. In assessing Envestra's proposed revisions and AGL's and Origin's submissions, the AER has had regard to the national gas objective.

The AER considers that in order to achieve the national gas objective the interests of both consumers and gas pipeline service providers need to be taken into account. On the one hand, charges and non-price terms and conditions that unduly favour the gas pipeline service providers are not consistent with the promotion of efficient investment in and efficient operation of natural gas services and are not consistent with the long term interests of consumers. On the other hand, if tariffs, other charges and non-price terms and conditions are weighted in favour of users without due regard to the interests of gas pipeline service providers, service providers may be unwilling to make adequate investment in the network or provide adequate services. This would not be in the long term interests of natural gas consumers.

Both AGL and Origin submitted that a number of terms and conditions should be reciprocal. The AER considers that it is fair and reasonable for some of these terms and conditions to be made reciprocal. Accordingly, the AER requires certain amendments.

Overall, the AER agrees with AGL and Origin that taken in aggregate the terms and conditions are weighted too much in favour of Envestra. To correct this imbalance the AER requires Envestra to amend a number of terms and conditions. The AER's reasons are contained in Appendix D.

The remainder of this section summarises the proposed terms and conditions which the AER considers need to be amended to balance appropriately the interests of Envestra and users. The terms and conditions for which Envestra proposes revisions are considered first, followed by those terms and conditions for which Envestra did not propose revisions.

13.2.4.1 Proposed revisions to terms and conditions

Delivery of gas

Envestra proposed new clauses relating to the delivery of gas (clauses 2.4, 2.5 and 16.6).[15] These provisions relieve Envestra of any liability or responsibility to make inquiries with respect to any gas taken at a delivery point by someone other than a user. Envestra submitted that the clauses clarify its gas delivery obligations.[16]

In these circumstances the AER considers that Envestra should use reasonable endeavours to mitigate any loss to users. Envestra is required to amend clauses 2.4, 2.5 and 16.6, as set out at amendments 13.1 and 13.2.

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15 All references to 'clauses' relate to annexure G of the access arrangement proposal, unless otherwise stated.

16 Envestra, *Qld access arrangement information*, October 2010, p. 213.

Gas specifications and receipt pressures

Envestra proposed a new term and condition under which it will have no liability to a user for any loss, cost, damage or expense the user might suffer or incur because someone (other than Envestra) delivers gas that does not comply with the appropriate gas specifications (clause 12.5). Envestra submitted that this clarifies liability in respect of gas quality.[17] Envestra proposed a similar term and condition with respect to gas pressure at receipt points (clause 13.4).

The AER considers that if Envestra becomes aware of non-specification gas, or gas that is outside the prescribed range of pressures, entering its network and to the extent it can take action to prevent it, Envestra should do so. Envestra is required to amend its access arrangement to take reasonable endeavours to mitigate any loss to users as a consequence of non-specification gas, or gas outside the prescribed range of pressures, entering the network, as outlined at amendments 13.3 and 13.4.

Maximum hourly quantity

Envestra proposed a new term and condition which states that the maximum hourly quantity (MHQ) of gas is the maximum quantity of gas that Envestra is obliged to deliver during a period of 60 minutes (clause 4.2).

No other references to MHQ (other than clause 4.2) occurs in the terms and conditions in annexure G of the access arrangement proposal. Moreover, there is no reference to MHQ in the specific terms and conditions (specific to individual users). Only the maximum daily quantity (MDQ) is required to be agreed to between Envestra and the user.[18] It is unclear how a user's MHQ is determined and why clause 4.2 is included. In light of this, Envestra is required to delete clause 4.2 from its terms and conditions, as set out at amendment 13.5.

Requests for reduction in MDQ

Envestra proposed new provisions relating to requests by a user for a reduction in MDQ. Clause 7.1(b) provides that, prior to Envestra agreeing to a user's request for a reduction in MDQ, the user's customer must not have taken delivery of a quantity of gas equal to or in excess of 90 per cent of its MDQ for at least 12 months. Clause 7.7 has the same time period with respect to requests for subsequent reductions in MDQ. Clause 7.8 provides that if a request is refused, the user must wait at least six months before lodging a further request.

The AER considers that it is reasonable to allow a period of time in order to gauge whether a reduction in MDQ is permanent. However, the AER considers that it may be obvious before 12 months has elapsed that a permanent reduction in MDQ has occurred. In these circumstances it would be appropriate for Envestra to give due consideration to requests for reductions in MDQ as this could potentially free up spare capacity for potential users. Envestra is required to amend clause 7 as set out at amendment 13.6.

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17 Envestra, *Qld access arrangement information*, December 2010, p. 213.

18 Envestra, *Qld access arrangement proposal*, October 2010, annexure F, p. 30.

In response to an issue raised by AGL,[19] Envestra submitted that new customers do not have to wait up to 12 months for a reduction in MDQ as they are unrelated to existing customers.[20] The AER does not consider that this is clear from clause 7. To clarify this matter, Envestra is required to amend clause 7, as set out at amendments 13.7. and 13.8.

Clause 7.5 provides that, if requested by a user, Envestra will provide an explanation for rejecting a request for a reduction in MDQ. The AER considers that Envestra should respond in a timely manner. Envestra is required to amend its terms and conditions to provide that it will respond to such requests as soon as practicable, as set out at amendment 13.9.

Maintenance and renewal of metering equipment

Envestra proposed a new part to clause 9.3 that users will bear the costs of the removal of telemetry and interval metering equipment. Envestra submitted that this clarifies current practice. Envestra also submitted that the costs are not already included in reference tariffs.[21]

The AER considers that Envestra has not provided sufficient information of what the costs are and that they are not included in the costs that are recovered by reference tariffs. Envestra is required to amend its access arrangement proposal by deleting this provision, as set out at amendment 13.10.

However, when making its final decision the AER will reconsider this matter if Envestra provides evidence that the costs are not included in the costs recovered through reference tariffs.

Inaccurate meters

With respect to meters, Envestra proposed changing the margin of accuracy from 'plus or minus 3%' to 'that is permitted by law' (clause 10.6). Envestra submitted that the metering tolerance has been superseded by new metering standards, and the reference has been changed to refer to the level of tolerance that is permitted by law.[22]

The AER considers that Envestra has not provided sufficient justification for the proposed revision and that it is unclear in terms of what the margin is. The AER requires Envestra to retain the margin of plus or minus 3 per cent, as set out at amendment 13.11.

However, when making its final decision the AER will reconsider this matter if Envestra provides further evidence of the new metering standards.

Supply curtailment

Clause 17.3 outlines the order of priority if Envestra intends to interrupt or curtail gas deliveries. The current terms and conditions (clause 16.3) state that where two or more delivery points fall within a particular category, Envestra will determine the

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19 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 7.
20 Envestra, *Response to AGL's submission*, December 2010, p. 8.
21 Envestra, *Response to AGL's submission*, December 2010, p. 4.
22 Envestra, *Qld access arrangement information*, December 2010, p. 213.

order of priority. Clause 16.3 also provides that Envestra will not set the order based on the identity of the relevant users.[23] Envestra proposed to revise its terms and conditions by deleting this qualification.

The AER does not accept this revision. The AER considers that it is appropriate that Envestra should not discriminate by setting the order based on the identity of the relevant users. Envestra is required to amend clause 17.3 as set out at amendment 13.12.

Ancillary reference services – payment of charges

The current terms and conditions (clause 18.4) provide that Envestra will have no obligation to read metering equipment unless the user has paid for the service (or, where permitted by Envestra, agreed to pay).[24] Envestra proposed a revision to extend this requirement to disconnections and reconnections (clause 18.2).

The AER does not consider that Envestra has justified why it needs to be paid for these services prior to carrying them out. Envestra is required to amend clause 18.2, as set out at amendment 13.13.

Other services

Envestra proposed a new term and condition that Envestra may provide a user with other services requested by the user from time to time (clause 19). Charges will be as agreed to between Envestra and the user or, in the absence of agreement, the charges previously notified by Envestra or reasonably determined by Envestra. Envestra submitted that this provision clarifies that Envestra may provide other services on request.[25]

It is unclear to the AER what Envestra contemplates as other services and why this provision is included in the terms and conditions, rather than the services policy. The services policy already includes a negotiated service. It is unclear how the 'other services' in the terms and conditions fit with the 'negotiated service' in the services policy. In light of this, the AER requires this clause to be deleted as set out at amendment 13.14.

Correction of billing errors

Clause 21 provides that Envestra will not correct any billing errors if a claim is made by a user after 11 months of the date of the invoice. The period in the current terms and conditions is 12 months (clause 20).[26]

The AER accepts Envestra's revision to reduce the period from 12 months to 11 months. However, the AER considers it appropriate that any claims that a user is required to pursue by law on behalf of a customer should not be subject to the 11 month time period. Envestra is required to amend clause 21 to exempt any claims a user is required to pursue by law, as set out at amendment 13.15.

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23 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 10.
24 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 12.
25 Envestra, *Qld access arrangement information*, December 2010, p. 213.
26 Envestra, *Qld Access arrangement terms and conditions*, June 2006, p. 14.

Delivered quantities

The current terms and conditions (clauses 21.1 and 21.7) refer to the quantity of gas delivered or estimated to have been delivered.[27] Envestra proposed to add the words 'or expected to be delivered' to these terms and conditions (clauses 23.1 and 23.7).

The additional words are relevant when invoicing is done in advance, as is the case for Envestra's South Australian network.[28] However, Envestra does not invoice in advance for its Queensland network. In light of this, the AER requires the deletion of the additional words as set out at amendment 13.16.

In two instances, Envestra proposed to revise its terms and conditions by changing the term 'on a reasonable basis' to 'whatever basis Envestra considers reasonable'. They relate to the estimate of quantities delivered if no meter reading is taken (clause 23.4(c)) and the allocation of deliveries in certain circumstances (clause 23.5(c)).

The AER requires an amendment to clarify that Envestra's estimation or allocation must be on a reasonable basis. Envestra is required to make to replace the term 'on whatever basis Envestra considers reasonable' with 'on a reasonable basis', as set out at amendment 13.17.

The amendments will bring these clauses into line with clause 5.4(c) (quantities received) and clause 10.7(c) (basis for correction of meter readings), which use the terminology 'on a reasonable basis'.

Right to suspend services

Clause 25.3 provides that Envestra may suspend services if a user fails to pay an invoice by the due date. Envestra proposed to delete the current provision that payments in dispute are exempt from this clause (clause 23.3).[29]

The AER does not consider that Envestra should have the ability to suspend services to a user in the event of a legitimate dispute over an invoice. Envestra is required to amend clause 25.3 to the effect that payments in dispute are exempt from the provisions of clause 25.3. Envestra is also required to make consequential amendments to clauses 25.1 (overdue interest) and 26.2(a) (termination by Envestra), as set out at amendments 13.18 to 13.20.

Holding over

Envestra proposed a new term and condition that if gas continues to be delivered after the term of an access agreement expires, Envestra and the user will be deemed to have entered into an access agreement on the same terms and conditions (clause 26.8).

While the AER understands the intent of the new provision, the AER does not consider that users should be liable if gas continues to be delivered due to Envestra's negligence. Envestra is required to amend clause 26.8 as set out at amendment 13.21.

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27 Envestra, *Qld access arrangement terms and conditions*, June 2006, pp. 14–15.
28 Envestra, *SA Access arrangement terms and conditions*, October 2010, clause 20, pp. 18–19.
29 Envestra, *Qld Access arrangement terms and conditions*, June 2006, p. 16.

Dispute resolution

The current terms and conditions (clause 33.5) provide that in the event that the parties cannot agree on a person to be appointed as an independent expert, they will request the Institute of Arbitrators to nominate a person.[30] Envestra proposed to change 'Institute of Arbitrators' to 'the Regulator' (that is, the AER).

The AER does not consider that it has the authority under the NGL to assume this role. Envestra is required to amend clause 35.5 by replacing 'Regulator' with 'Institute of Arbitrators', as set out at amendment 13.22.

Automatic amendments

Envestra proposed that whenever the terms and conditions of the access arrangement are amended in accordance with the NGL, the access agreement between Envestra and the user will also be amended, except to the extent that Envestra otherwise notifies the network user (clause 38.2). This is a revision to the current clause 36.2, which states that the access agreement between Envestra and the user will also change 'unless otherwise agreed.'[31]

The AER does not consider that Envestra should have the ability to unilaterally make this decision without reference to the user. The AER does not approve Envestra's proposed revision and Envestra is required to amend its access arrangement, as set out at amendment 13.23.

13.2.4.2 No revisions to existing terms and conditions

Gas specification

Clause 12.4 provides that a user must notify Envestra as soon as practicable if there is the possibility of non-specification gas being delivered into the network by or on behalf of the user.

The AER considers that this arrangement should be reciprocal. Envestra is required to amend its terms and conditions so that Envestra must notify users if it becomes aware of non-specification gas in its network, as set out at amendment 13.24.

Delivery pressures

Clause 14.1 provides that Envestra must ensure that delivered gas is at a pressure within the range determined by law or as agreed with the user. Clause 14.2 sets out the circumstances under which Envestra is excused from liability for a breach of clause 14.1. Envestra is excused from liability irrespective of whether or not Envestra was aware of those circumstances.

The AER requires an amendment to clarify that Envestra is not relieved of its obligations if the failure to deliver gas within the range of pressures is due to its negligence, as set out at amendment 13.25.

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30 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 24.
31 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 26.

Set off arrangements

Clause 24.2 provides that a user must pay amounts owing to Envestra in full without any right to withhold and set off amounts owing by Envestra to the user. In contrast, Clause 25.2 provides that if a user does not pay any amount owing to Envestra, Envestra may withhold and set off any amount owing by Envestra to the user.

The AER considers that it is reasonable for set off arrangements to be reciprocal. Envestra is required to delete clause 24.2 and amend clause 25.2, as set out at amendments 13.26 and 13.27.

Overdue interest

Clause 25.1 provides that Envestra may charge interest on any amount unpaid by the due date.

Clauses 25.2 (right to set off unpaid amounts) and 25.3 (right to suspend services) refer to 'any amount due to Envestra under the Agreement', but clause 25.1 does not. The AER considers that the same words should be inserted into clause 25.1 for clarity. Envestra is required to amend clause 25.1 as set out at amendment 13.28.

Termination

Clause 26.2 sets out the circumstances under which Envestra can terminate an agreement, while clause 26.3 sets out the circumstances under which a user can terminate an agreement.

The AER considers that the same opportunities available to Envestra to terminate an agreement should also be available to users. Envestra is required to amend clause 26.3 to include Envestra's insolvency and revocation of coverage[32] of the network as conditions under which a user may terminate an access agreement, as set out at amendment 13.29.

Liabilities

Clause 27.6 provides that Envestra will have no liability to a user for economic or consequential loss. Clause 27.7 provides that Envestra's liability for any claim by a user is capped at $100 million.

The AER considers that it is reasonable for these provisions to be reciprocal. Envestra is required to amend its terms and conditions to exclude consequential loss from a user's liability (clause 27.6) and to cap a user's liability (clause 27.7), as set out at amendments 13.30 and 13.31.

Consumer contract limitation

On 1 January 2011 the *Competition and Consumer Act 2010* replaced the *Trade Practices Act 1974*. As a result the references to the *Trade Practices Act 1974* in clause 28 are incorrect. Envestra is required to submit revisions to its terms and conditions to reflect the new *Competition and Consumer Act 2010*, or otherwise delete clause 28 from its terms and conditions, as set out at amendment 13.32.

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[32] NGL, ss. 102–108.

Force majeure

Clause 29.4 states that a force majeure event does not relieve a user of its obligations to ensure:

- gas delivered into the network meets specifications (clause 12.1)
- is within specified receipt pressure (clause 13.1)
- the user has good title to the gas (clause 16.1).

The AER does not consider that users should be expected to continue to perform their obligations when prevented by a force majeure event. Envestra is required to delete clause 29.4, as set out at amendment 13.33.

Network user to assist

Clauses 30.1 and 30.2 require a user to provide information and assistance to Envestra in certain circumstances.

The AER considers that it reasonable for these arrangements to be reciprocal. Envestra is required to amend its clauses 30.1 and 30.2 to state that Envestra will provide users with whatever information and assistance they reasonably require, as set out at amendment 13.34.

Clause 30.3 states that Envestra may provide to an upstream operator whatever information the upstream operator may require.

The AER considers that Envestra should be required to provide whatever information an upstream operator reasonably requires, as outlined at amendment 13.35.

Insurance

Clause 32.5 provides that a network user must promptly notify Envestra of any event that might give rise to a claim under any insurance policy which the user maintains under its access agreement with Envestra. Clause 32.6 provides that a user must not settle or compromise an insurance claim without the consent of Envestra, which will not be unreasonably held.

Origin submitted that these clauses are unworkable because Origin maintains group insurance policies that cover exposure to a wide range of agreements. Many insurance claims would be unrelated to Envestra. Origin also submitted that even if a claim did relate to Envestra, it is unclear why Envestra should have a right to withhold consent to Origin in settling a claim with its insurers.[33]

The AER agrees with Origin's submission. The AER requires clause 32.5 to be amended to clarify that it only relates to claims in relation to Envestra's network, as set out at amendment 13.36. The AER also requires that clause 32.6 be deleted, as set out at amendment 13.37.

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[33] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 9.

Confidentiality

Clause 34 sets out a user's obligations concerning confidentiality. Clause 34.5 provides that Envestra must comply with any confidentiality obligations imposed on it pursuant to the NGL.

For completeness the AER requires an amendment to clause 34.5 so that it refers to both the NGL and the NGR, as set out at amendment 13.38.

The AER considers that the confidentiality provisions should survive the termination and expiration of an access agreement. In this manner confidential information is protected after an access agreement expires or is terminated. Envestra is required to amend clause 34, as set out at amendment 13.39.

Notices

Clause 36.1 provides the manner by which notices can be sent to either party (Envestra or the user).

In its response to AGL's submission in relation to Envestra's South Australian network,[34] Envestra submitted that it is willing to amend clause 36.1 to provide for email.[35] Envestra is required to amend its access arrangement proposal to give effect to this, as set out at amendment 13.40.

13.2.4.3 Access arrangement information

As mentioned above, Envestra's access arrangement information includes a table summarising the proposed changes to its terms and conditions. This table seems to be copied from Envestra's access arrangement information for its South Australian network. While the issues are similar, there are some errors in the table in the access arrangement information for Envestra's Queensland network. These are incorrect references to clauses in Envestra's current terms and conditions and the inclusion of two redundant rows (the last two). Therefore, the AER requires Envestra to amend its access arrangement information as outlined at amendment 13.41.

13.2.5 Conclusion

The AER considers that taken in aggregate the terms and conditions are weighted too much in favour of Envestra and do not comply with r. 100 of the NGR. To correct this imbalance the AER requires Envestra to amend a number of terms and conditions.

13.2.6 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments

Amendment 13.1: amend annexure G of the access arrangement proposal by inserting the words 'Subject to clause 2.5A,' at the start of clause 2.4 and 2.5 and inserting new clause 2.5A:

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[34] AGL, *Envestra's SA gas network access arrangement*, November 2010, p. 16.
[35] Envestra, *Response to AGL's submission*, December 2010, p. 5.

‘Envestra will use reasonable endeavours to mitigate any loss to the Network User as a consequence of Gas being taken through the User DP by someone other than the Network User or a Network User’s customer.’

Amendment 13.2: amend annexure G of the access arrangement proposal by changing existing clause 16.6 to clause 16.6(a), inserting the words ‘Subject to clause 16.6(b),’ at the start of clause 16.6(a) and inserting new clause 16.6(b):

‘Envestra will use reasonable endeavours to mitigate any loss to the Network User as a consequence of Gas being taken through the User DP by someone other than the Network User or a Network User’s customer.’

Amendment 13.3: amend annexure G of the access arrangement proposal by changing existing clause 12.5 to clause 12.5(a), inserting the words ‘Subject to clause 12.5(b),’ at the start of clause 12.5(a) and inserting new clause 12.5(b):

‘Envestra will use reasonable endeavours to mitigate any loss to the Network User as a consequence of Gas being delivered into the Network that does not comply with the specifications required by the Agreement.’

Amendment 13.4: amend annexure G of the access arrangement proposal by changing existing clause 13.4 to clause 13.4(a), inserting the words ‘Subject to clause 13.4(b),’ at the start of clause 13.4(a) and inserting new clause 13.4(b):

‘Envestra will use reasonable endeavours to mitigate any loss to the Network User as a consequence of Gas being delivered at any Receipt Point at a pressure which is outside the limits required by the Agreement.’

Amendment 13.5: amend annexure G of the access arrangement proposal by deleting clause 4.2.

Amendment 13.6: amend clause 7.1(a) of annexure G of the access arrangement proposal by deleting the word ‘and’ and replacing it with the word ‘or’.

Amendment 13.7: amend annexure G of the access arrangement proposal by changing existing clause 7.6 to clause 7.6(a) and inserting new clause 7.6(b):

‘Nothing in this clause prevents a new MDQ for a Demand DP to be agreed on when the Customer at the Demand DP changes.’

Amendment 13.8: amend clause 7.7 and clause 7.8 of annexure G of the access arrangement proposal by inserting the words ‘for the same Customer’ between the words ‘further request’ and ‘of Envestra’.

Amendment 13.9: amend annexure G of the access arrangement proposal by inserting the words ‘as soon as practicable’ at the end of clause 7.5.

Amendment 13.10: amend clause 9.3 of annexure G of the access arrangement proposal by deleting the sentence:

‘Where the Metering Equipment at a DP includes equipment for telemetry or interval metering and that equipment is no longer required by law to be used at that DP, then the Network User will bear the costs of removal of that equipment.’

Amendment 13.11: amend clause 10.6 of annexure G of the access arrangement proposal by inserting the words ‘or, if no margin is prescribed by law, outside a margin of accuracy of plus or minus 3 per cent,’ after the words ‘outside a margin of accuracy that is permitted by law’.

Amendment 13.12: amend annexure G of the access arrangement proposal by inserting the sentence ‘Envestra will not select which of those DPs to curtail or interrupt based on the identity of the Network User’ at the end of clause 17.3.

Amendment 13.13: amend annexure G of the access arrangement proposal by deleting clause 18.2 and replacing it with the following:

‘Envestra is entitled to charge the Network User for the Disconnection and Reconnection of a DP and for a Special Meter Reading. The charge will be calculated in accordance with the Agreement and the applicable Reference Tariff.’

Amendment 13.14: amend annexure G of the access arrangement proposal by deleting clause 19.

Amendment 13.15: amend annexure G the access arrangement proposal by inserting at the end of clause 21 the words ‘except for any claim that the Network User is required to pursue by law on behalf of a Customer of the Network User’.

Amendment 13.16: amend clause 23.1 and clause 23.7 of annexure G of the access arrangement proposal by deleting the words ‘or expected to be delivered’.

Amendment 13.17: amend clauses 23.4(c) and 23.5(c) of annexure G of the access arrangement proposal by deleting the words ‘on whatever basis Envestra considers reasonable in the circumstances’ and replacing them with the words ‘on a reasonable basis’.

Amendment 13.18: amend clause 25.1 of annexure G of the access arrangement proposal by inserting the words ‘except for payments in dispute under clause 22’ after the words ‘unpaid from time to time’.

Amendment 13.19: amend clause 25.3 of annexure G of the access arrangement proposal by inserting the words ‘except for payments in dispute under clause 22’ between the words ‘Related Haulage Agreement,’ and ‘then Envestra may cease’.

Amendment 13.20: amend clause 26.2(a) of annexure G of the access arrangement proposal by inserting the words ‘except for payments in dispute under clause 22’ at the end of the clause.

Amendment 13.21: amend clause 26.8 of annexure G of the access arrangement proposal by inserting after the words ‘(as that term is defined in the Retail Market Procedures)’ the following words:

‘except to the extent that the delivery of Gas is due to the negligent act or omission on the part of Envestra (or any officer, servant, agent, contractor or other person for whom Envestra is liable)’.

Amendment 13.22: amend clause 35.5 of annexure G of the access arrangement proposal by deleting the word ‘Regulator’ and replacing it with the words ‘Institute of Arbitrators’.

Amendment 13.23: amend clause 38.2 of annexure G of the access arrangement proposal by deleting the words ‘except to the extent that Envestra otherwise notifies the Network User’ and replacing them with the words ‘except as otherwise agreed between Envestra and the Network User’.

Amendment 13.24: amend annexure G of the access arrangement proposal by deleting the words ‘to Envestra’ in the heading to clause 12.4, changing existing clause 12.4 to clause 12.4(a) and inserting new clause 12.4(b):

‘Envestra will notify Network Users as soon as practicable if Envestra reasonably believes that Gas is being or may be delivered into the Network which does not meet the specifications imposed by law or specified by Envestra.’

Amendment 13.25: amend annexure G of the access arrangement proposal by inserting the words ‘and the failure is not due to the negligent act or omission on the part of Envestra (or any officer, servant, agent, contractor or other person for whom Envestra is liable)’ at the end of clause 14.2.

Amendment 13.26: amend annexure G of the access arrangement proposal by deleting clause 24.2.

Amendment 13.27: amend annexure G of the access arrangement proposal by deleting clause 25.2 and replacing it with the following:

‘If a party (the first party) does not pay any amount due to the other party (the second party) under the Agreement (except for payments in dispute under clause 22), then the second party may withhold and set off payment of any amounts due or owing by the second party against any and all amounts due or owing by the first party to the second party. This clause will survive the termination of the Agreement..’

Amendment 13.28: amend clause 25.1 of annexure G of the access arrangement proposal by inserting the words ‘due to Envestra under the Agreement’ between the words ‘any amount’ and ‘by the date’.

Amendment 13.29: amend annexure G of the access arrangement proposal by deleting clause 26.3 and replacing it with:

‘The Network User may terminate the Agreement by seven days’ notice to Envestra at any time in the event that:

(a) Envestra breaches any obligation under or in relation to the Agreement and, where that breach can be remedied, fails to remedy that breach to the satisfaction of the Network User within 14 days after it receives notice of that breach from the Network User;

(b) Envestra becomes an externally-administered body corporate or insolvent under administration (as defined in the Corporations Act 2001) or an Insolvency Event occurs in relation to Envestra; or

(c) the Network ceases to be a Covered Pipeline under or for the purposes of the National Gas Law (including, but without limitation, if the National Gas Law is repealed).'

Amendment 13.30: amend annexure G of the access arrangement proposal by deleting clause 27.6 and replacing it with:

'To the extent permitted by law, neither party will have any liability to the other party, for or in respect of any claim (whether in tort, in contract or otherwise) for any loss of business or business interruption, loss of profit, loss of revenue or loss of opportunity, or for any other purely economic or monetary loss, or for any indirect, special or consequential loss, cost, expense or damage, which the other party may suffer or incur.'

Amendment 13.31: amend annexure G of the access arrangement proposal by deleting clause 27.7 and replacing it with:

'To the extent permitted by law, the maximum amount that either party will be legally liable to pay to the other party (and to any other person or persons) as damages for compensation in respect of the death or any person or any injury to any person or any damage to any property will be limited to $100 million in aggregate in relation to any one event or occurrence (aggregating all damages and compensation due to the other party and each person in respect of that event or occurrence). Neither party will have any right to recover damages or compensation from the other party in relation to any claim to the extent that the other party's liability will then exceed the limit set out in this clause.'

Amendment 13.32: Envestra is required to submit revisions to clause 28 of annexure G of the access arrangement proposal that reflect the *Competition and Consumer Act 2010.* Otherwise, Envestra is required to delete clause 28.

Amendment 13.33: amend annexure G of the access arrangement proposal by deleting clause 29.4.

Amendment 13.34: amend annexure G of the access arrangement proposal by deleting clauses 30.1 and 30.2 and replacing them with the following new clauses 30.1 and 30.2 respectively:

'Each party will provide the other party at no cost and in a timely manner with whatever information, assistance and cooperation the other party might reasonable require from time to time in connection with the Agreement or the Services provided under the Agreement, including information, assistance and cooperation the other party requires to comply with its obligations under any law from time to time.'

'The Network User will cause or procure each Network User's Customer and each Upstream Operator to provide Envestra at no cost and in a timely manner with whatever information, assistance and cooperation Envestra might reasonable require

from time to time in connection with the Agreement or the Services provided under the Agreement, including information, assistance and cooperation Envestra requires to comply with its obligations under any law from time to time.'

Amendment 13.35: amend clause 30.3 of annexure G of the access arrangement proposal by deleting the words 'Envestra may provide' and replacing them with the words 'Envestra must provide' and by deleting the words 'Upstream Operator may require' and replacing them with the words 'Upstream Operator may reasonably require'.

Amendment 13.36: amend clause 32.5 of annexure G of the access arrangement proposal by inserting the words 'in relation to the Network' between the words 'or might have arisen' and 'under any insurance'.

Amendment 13.37: amend annexure G of the access arrangement proposal by deleting clause 32.6.

Amendment 13.38: amend clause 34.5 annexure G of the access arrangement proposal by inserting the words 'and National Gas Rules' after 'National Gas Law'

Amendment 13.39: amend annexure G of the access arrangement proposal by inserting new clause 34.6:

'This clause 34 will survive the termination or expiration of the Agreement.'

Amendment 13.40: amend annexure G the access arrangement proposal by inserting new clause 36.1(d):

'(d) by email.'

Amendment 13.41: amend table 16.1 of the access arrangement information by deleting the numbers '4', '9.6', and '17' and replacing them with the numbers '2.5', '9.7' and '18' respectively in the column headed 'Old Clause Number', and by deleting the last two rows of table 16.1.

13.3 Capacity trading requirements

A capacity trading policy allows a user to transfer contract capacity to another user. In doing so, it enables a secondary market with more efficient price signals and levels of usage. As service providers do not gain directly from capacity trading, the NGR protects users' rights to trade flexibly and limits the service provider's power to deny this right. The AER notes that Envestra has proposed its requirements for changing receipt and delivery points under the heading of 'Capacity Trading'.[36] For consistency, the AER has also addressed the change of receipt and delivery points in this section.

13.3.1 Regulatory requirements

Under clause 48(f) of the NGR, capacity trading requirements are to be included in a full access arrangement. Rule 105(1) of the NGR requires that capacity trading

[36] Envestra, *Access arrangement information*, October 2010, p. 211.

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. If the service provider is not registered, or the rules or procedures do not address capacity trading, then capacity trading requirements must comply with r. 105 of the NGR.

Rules 105(3) and 105(2) of the NGR concern the transfer of capacity trading requirements with and without the service provider's consent. Capacity trading requirements may specify conditions under which consent will or will not be given, and conditions to be complied with if consent is given. A service provider is precluded from withholding its consent unless it has reasonable grounds, based on technical or commercial considerations, for doing so.[37]

The terms and conditions for changing receipt and delivery points are to be included in a full access arrangement.[38] Rule 106 of the NGR requires that an access arrangement must provide for the change of a receipt or delivery point with the service provider's consent. The service provider is precluded from withholding its consent unless it has reasonable grounds, based on technical or commercial considerations, for doing so. The access arrangement may specify conditions under which consent will or will not be given and conditions to be complied with if consent is given.[39]

13.3.2 Access arrangement proposal

Envestra stated that no trading of capacity can occur on a distribution network, and therefore did not propose capacity trading requirements. However, Envestra proposed requirements for changing receipt or delivery points, under r. 106 of the NGR.[40]

13.3.3 AER's considerations

The AER does not accept Envestra's proposed position on capacity trading. Under r. 40(3) of the NGR, the AER has full discretion to impose preferable capacity trading requirements in an access arrangement review where they also comply with applicable requirements and criteria under the NGL and the NGR. The AER considers that an amended version of Envestra's proposal would better promote the national gas objective.[41]

The AER notes that r. 48 of the NGR requires that a full access arrangement must include a service provider's capacity trading requirements. Rule 105 sets out further specific requirements that the service provider must adhere to for the transfer of capacity under certain circumstances. The AER considers Envestra's proposal does not satisfy either rule.

The AER also notes that Envestra has always had capacity trading requirements in past access arrangements.[42] The AER considers it preferable that Envestra amend its

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37 NGR, r. 105(4).
38 NGR, clause 48(h).
39 NGR, r. 106.
40 Envestra, *Access arrangement information*, October 2010, p. 211.
41 NGL, s. 23.
42 Envestra, *Access arrangement information*, October 2010, p. 211.

access arrangement to mirror its past capacity trading provisions, but update these to apply to distribution networks and reflect the NGR rather than the Code.

Envestra noted that a capacity trading policy is comparable to queuing requirements, in that both are more relevant to transmission pipelines than distribution networks.[43] The AER notes that r. 103 of the NGR— covering queuing requirements— contains distinct requirements for distribution and transmission businesses. Specifically, all transmission businesses must provide queuing requirements, but distribution businesses are exempt unless required otherwise by the AER. The AER notes that r. 105— covering capacity trading— does not draw a distinction between distribution and transmission businesses. As such, the AER considers that distribution and transmission businesses are equally required to provide capacity trading requirements under r. 105.

The AER notes that other gas distribution businesses have continued to propose capacity trading requirements to satisfy r. 105.[44] The AER considers that Envestra is not disadvantaged by having a clear capacity trading policy if it remains unused, and that the inclusion of such a policy better satisfies the requirements of the NGR.

13.3.4 Conclusion

The AER proposes not to approve Envestra's proposed position on capacity trading requirements. The AER considers amended requirements could better promote the national gas objective in s. 23 of the NGL.

13.3.5 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments.

Amendment 13.42: amend section 7 of the access arrangement proposal as follows:

7. Capacity Trading

7.1 Transactions subject to Retail Market Procedures

Transfers of Contracted Capacity will be undertaken:

(a) where the relevant parties are registered as participants under the Retail Market Procedures - in accordance with the Retail Market Procedures; or

(b) if the relevant parties are not so registered - in accordance with rules 105 and 106 of the NGR, and this part 7.

7.2 Bare Transfers

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43 Envestra, *Access arrangement information*, October 2010, p. 211.

44 For example; APT Allgas, *Access arrangement proposal*, September 2010, p. 16; Jemena, *Access arrangement proposal*, August 2009, p. 35; ActewAGL, *Access arrangement proposal*, June 2009, p. 39.

A Network User is permitted to transfer or assign all or part of its Contracted Capacity without the consent of Envestra if:

- the Network User's obligations under the Agreement related to that Contracted Capacity remain in full force and effect after the transfer or assignment; and

- the terms of that Agreement are not altered as a result of the transfer or assignment (a Bare Transfer).

Prior to using any Contracted Capacity that is the subject of a Bare Transfer, the transferor must notify Envestra of the nature of the Contracted Capacity that is subject to the Bare Transfer. The transferor must notify Envestra of:

- the subcontract and its likely duration; and

- the identity of the transferee; and

- the amount of contracted capacity transferred.

7.3 Other transfers

A Network User is permitted to transfer or assign all or part of its Contracted Capacity (other than by way of a Bare Transfer) with the prior written consent of Envestra, where the transfer or assignment is commercially and technically reasonable. Following such a transfer, the transferor's rights against, and obligations to Envestra are terminated or modified in accordance with these capacity trading requirements. A contract then arises between the transferee and Envestra on terms and conditions in accordance with the capacity trading requirements.

Envestra may withhold its consent only on reasonable commercial and technical grounds, and may make its consent subject to conditions, but only if they are reasonable on commercial and technical grounds.

Examples of the reasonable commercial or technical grounds upon which Envestra will withhold its consent or make its consent subject to conditions include:

- where there is insufficient Capacity at any point in the Network (either before or as a result of the transfer) to enable the proposed Contracted Capacity to be transferred or assigned to the proposed User Delivery Point;

- where Envestra would receive less revenue as a result of the proposed transfer or assignment of Contracted Capacity; and

- where the proposed transferee is unable to satisfy Envestra that it is able to meet the requirements set out in section 6 of this Access Arrangement.

7.4 Delivery and receipt points

A Network User is permitted to change a Delivery Point and/or Receipt Point from that specified in an Agreement with the prior written consent of Envestra where the change is commercially and technically reasonable.

Envestra may withhold its consent only on reasonable commercial and technical grounds, and may make its consent subject to conditions, but only if they are reasonable on commercial and technical grounds. An example might be, if Envestra would not receive at least the same amount of revenue it would have received before the change.

7.5 Procedure

The following procedure is to be followed in relation to transfers or assignments of Contracted Capacity (other than Bare Transfers) and changes to Delivery Point and/or Receipt Points:

- the party requesting the transfer/assignment or a change to a Delivery Point/Receipt Point shall submit a written request to Envestra, setting out the applicable details. A fee of $100, payable at the time of the request, will apply to each request.

- Envestra will complete an analysis to determine whether the request is technically and commercially feasible and reasonable. The cost of completing this analysis will be borne by the party that makes the request. Charges for the analysis may be made in relation to Demand Delivery Points only, and may vary depending on the complexity of analysing the request, but will be agreed in advance with the party making the request. Costs will be based on an hourly rate of $100 per person per hour for each hour after the first hour.

Envestra will reply to requests for a transfer (other than a bare transfer) or for a change in Receipt Point or Delivery Point, within 14 Business Days of receiving the request, provided the request is accompanied by information which is reasonably necessary to enable Envestra to consider the request.

If, at the time the request is made, the Network User informs Envestra that, due to hardship, the Network User requires an urgent reply to its request, Envestra will use reasonable endeavours to respond to the request within two Business Days of receiving the request, provided the request is accompanied by information which is reasonably necessary to enable Envestra to consider the request.

13.4 Extensions and expansions policy

An extensions and expansions policy sets out the method for determining whether extensions or expansions to the covered pipeline are to be covered by the access arrangement. Where an extension or expansion is determined to be covered, the policy determines how the use of that extension or expansion will be priced.

13.4.1 Regulatory requirements

Under r. 48 of the NER extension and expansion requirements are to be included in a full access arrangement.[45] Rule 104(1) of the NGR requires that extension and expansion requirements may state whether the applicable access arrangement will apply to incremental services provided as a result of a particular extension or

[45] NGR, r. 48(1)(g).

expansion or outline how this may be dealt with at a later time. If the requirements provide that an access arrangement applies to incremental services, r. 104(2) of the NGR states that the requirements must deal with the effect of the extension or expansion on tariffs.

13.4.2 Access arrangement proposal

Envestra proposed an extensions and expansions policy that is similar to the policy approved by the QCA in its previous access arrangement. Envestra noted that it retained the 'significant extensions' criteria for discretionary coverage from the previous access arrangement.[46] However, the definition of a 'significant extensions' to the network no longer requires an extension to exceed $1 million of capital expenditure in order to require the AER to determine whether the pipeline should be covered. Pipeline extensions and expansions were previously covered under the access arrangements by default, unless the anticipated quantity of gas delivered exceeded 10 TJs per year and the anticipated capital expenditure for the extension exceeded $1 million.[47] Envestra also removed references to pipeline expansions, on the basis that these are not relevant to distribution networks.[48]

13.4.3 AER's considerations

The AER does not accept Envestra's proposed extensions and expansions policy. Under r. 40(3) of the NGR, the AER has full discretion to impose preferable extension and expansion requirements in an access arrangement review where they also comply with applicable requirements and criteria under the NGL and NGR. The AER considers that an amended version of Envestra's proposal would better promote the national gas objective.[49]

Consistent with its previous decisions[50], the AER considers that all extensions to high pressure pipelines, rather than just 'significant' high pressure extensions as proposed by Envestra.[51], should be assessed on a case-by-case basis for coverage. This is because high pressure pipelines have similar characteristics to transmission pipelines, and could be used either as viable bypass options to end users, or to support the existing network. The AER does not consider that any high pressure pipeline extensions should be covered by default. The AER considers this should allow for sufficient oversight of whether extension costs should be borne by reference service customers.

In contrast, the AER considers that low and medium pressure pipeline extensions are more likely to support the existing network than high pressure pipelines and should therefore be covered by default. If low or medium pressure pipeline extensions are not covered under the access arrangement, the AER considers that the service provider

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46 Envestra, *Access arrangement information*, October 2010, pp. 211–212.
47 QCA, *Final decision, revised access arrangement for gas distribution networks: Envestra*, May 2006, pp. 42-43.
48 Envestra, *Access arrangement information*, October 2010, p. 211.
49 NGL, s. 23.
50 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.
51 Envestra, *Access arrangement information*, October 2010, pp. 228–229.

has scope to exercise monopoly power by charging above reference prices, with cross-subsidisation from the existing network. For these reasons, the AER considers that all low and medium pressure pipeline extensions should be covered by default.

Unlike extensions to the network, the AER considers that all expansions to the network should be covered by default. Network expansions involve the augmentation of pipeline capacity within the existing network, and are likely to be used largely by existing network customers. Relative to network extensions, they are less likely to serve a new or isolated customer or group of customers as a bypass option. As such, it is appropriate that any network expansions are covered as reference services under the access arrangement. The AER does not accept Envestra's position that pipeline expansions have little relevance to distribution systems.[52] The AER considers that all potential augmentations to the distribution network should be covered under Envestra's extensions and expansions requirements, in order to provide certainty to end users. The AER also notes that Envestra is no worse off by including provisions for expansions if those provisions remain unused.

The AER considers that coverage on this basis (the pressure threshold) should satisfy the national gas objective,[53] by promoting the efficient investment in, operation, and use of natural gas services. The AER considers that Envestra should notify the AER of all extensions or expansions completed or in progress at the end of each financial year. The AER considers this level of transparency is necessary to satisfy the national gas objective.[54] The AER notes that Envestra's proposal contains no such provisions, and the AER requires Envestra to amend the access arrangement accordingly.

Envestra may seek to recover non-conforming capital expenditure by means of a surcharge[55]. The AER considers this will only apply to high-pressure pipeline extensions that the AER does not approve for coverage under the access arrangement. Under r. 83(2) of the NGR, the AER considers Envestra must notify the AER of proposed surcharges, which may be levied subject to the AER's approval. The AER will only approve a proposed surcharge subject to r. 83(4) of the NGR.

13.4.4 Conclusion

The AER proposes not to approve Envestra's proposed extensions and expansions policy. The AER considers an amended policy could better promote the national gas objective in s. 23 of the NGL and better adhere to the pipeline coverage criteria in s. 15 of the NGL.

13.4.5 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments.

Amendment 13.43: amend section 8 of the access arrangement proposal as follows:

8. Network extensions and expansions

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52 Envestra, *Access arrangement information*, October 2010, p. 228.
53 NGL, s. 23.
54 NGL, s. 23.
55 Envestra, *Access arrangement proposal*, October 2010, p. 17.

8.1 High pressure extensions

If Envestra proposes a high pressure pipeline extension of the covered pipeline, it must apply to the AER in writing to decide whether the proposed extension will be taken to form part of the covered pipeline and will be covered by this access arrangement.

For the purposes of this section 6, a high pressure pipeline extension means a pipeline that exceeds one kilometre in length and is proposed to be built to a postcode area previously not serviced by reticulated gas.

A notification given by Envestra under this clause 6.1 must:

(a) be in writing;

(b) state whether Envestra intends for the proposed high pressure pipeline extension to be covered by this Access Arrangement;

(c) describe the proposed high pressure pipeline extension and describe why the proposed Extension is being undertaken; and

(d) be given to the AER before the proposed high pressure pipeline extension comes into service.

Envestra is not required to notify the AER under this clause 6.1 to the extent that the cost of the proposed high pressure pipeline extension has already been included and approved by the AER in the calculation of Reference Tariffs.

After considering Envestra's application, and undertaking such consultation as the AER considers appropriate, the AER will inform Envestra of its decision on Envestra's proposed coverage approach for the high pressure pipeline extension.

The AER's decision referred to above may be made on such reasonable conditions as determined by the AER and will have the effect stated in the decision.

8.2 Other extensions and expansions

Any extensions to and expansions of the capacity of the Network which are not high pressure pipeline extensions within the meaning of clause 6.1 will be treated as part of the Network and covered by this Access Arrangement.

All extensions of low or medium pipelines and expansions of the capacity of the Network carried out by the Envestra will be treated as covered under this Access Arrangement. No later than 20 Business Days following the expiration of its financial year, the Service Provider must notify the AER of all extensions of low or medium pipelines and expansions of the capacity of the Network during that financial year, including all expansions commenced, in progress and completed. The notice must describe each extension and expansion and set out why this was necessary.

8.3 Treatment of covered pipelines

If an extension or expansion is to be treated as a covered network under the access arrangement, Envestra will offer reference services for that extension or expansion at reference tariffs (ie no change to the reference tariffs). Envestra may levy a surcharge on users to recover non-conforming capital expenditure in accordance with rule 83 of the NGR.

Envestra will notify the AER to seek approval of any proposed surcharge to be levied on users of incremental services, and designed to recover non-conforming capital expenditure or a specified portion of non-confirming capital expenditure (non-conforming capital expenditure which is recovered by means of a surcharge will not be rolled into the capital base). Surcharges will only be approved subject to rule 84(4) of the NGR.

13.5 Queuing requirements

Queuing can be used to determine access to a pipeline that is fully, or close to fully, utilised. Typically, new users will be able to be accommodated because, unlike transmission pipelines, distribution networks do not operate close to full capacity. If use at one point in the network is nearing capacity, augmentation of the network will normally be undertaken to meet the needs of prospective users.

13.5.1 Regulatory requirements

Under r. 103 of the NGR, queuing requirements are to be included in a full access arrangement only if the access arrangement is for a transmission pipeline or if the AER has notified the service provider to include queuing requirements.

13.5.2 Access arrangement proposal

Envestra's access arrangement proposal did not include any references to queuing requirements.

13.5.3 AER's analysis and considerations

Envestra is not required to include queuing requirements in its access arrangement proposal as it operates a distribution pipeline and the AER has not required Envestra to include queuing requirements.[56] The AER notes that Envestra did not propose queuing requirements in the earlier access arrangement period and that the QCA did not require any to be included. The QCA came to this conclusion because it accepted Envestra's argument that queues were unlikely to form due to a lack of capacity in the network.[57]

13.5.4 Conclusion

The AER proposes to accept Envestra's proposal not to include queuing requirements in its access arrangement proposal.

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[56] NGR, r. 103(1).

[57] QCA, *Final decision, revised access arrangement for gas distribution networks: Envestra*, May 2006, p. 39.

13.6 Review dates

The NGR includes a general rule that the proposed access arrangement period will apply for at least five years and be reviewed after four years, or sooner in the event of certain triggers. A five year period between reviews provides regulatory certainty for service providers, in terms of the commercial parameters they operate within, as well as for users, in terms of the price and conditions of access to the regulated network.

13.6.1 Regulatory requirements

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.

In general, a review submission date will fall four years after the current access arrangement took effect or the last revision commencement date, and a new revision commencement date will fall one year later.[58] The AER is required to accept a service provider's proposed review submission and commencement dates if these are made in accordance with the general rule set out in r. 50 of the NGR. It may also approve dates that do not conform to the general rule if it is satisfied that the dates are consistent with the national gas objective and the revenue and pricing principles.

The review submission date may occur in advance of the date fixed in the access arrangement if a specified trigger event occurs.[59] Rule 51(2) of the NGR provides examples of possible trigger events. The AER may insist on the inclusion of trigger events in an access arrangement and may specify the nature of the trigger events.[60]

13.6.2 Access arrangement proposal

Envestra proposed a review submission date on or before 1 October 2015 and a revision commencement date on the later of 1 July 2016 and the date on which the AER's approval of the revisions to the access arrangement takes effect under the NGR.[61]

Envestra's access arrangement proposal did not include a trigger event for the acceleration of the review submission date.

13.6.3 AER's analysis and consideration

The review submission date of 1 October 2015 proposed by Envestra is later than the 1 July 2015 date indicated by the general rule under r. 50(1) of the NGR. The AER considers that a 1 October 2015 review submission date would allow significantly less time for the AER to make its decision on the access arrangements for Envestra compared to the 1 July 2015 date indicated by the general rule in the NGR. The AER considers that a truncated review process may reduce its ability to adequately consider the access arrangements, which could result in an outcome that is not consistent with the national gas objective. On the basis of this the AER rejects the 1 October 2015 review submission date proposed by Envestra.

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58 NGR, r. 50(1).
59 NGR, r. 51(1).
60 NGR, r. 51(3).
61 Envestra, *Access arrangement proposal*, October 2010, p. 17.

As the revision commencement date proposed by Envestra is consistent with the general rule under r. 50(1)(b) of the NGR, the AER must accept it.

The AER notes that the retail energy and gas connections frameworks are expected to be introduced during the access arrangement period. These frameworks may impact on the terms and conditions of access for users and potential users, such as the credit support provisions proposed under the National Energy Customer Framework (NECF). In these circumstances, the AER considers that a trigger event should be included to enable the AER to review the approved terms and conditions of access for consistency with the arrangements proposed under these new frameworks.

13.6.4 Conclusion

The AER proposes not to accept Envestra's proposed review submission date. The AER considers an amended date could better promote the national gas objective in s. 23 of the NGL. The AER accepts the review commencement date proposed by Envestra.

13.6.5 Required amendments

Before the access arrangement proposal can be approved, Envestra must make the following amendments.

Amendment 13.44: amend section 9 of the access arrangement proposal to:

1) delete clause 9.1 and replace it with the following:

Envestra will submit revisions to this Access Arrangement to the Regulator on or before 1 July 2015.

2) include the following new clause 9.3:

The AER may require Envestra to revise its Access Arrangement for inconsistencies between the proposed terms and conditions and the NGL or NGR.

The revisions submission date stated in clause 9.1 of the access arrangement proposal will advance on the occurrence of a trigger event described below. For the purposes of this clause, a 'trigger event' occurs if:

(a) there is an amendment to the NGL or the NGR, or the National Energy Retail Law or National Energy Retail Rules commence operation in Queensland; or

(b) the STTM does not operate as anticipated and the access arrangement does not effectively accommodate the STTM; and

(c) the AER provides Envestra with a notice stating that the circumstances described in (a) or (b) are significant. An amendment or the commencement in Queensland of the National Energy Retail Law or National Energy Retail Rules is significant if it affects reference tariffs. The new review submission date will be the date 6 months from the date of the notice provided by the AER under this clause.

A. Confidential averaging period

B. Actual cost of debt (confidential)

C. Detailed WACC Issues

This appendix outlines the AER's consideration of detailed issues in relation to Envestra's proposed rate of return, under the following general categories:

- Overall rate of return
- Equity beta
- Debt risk premium
- Market risk premium

This appendix should be read in conjunction with chapter 5.

C.1 Overall rate of return

C.1.1 Recent sale of regulated assets

The AER considers that recent sales of regulated assets can provide useful information regarding the extent to which the AER's weighted average cost of capital adequately compensates regulated service providers. The AER's consultant, Professor Kevin Davis stated:

> … if access prices are set using the correct cost of capital such that expected future net cash flows provide both the required return to capital and the full return of capital, the market value of equity plus debt will (at the start of the regulatory period) equal the book (regulatory) value of assets. With the regulatory period, the valuation may differ because of unanticipated changes in risk premia or cash flows. In principle, if market value exceeds book value, this suggests that the regulatory rate of return is above that required by investors, and the converse when book value exceeds market value.[1]

Professor Kevin Davis stated various factors may cause market and book values to differ at the date of the regulatory determinations. For instance, the market value can exceed the book value as regulated entities may also be involved in other non-regulated activities (which are able to earn excess returns), AER's financial and operating structure maybe sub optimal and possible synergies associated with mergers. Professor Kevin Davis states that the book value may exceed the market value if regulatory risk is high.[2]

While other factors may be present, the AER does not consider that they fully explain the purchase price of regulated utilities being 30 per cent more than the regulated asset base.

One of the most recent sales of regulated assets was the Envestra purchase of Country Energy's NSW Gas Networks business. Information relating to this sale was

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1 Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 7.
2 Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 7.

contained in a market presentation released to the ASX on 26 October 2010 and is summarised as follows:

- purchase price of $107 million
- regulated assets represent 70 per cent of purchase price
- the RAB was $59.6 million as at 30 June 2010 and forecast to be $63.2 million at 30 June 2011.[3]

The purchase of Country Energy's NSW Gas Networks business was a public tender and it is therefore reasonable to assume the sale price represents an approximate of the true market value. In addition, Envestra had the advantage of knowing the outcome of the AER's final decision on the access arrangement for the covered pipeline, including the cost of capital and the cash flows associated with that rate of return. The premium paid by Envestra relative to Country Energy's RAB suggests that the AER's weighted average cost of capital does not under compensate the service provider. Envestra purchased Country Energy's regulated assets at approximately 26 per cent (19 per cent if the 2011 RAB forecast is used) above the RAB value.

The AER recognises that Envestra may justify the high purchase price due to potential synergistic gains. However, the AER does not consider the 26 per cent premium can be justified on these grounds alone. The AER considers that synergies can be primarily driven by a minimisation of operating expenditure[4] which is only 34 per cent of total building block revenue in Envestra's case. Even if Envestra was able to reduce Country Energy's operating expenditure by half (impossible scenario), this would not justify the 26 per cent premium paid.

As demonstrated in table C.1 below, all regulated firms have been purchased at RAB multiples of greater than one, with a RAB multiple of at least 1.2 times.

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3 AER, Final decision, *Wagga natural gas distribution network 1 July 2010–30 June 2015*, March 2010, p. 5 and ASX, *Envestra company announcement*, 26 October 2010, viewed 27 January 2011 <http://www.asx.net.au/asxpdf/20101026/pdf/31tcv1nblp4xqc.pdf>

4 The benefit associated with minimising capital expenditure is limited as it only relates to the return on capital for difference between actual and forecast capital expenditure for the outstanding year of the access arrangement period. This being due to the fact that actual capital expenditure and not forecasted capital expenditure is used to determine the opening regulated asset base. Further, other synergistic gains exist, but they are small in magnitude.

Table C.1: RAB multiple for recent regulated asset sales

Date	Acquirer	Target	RAB multiple (times)
Dec 06	APA	DirectLink	1.45
Oct 06	APA	Allgas	1.64
Aug 06	APA	GasNet	2.19
Apr 06	Alinta	AGL Infrastructure assets	1.41 – 1.52
Mar 06	APA	Murraylink	1.47
Aug 04	DEUT/Alinta/Alcoa	Dampier to Bunbury Natural Gas Pipeline	1.20
Aug 04	APA	Southern Cross Pipeline and Parmelia Gas	1.47
Apr 03	Alinta/AMP/Aquila	Alinta Gas Network	1.35
Apr 03	Alinta/AMP/Aquila	Multinet Gas	1.44
Apr 03	Alinta/AMP/Aquila	United Energy	1.52
Aug 02	CKI/HEH	Citipower	1.69
Oct 00	Consortium	ElectraNet	1.37
Sep 00	CKI/HEH	Powercor	1.71
Jun 00	Singapore Power	PowerNet	1.49
Dec 99	CKI/HEH	ETSA Utilities	1.26
Jul 99	CKI	19.97% of Envestra	1.49
Jun 99	GPU	GasNet	1.72
Mar 99	Envestra/Boral	Stratus Networks	1.99
Jan 99	Texas Utilities	Westar	1.86

Source: Grant Samuel & Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, p. 78 and Grant Samuel & Associates Pty Limited, *Independent Expert Report in relation to the Acquisition of the Alinta Assets*, 5 November 2007, p. 65.

Table C.2 presents analysis from Grant Samuel which shows listed infrastructure firms being traded at premiums significantly above regulated asset values.

Table C.2: RAB multiples of regulated assets using recent market data

Entity	Average RAB as at 30 June 2009	Average RAB as at 30 June 2010
SP AusNet	1.50	1.40
Spark	1.81	1.73
DUET	1.21	1.15
Envestra	1.28	1.21

Source: Grant Samuel & Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, p. 77. Based on share prices at 29 September 2009 and average nominal RAB for relevant year. RAB is based on the respective regulatory determinations except for DUET which allows for the $908 million expenditure on the Stage 5A and 5B expansion of the Dampier to Bunbury Natural Gas Pipeline.

Further, the AER considers the broker reports provided by Envestra also support the proposition that regulated utilities trade and are acquired at RAB multiples in excess of one.

C.1.2 Cost of equity implied by broker reports

SFG's analysis of information from broker reports is subject to several shortcomings when it is used to test the overall reasonableness of the AER's return on equity.

SFG noted that the cost of equity can be estimated from comparable firms as the sum of the expected annual dividend yield and expected annual price appreciation. From various broker reports, SFG estimated that for comparable firms the dividend yield is 10.5 per cent[5] and annual price appreciation is 11.3 per cent.[6] However, SFG recognised that this would unrealistically imply that comparable firms are expected to earn an annual return of 21.8 per cent (10.5 + 11.3). Nonetheless, the AER considers it is unrealistic to assume a price appreciation of 11.3 per cent as:

- 12 month price targets issued by brokers represent an expected high over the 12 month period and do not represent the expected annual capital appreciation over the long term
- these forecasts are heavily influenced by the current state of the share market and the 11.3 per cent suggests that at the time of the report the stocks were still recovering from the effects of the GFC, and that a recovery across the entire market was expected.

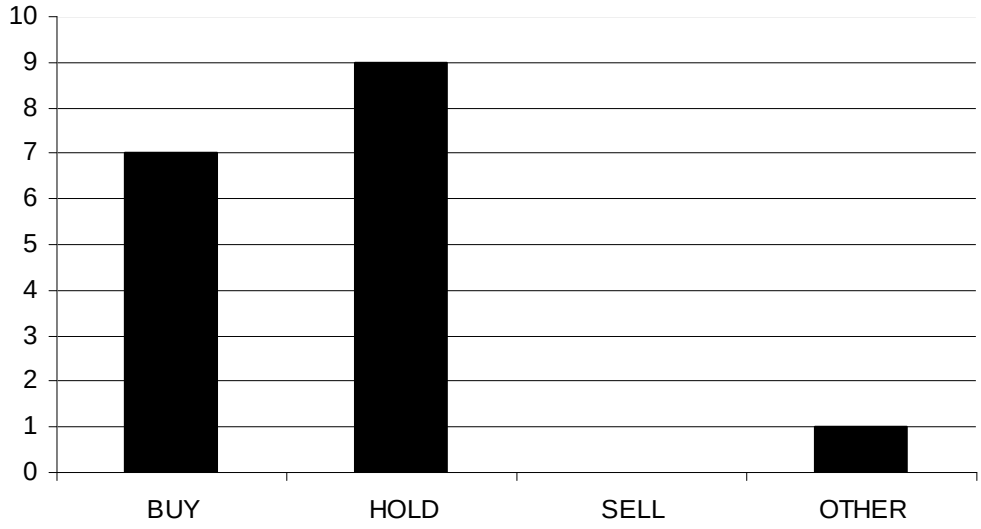
5 Strategic Finance Group, *The required return on equity commensurate with current conditions in the market for funds Report prepared for Envestra*, 27 September 2010, p. 8.

6 Strategic Finance Group, *The required return on equity commensurate with current conditions in the market for funds Report prepared for Envestra*, 27 September 2010, p. 12.

As submitted by Professor Kevin Davis, making use of broker forecasts in forming decision is problematic at best.[7] Professor Kevin Davis considers caution should be exercised when interpreting capital appreciation from broker reports, as they are generally accompanied by buy, hold or sell recommendations. Buy and sell recommendations are premised on the view that market prices are not inline with fundamentals and not generally linked to an estimate of a required rate of return.[8] Assuming a buy recommendation is issued (which suggests the firm is underpriced), the capital appreciation forecasted by the broker report would include a component that is associated with the under pricing. Overlooking this mispricing component is a further shortcoming of SFG's analysis.

As evident in figure C.1, all of the broker reports provided by Envestra have either a buy or hold recommendation. As a result, the AER considers the capital appreciation forecasts provided in the broker reports can not be used to estimate the return of capital, as the mispricing component would result in an over estimation of the return on capital.

Figure C.1: Frequency of recommendation in broker reports provided by Envestra



Source: Envestra, email to AER, *RE: AER.EN.20 – return on capital,* 10 February 2011.

As an alternative approach to testing the AER's cost of equity, SFG submitted that comparable firms are likely to appreciate by 2.5 to 3.5 per cent in nominal terms. As a result, SFG submitted that 13 to 14 per cent (10.5 + 2.5, 10.5 +3.5) is a conservative estimate of the return on equity for Envestra. However, the AER notes that the 10.5 per cent dividend is upward biased due to it being partially composed of a return of capital (depreciation) component. As a result, SFG's dividend yield forecast is not indicative of the company's profit based return for the purposes of indicating the market cost of capital. Professor Kevin Davis also notes that a component of utilities

[7] Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.
[8] Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.

dividends (stapled securities) is return of capital and should be deducted from the dividend in performing the calculation:

> To the extent that this is the case, the capital component of those payments should be deducted from the "dividend" in performing the calculation… it is not apparent that for many such entities these are estimates of dividends *per se* as opposed to estimates of distributions which encompass dividends, interest payments on loan and returns of capital.[9]

Using information from annual reports, table C.3 demonstrates that a significant component of utilities total distribution is interest on loan and return of capital. As is evident in table C.3, the dividend component of total distributions can be as low as 18.6 per cent.

Table C.3: Break down of Envestra's and SP AusNet total distributions

Company	Item (cents per share/security)	2009	2010
Envestra	Earnings	3.80	2.80
	Unfranked dividend	1.89	2.75
	Partially franked dividend	-	2.75
	Loan Note Interest	3.90	-
	Loan Note Principal	4.39	-
	Total Distributions	10.18	5.50
SP AusNet	Earnings	6.99	8.09
	Franked Dividend	2.65	3.20
	Loan Interest	3.94	4.58
	Capital Return	5.57	2.15
	Total Distribution	11.81	9.93

Source: Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.

The AER considers that if a nominal price appreciation is to be considered (2 – 3 per cent), the dividend yield must be reduced by 5.5 per cent[10], so that the dividend reflects pure return expectations. Accordingly, the most appropriate return on equity that can be derived from analyst reports is 7.5 – 8.5 per cent and can be derived in two equivalent ways:

- a 5 per cent dividend yield (10.5 minus 5.5) and a 2.5 – 3.5 per cent nominal price appreciation, or

[9] Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, pp. 15-16.

[10] AER analysis. The 5.5 per cent is the difference in yield forecast and the maximum yield attributed to profits. The figure is derived from broker report forecasts.

- a 10.5 per cent dividend yield and 2 – 3 per cent nominal price depreciation.[11]

Further, SFG stated that the 10.5 per cent dividend yield is conservative as data from capital raisings imply a dividend yield of 15.11 per cent.[12] However, in addition to the concerns raised above (primarily that dividend yields include return of capital), the AER considers dividend yields from capital raisings can not be relied upon as shares are typically issued at a discount to prevailing market prices. Therefore, the dividend yields obtained in capital raisings are upward biased and not reliable. Further, capital raisings are not arms length transactions, since they generally involve offers to existing shareholders.

There is a trade-off between capital gains and dividends. Even though regulated utilities are able to pay high dividends today, this comes at the expense of future dividends and future capital appreciations. However, it can not be expected that the firm will not decline in value if it is paying down its capital over time. As a result, it is not practical to assume the benchmark efficient network service provider can maintain a high dividend of 10.5 per cent and at the same time expect its share price to appreciate.

SFG has only provided limited material from the brokers' reports consulted and Envestra provided the broker reports to the AER a week prior to the draft decision release date.[13] As a result, the AER has not been able to adequately assess the information contained in the broker reports provided by Envestra. Following a limited analysis, the AER considers the broker reports provided by Envestra may not be reflective of the broker reports quoted by SFG (see table C.4). For instance, Envestra did not provide certain brokers quoted by SFG, and some of the reports provided by Envestra were not quoted by SFG.

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[11] This is supported by Professor Kevin Davis who states, "Alternatively the terminal vale assumption should reflect the decline in capital value of the security due to repayment of principle". See Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 15.

[12] Strategic Finance Group, *The required return on equity commensurate with current conditions in the market for funds Report prepared for Envestra*, 27 September 2010, p. 12.

[13] On the 14 January the AER requested the broker reports from Envestra and asked the broker reports to be produced by the 20 January. AER, email to Envestra, *AER.EN.20 – rate of return*, 14 January 2011. Envestra provided the broker reports on the 10 February 2011. Envestra, email to AER, *RE: AER.EN.20 – return on capital*, 10 February 2011.

Table C.4: Broker reports quoted by SFG and provided by Envestra to the AER

	Broker reports quoted in the SFG study	Broker reports provided by Envestra to the AER
Ballieu Research	X	
Citi Group		X
Credit Suisse	X	
Deutsche Bank		X
Goldman Sachs JBWere	X	
JP Morgan	X	
Macquarie	X	X
Merrill Lynch	X	
Morgan Stanley	X	
RBS Morgan's	X	X
USB	X	X
Wilson HTM	X	X

Source: Envestra, email to AER, *RE: AER.EN.20 – return on capital*, 10 February 2011.

Further, the AER considers the majority of the broker reports provided are outdated and maybe of limited use in estimating the cost of equity for the 2011-2016 access arrangement period. Given that broker reports usually provide 3 year forecasts, Envestra latest broker report (28 April 2008) would be of limited use in determining capital appreciation and dividend yield forecasts that are expected to prevail over the 2011-16 period.[14] The AER questions why SFG did not use more up to date broker reports in its analysis when assessing the cost of capital.

[14] The latest broker report provided by Envestra would only be able to provide forecast for the first 6 months of the 2011-2016 access arrangement.

Table C.5: Broker reports provided by Envestra to the AER

Date	Broker	Firm analysed
17 November 2003	Auerbach Group	ENV
20 November 2003	UBS	APA
26 November 2003	Auerbach Group	GAS
27 November 2003	UBS	ENV
29 August 2005	Citi Group	HDF
21 February 2006	ABN AMRO	ALN, AGL
23 February 2006	ABN AMRO	ALN
11 May 2006	Deutsche Bank	AGL
19 June 2006	ABN AMRO	APA
30 October 2006	Macquarie	AAN
28 February 2007	Deutsche Bank	AAN
17 August 2007	Macquarie	DUE
30 August 2007	Macquarie	SKI
25 February 2008	ABN AMRO	SKI
27 February 2008	ABN AMRO	ENV
26 March 2008	ABN AMRO	SPN
28 April 2008	ABN AMRO	DUE

Source: Envestra, Email to the AER, *RE: AER.EN.20 – return on capital*, 10 February 2011.

If broker reports are to be used as a cross check for the cost of equity, all information in the report should be considered, including the estimated WACC contained within the report. Some of the reports quoted by SFG assume a WACC of around 7 per cent. As a result, this would indicate that the AER WACC does not under compensate the service provider.

The AER further considers that broker report forecasts can not be relied upon as the firms analysed are not reflective of the benchmark service provider. For instance, the broker reports suggest that Envestra's gearing ratio is approximately 71 per cent, which is well above 60 per cent assumed for the benchmark service provider. The higher actual gearing of Envestra would be expected to move the equity return upward relative to an equity return based on a benchmark 60 per cent gearing.

C.1.3 Cost of equity vs. cost of debt

The AER considers the cost of debt has not been higher than the cost of equity in any of its decisions. In examining why the cost of equity crossed over to be lower than the cost of debt in the period January to June 2009, the AER notes:

- at the time of cross-over the risk of default on long term bonds seemed real to most investors leading to a short term beta escalation for such securities (the data is not limited to bonds issued by regulated firms). Regulated entities did not present the same risk so the cross-over relative to their cost of capital was perfectly reasonable in the circumstances

- no companies were actually issuing long term corporate bonds at this time. In particular, there were no actual Australian issued BBB+ 10 year corporate bonds in existence at the time. Therefore, the rates quoted are constructed from other data and subject to the distortions in the market where risk of default was a dominating influence, and the normal market risk criteria associated with corporate bonds of a particular credit rating no longer applied. This means the comparison is based on data constructed for regulatory purposes and should be discounted

- had the AER issued a decision at this time, the AER's WACC estimates would have reflected higher debt costs.

It is valid to assume that the return on equity would be higher than the return on debt. However, the AER does not consider this implies the cost of equity it has set in the past would have been too low in the period January to June 2009. Instead, the AER considers this outcome implies that the debt risk premium allowed in this period was unusually high. The AER considers firms do not depend on the issue of long term bonds for debt financing when markets are volatile, yet the benchmark cost of debt is based on such bonds even though they did not exist in the market at the time and values had to be based on estimates and extrapolation (which have been the subject of much debate). The AER considers recent data suggest that bonds have been issued at much lower yields than the debt margins considered by CEG. If debt margins are based on more recent data, the consistency issue between the debt risk premium and the cost of equity should not be present.

C.1.4 Modigliani and Miller theorem

The paper submitted by Professor Bruce Grundy modifies the weighted average cost of capital formula to express in terms risk premia, such:

$$R_c - R_f = \frac{D}{V} R_d + \frac{E}{V} R_e - R_f$$

$$(R_c - R_f) = \frac{D}{V}(R_d - R_f) + \frac{E}{V}(R_e - R_f)$$

$$Firm\_Risk\_\text{Pr}emium = \frac{D}{V} Debt\_Risk\_\text{Pr}emium + \frac{E}{V} Equity\_Risk\_\text{Pr}emium$$

$$FRP = \frac{D}{V} DRP + \frac{E}{V} ERP$$

However, Grundy assumes the convex relation between DRP and D/V implies that the DRP must be less than D/V*FRP. That is FRP>DRP*V/D which implies:

$$\frac{D}{V}DRP + \frac{E}{V}ERP > DRP\frac{V}{D}$$

Substituting gearing of 60%, Professor Bruce Grundy submits the equity risk premium must be at least 2.67 times the debt risk premium.

Professor Kevin Davis and Associate Professor Handley (Handley) both caution the use of the Modigliani and Miller theorem to imply a relationship between the cost of debt and equity.[15] Handley considers the Modigliani and Miller theorem in the presence of risk debt is based on the assumption that equity and debt are priced in the (same) integrated market, rather than being priced in (separate) segmented markets. Handley states that when this assumption is assumed an exact relationship between the firms cost of debt and equity can be established. Assuming Professor Bruce Grundy's theory is correct, Handley considers that, if the equity risk premium is less than 2.67 times the debt risk premium, this could imply the equity and debt is priced in:

- an integrated market and the equity risk premium is too low
- an integrated market and the debt risk premium is too high
- in segmented markets and so the Modigliani and Miller theorem cannot be used to infer that the equity is mispriced relative to the debt.[16]

Taking into account Handley's advice, the AER considers Professor Bruce Grundy has not demonstrated which of the three situations above is most likely to be present. The Modigliani and Miller theorem could imply that the debt risk premium is excessive or that equity and debt is priced in segmented markets.

Further, the AER considers the Modigliani and Miller proposition 2 can be used to demonstrate that the AER's weighted average return on capital does not under compensate the service provider. According to the Modigliani and Miller proposition two, the weighted average cost of capital can be calculated as the return on equity of a firm with zero leverage. Removing the financial risk element from the Envestra' equity beta of 1.1 (upper bound of Envestra's range) derives an asset beta estimate of 0.44. Therefore, using the parameters in Envestra's proposal the return on equity on a zero leverage firm as per the Modigliani and Miller proposition 2 is:

$$r_e = r_f + \beta * (MRP)$$

$$r_e = 5.30 + 0.44 * (8.0)$$

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15 Kevin Davis, *Cost of Equities – A Report for the AER*, 16 January 2011, p. 19 and John Hanley, Peer Review of Draft Report by Davis on the Cost of Equity, 18 January 2011, pp. 9-10.

16 John Hanley, Peer Review of Draft Report by Davis on the Cost of Equity, 18 January 2011, pp. 9-10.

$$r_e = 8.82$$

As is evident, the weighted cost of capital using Envestra's parameters is 8.82 per cent. Now to contrast that to weighted average cost of capital the AER is providing to Envestra:

$$r_e = r_f + \beta * (MRP)$$

$$r_e = 5.68 + 0.8 * (6.0)$$

$$r_e = 10.48$$

$$r_o = r_e(\frac{E}{V}) + r_d(\frac{D}{V})$$

$$r_o(AER) = 10.48 * (0.4) + 9.61 * (0.6)$$

$$r_o(AER) = 9.96$$

As is evident, the AER weighted average cost of capital (9.96 per cent) is significantly higher than the weighted average cost of capital implied by Modigliani and Miller proposition 2 using Envestra's parameters (8.82 per cent). The AER does not intend to set the weighted average cost of capital based on Modigliani and Miller proposition 2. However, the AER does consider that Modigliani and Miller proposition 2 demonstrates that the AER's return on capital does not under compensate service providers.

C.2 Equity beta

The following section addresses issues raised by Envestra in regards to the beta estimate.

Envestra submitted that the sampling period the AER relied upon in estimating a beta of 0.8 exhibits a historically low level of volatility, and specifically excluded the period of the GFC on the basis that this period was unlikely to be consistent with the equilibrium requirement of the CAPM. Envestra suggested that beta sampling period should take into account of the GFC as:

- not including the GFC period resulted in a downward bias in the beta estimate. Given the continued systematic shocks and heightened instability in the global economy since September 2008 (e.g. European debt crisis)

- Jagannathan and Wang point out that if a stock has a high beta when market risk is high and a low beta when market risk is low, then the unweighted average

measured beta for that stock will underestimate the true unconditional beta that investors assign to that stock[17]

- if the future is uncertain, then most weight should be given to the betas that existed when the risk was high[18]

- stocks that most likely have low betas (such as utility stocks and other mature industry stocks) might nonetheless have high betas in periods that really matter to investors (periods of high risk).

The AER does not consider that the GFC period should be relied upon when estimating beta. The AER considers the GFC period is unrepresentative as the market conditions during the GFC period are unlikely to be reflective of the market going forward. If the GFC period were to be included in sampling period, the beta estimate is unlikely to represent the best forecast possible in the circumstances.[19] This is consistent with the AER's exclusion of the 'technology bubble' over the 1990s from the sample period during the WACC review, which would have been to the detriment of service providers.[20]

Professor Kevin Davis considers caution should be used with the argument that poor stock market performance of regulated utilities during the GFC suggests a beta closer to one.

> The weakness in this argument lies in the implied assumption that actual returns are indicative of expected returns over a relatively short period of time, and particularly at a time of significant market disruption. [21]

To infer that utilities have a beta estimate greater than one, as a result of utilities having a more negative return than the market over the period January 2008 to March 2009, requires an assumption that there was no difference in news affecting both utilities and the overall market in that period.[22] Given the market condition in the period January 2008 to March 2009, Professor Kevin Davis considers this assumption to be unrealistic. Professor Kevin Davis submits that Envestra must provide substantially more analysis to demonstrate that higher beta estimates are required for service providers as a result of the GFC period.[23]

Further, the AER's consultant in the WACC review, Olan Henry, noted that the estimates after September 2008 and any estimate after this period (GFC period) are unlikely to be consistent with the capital asset pricing model.[24] Olan Henry notes that the period post 2008–09 are unlikely to be consistent with the equilibrium condition

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17 Competition Economics Group, *Estimating the cost of capital under the NGR, A report for Envestra,* September 2010, p. 16.
18 Competition Economics Group, *Estimating the cost of capital under the NGR, A report for Envestra,* September 2010, p. 21.
19 NGR, r. 74(2)(b).
20 AER, *WACC review final decision*, 1 May 2009, pp. 269–271.
21 Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.
22 Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.
23 Kevin Davis, *Cost of Equities – A Report for the AER,* 16 January 2011, p. 16.
24 AER, *WACC review final decision*, 1 May 2009, p. 271.

required and should be excluded form the sample period under consideration.[25] As a result, the AER considers that the GFC period should not be relied up on estimating beta for Envestra. Further, Envestra has not provided any evidence that investors develop expectations on periods when volatility is high. The AER considers that beta should be estimated on the period 2002-2007, which is a period that it considers is a representative period of prevailing market conditions over the next ten years.

The AER also highlights that Synergies Economic Consulting (on behalf of APT Allgas) submitted that that caution must be exercised when estimating equity returns over the GFC period.

> … From August 2007, the normal volatility in equity returns moved below the lower bound of the control range. Caution must therefore be exercised when estimating equity returns from this sub period. Based on this analysis, this sub period is clearly not indicative of what normally happens with regard to equity returns. Alternatively, there may have been a change in the way investors assess and / or price risk (that is, a structural change) however this would be difficult to reliably determine without several years of data.[26]

This reaffirms the AER's point of view that the GFC period can not be relied upon when estimating the beta.

CEG demonstrates the general utilities stock prices (including Envestra) fell by more than the market index in the period 2 January 2008 to 6 March 2009. As a result, CEG suggests that the utilities are more risky than the overall market and should receive a beta estimate greater than one. As outlined above, the AER does not consider accurate conclusions can be drawn from the GFC period as it is unrepresentative of the conditions that are likely to prevail in the 2011–15 access arrangement period. Further, Envestra's actual gearing is more than the benchmark level of gearing (60 per cent). Hence, Envestra's stock price would be more responsive to general market movement, in contrast to a benchmark service provider. Professor Kevin Davis considers that more analysis and evidence must be presented to infer that the performance of regulated utilities stock prices relative to the market during the GFC can imply utilities have a higher beta estimate.[27]

CEG provided two forms of asset beta estimates to the AER. One asset beta estimate was derived using a variable estimation period around the GFC period and another estimate was based on 5 year estimate period ending June 2010 with a variable observation period. The beta estimates are derived using 55 companies from a modified sample used by NZ Commerce Commission Draft Reasons paper. The AER considers that the sample of companies used in CEG's asset beta estimate can not be relied upon when estimating for a benchmark service provider. The sample is primarily made up of foreign firms and as was the case in the WACC review limited weight should be placed on foreign estimate. For instance, in the WACC review the AER noted that the difference in the regulation of businesses, the regulation of the domestic economy, geography, business cycles, weather and a number of different factors are likely to result in difference between equity beta estimates for similar

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25 Olan T. Henry, *Estimating beta*, 23 April 2009, p. 8.

26 Synergies Economic Consulting, *Estimating a WACC for the APT Allgas Distribution Network*, September 2010, p. 31.

27 Kevin Davis, *Cost of Equities – A Report for the AER*, 16 January 2011, p. 18.

businesses between countries. As a result, the AER considers that foreign estimates should only be used a cross check of the domestic equity beta estimates.[28]

CEG submitted that it observes a heightened average asset beta in the midst of the GFC crisis of around 0.48 and notes this beta falls back to a level of around 0.38 as the estimation period of measurement is extended further forward and backward from the GFC crisis.[29] The estimation period that is used to derive the 0.38 to 0.48 asset beta estimate is only 170 to 600 trading days. The AER considers that in determining an appropriate estimation period there is generally considered a trade-off between the potential loss in relevance of older in reflecting forward looking expectations and having sufficient observations in order to obtain a robust and statistical reliable beta estimate. As a result, the AER considers that the estimation period used by CEG to derive the asset beta estimate of 0.48 to 0.38 is too low to derive a statistically reliable beta estimate. CEG has not provided information (e.g. t-statistics) to demonstrate that these asset betas are statistically significant. As noted in the Olen Henry review, the beta t-statistic increased drastically in the GFC period.[30]

Further, when beta is estimated in short time frame, a short term CAPM must be assumed. However, the AER considers such with such a short time frame it is known the assumption behind the CAPM are far less secure. For example the assumption that transaction costs are negligible is an approximation over a multi-year time horizon but is highly questionable in a one month time frame. Similarly, as a one period model the assumption that the expected return covers the investor's total time horizon may be reasonable in a five to ten year setting but is implausible in a one month framework.

CEG estimated an asset beta for a 5 year estimation period to June 2010 with a variable observation period. CEG demonstrates that the average asset beta is 0.38 and that the beta varies drastically depending on the amount of trading days in the sample period.[31] When estimating equity beta, data service providers generally use an estimation period of five years using monthly observations. However, the AER does consider that in most circumstance increasing the frequency of the data to weekly or daily is likely to increase the precision of the estimate, as long there is no presence of thick trading.[32] Given CEG has not presented any information that thick trading is not an issue (e.g. the Dimson approach) and other robustness test to demonstrate observation period is appropriate (e.g. test for autocorrelation and heteroskedasticity), the AER considers that only the monthly observation period should be used. The AER notes that CEG's five year asset beta estimate using monthly observations is 0.29, which translates into an equity beta estimate of 0.725. This would indicate that the AER beta estimate of 0.8 is sufficient to give Envestra an opportunity to earn a return on capital that is commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services. Further, as was the case with the asset beta estimate for the small estimation period, CEG has not provided t-statistics

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28 AER, *WACC review final decision*, 1 May 2009, pp. 259–261.

29 Competition Economics Group, *Estimating the cost of capital under the NGR, A report for Envestra*, September 2010, pp. 24–25.

30 Olan T. Henry, *Estimating beta*, 23 April 2009, pp. 52–83.

31 Competition Economics Group, *Estimating the cost of capital under the NGR, A report for Envestra*, September 2010, p. 28.

32 AER, *WACC review final decision*, 1 May 2009, p. 275.

to demonstrate the beta estimates for the five year estimation period are statistically significant.

Envestra submitted that Grant Samuel as part of its independent expert report in relation to the "proposed acquisition of Alinta Asset from Singapore International" used an equity beta estimate of 0.8-0.9 to value energy distribution businesses. Envestra stated that the beta estimate of 0.8-0.9 was a pre-GFC expectation and is likely to be higher post-2008. However, the AER has obtained a more recent Grant Samuel independent expert which was published post-GFC. Given the more recent post GFC Grant Samuel report still uses a beta estimate of 0.8-0.9, the AER considers that Grant Samuel itself believes that energy distribution businesses beta estimate have been un-changed as result of the GFC.[33]

C.3 Debt risk premium

The AER considers that the DRP should be based on an Australian corporate bond issuance with a term to maturity of 10 years and a BBB+ credit rating. The 10 year benchmark reflects consistency with the term of the risk free rate, while the BBB+ credit rating reflects what the AER determined during the WACC review following consideration of comparable energy businesses.[34]

Envestra stated that the benchmark credit rating for a notional regulated entity should be Standard and Poor's BBB+ rating.[35] However the methodology proposed by Envestra for estimating the DRP is infeasible since CBASpectrum has ceased publication of its 10 year, BBB+ fair value yield curve. Envestra more recently submitted to the AER that:

> In the absence of CBASpectrum, Envestra's revised approach to estimating the DRP is for sole reliance to be placed on Bloomberg's BBB fair value estimates extrapolated out to the 10 year benchmark term. Envestra considers that placing full weight on Bloomberg ensures that the benchmark DRP will continue to be based on current data from an independent market participant.[36]

Accordingly, the AER has considered Envestra's more recent proposal to rely on Bloomberg as a sole estimate, as well as examining alternative sources of information for estimating the DRP. In particular, the AER has considered the relevance of the 10 year, BBB rated bond issued by the APA Group and the A- rated Stockland bond as alternative sources of information when setting the benchmark cost of debt.

C.3.1 Bloomberg

The AER has considered that Bloomberg's fair value estimates provided one independent and potential source of yield information on corporate bonds with a

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33 Grant Samuel, *Financial Service Guide and Independent Experts Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, Appendix 1, p. 8.

34 While the SORI has no status under the NGR, it was intended to provide guidance to the gas sector.

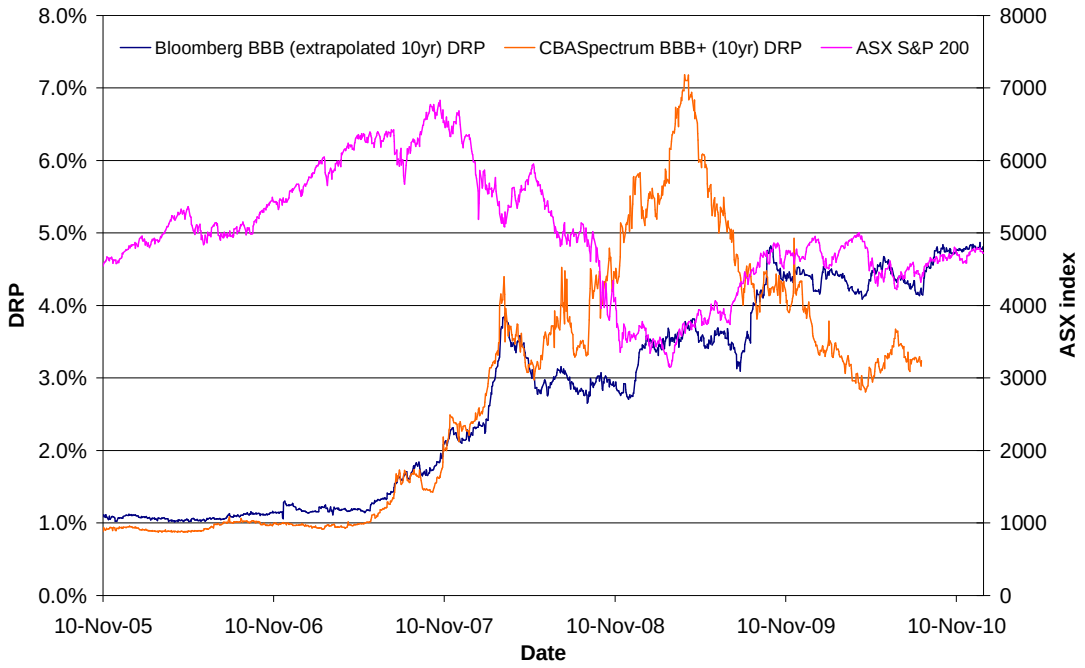
35 Envestra, *Qld access arrangement information*, September 2010, p. 144.

36 Envestra, *Email to the AER*, 15 December 2010.

BBB+ credit rating and maturities up to 7 years.[37] However, CBASpectrum's decision to cease publication of its fair value yield curves has given the AER cause to question the reliability of Bloomberg's estimates as the only source of information when setting the DRP, particularly given that both Bloomberg's and CBASpectrum's estimates rely on similar input data.

In exploring the performance of Bloomberg's estimates, the AER has compared them to the CBASpectrum yield curve and the value of the Standard and Poor's ASX 200—a broad based Australian share market index. These data are illustrated in figure C.2.

Figure C.2: Changes in debt risk premia in comparison to the ASX S&P 200



Source: Bloomberg, CBASpectrum, RBA, AER analysis.

In viewing this figure, one should generally observe the DRP moving inversely to returns in the equity market. That is, during a bull market when equity returns are strong, the risk of default on debt should be comparatively low. Conversely, as the equity market falls, and the risk of default across the market increases, the debt risk premium demanded by investors should logically increase.[38] While both the CBASpectrum and Bloomberg series increased in line with deteriorating equity market returns, Bloomberg's spreads continued to increase with improving conditions in the equity market (implying increasing default risk). Indeed, the Bloomberg DRP was actually higher in December 2010 than at any time in recent history including periods spanning the GFC. In contrast, the CBASpectrum fair value yield curve gradually declined in accordance with improved equity market conditions.

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37 AER, *Victorian electricity distribution network service providers, Distribution determination 2011–2015, Final decision*, October 2010, pp. 505–506.

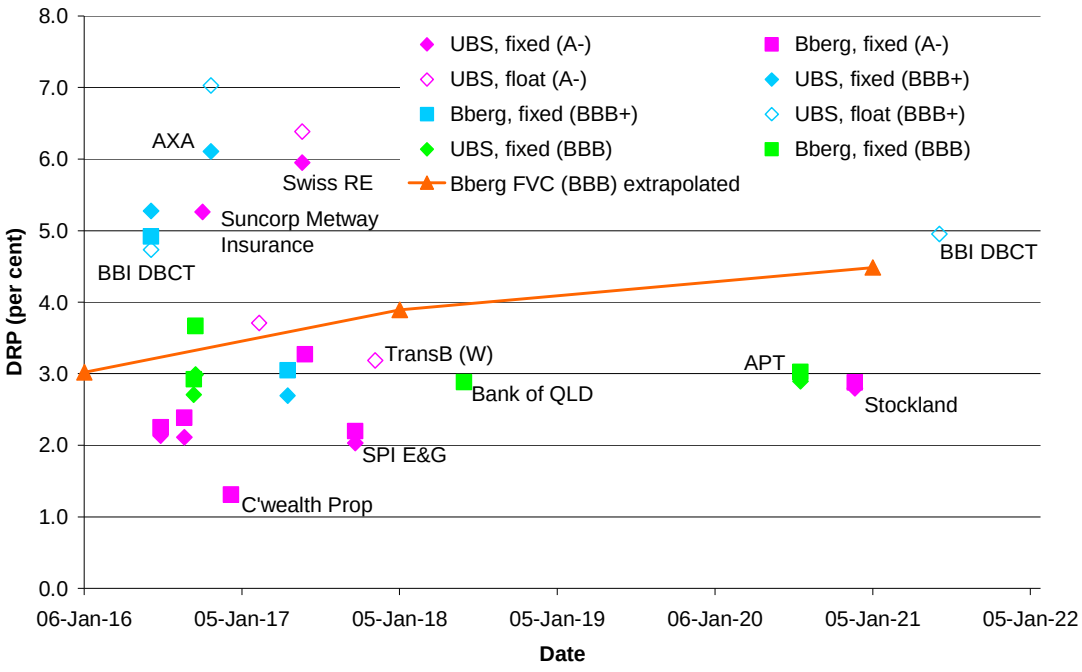
38 In practice, the interaction between debt and equity markets is more complicated than this, but generally, heightened financial risk translates to lower share prices and a higher DRP.

The significant divergence of estimates derived from Bloomberg data and from CBASpectrum over the timeframe including and since the GFC is also difficult to explain. The AER considers it is likely, however, to relate to the different proprietary methods employed by the data service providers, the method of extrapolating Bloomberg estimates to a comparable 10 year maturity, and the general paucity of lower rated, long dated bonds.

To some extent, the limited market data that has recently become available further suggests that Bloomberg's series may not be representative of bond spreads beyond 7 years. Specifically, in July 2010 the Australian Pipeline Trust—the financing arm for the APA Group—announced the issuance of a new 10 year, BBB rated corporate bond (APT bond) with a yield to maturity well below that indicated by Bloomberg's fair value estimates. Similarly, property firm Stockland recently issued a 10-year, A-rated bond (Stockland bond) with a yield that is currently over 100 basis points below the extrapolated Bloomberg fair value curve.

The paucity of corporate bonds with credit ratings at or close to BBB+ with maturities greater than 5 years currently trading in the market has been acknowledged by the Tribunal.[39] For the indicative averaging period for this draft decision, the AER has compared all bonds with these characteristics, as reported on UBS and Bloomberg. These bonds are shown in figure C.3, along with Bloomberg's fair value estimates for 5 and 7 years, and an extrapolation to 10 years (using the AER's extrapolation method, discussed below).

Figure C.3: Australian corporate bonds with maturities greater than 5 years and credit ratings ranging from BBB to A-



Source: Bloomberg, UBS, AER analysis.

[39] APT Allgas, *Access arrangement submission, effective 01 July 2011–30 June 2016*, October 2010, pp. 65–66; Australian Competition Tribunal, *Application by ActewAGL Distribution [2010] ACompT4*, 17 September 2010, paragraph 75, 77.

Of the bonds plotted in this figure, the three of immediate interest are the APT, Stockland and DBCT bonds, which are considered in turn below.

C.3.2 APA Group bond

The yields on the APT bond are likely to provide a close match to those of the benchmark corporate bond.[40] Specifically, the AER considers that the APT bond—with a BBB credit rating and 10 year term to maturity—closely resembles the characteristics relevant to the benchmark adopted by the AER in both electricity and gas determinations. To the extent that credit ratings capture the entire risk of default, use of the APT bond would be expected to overcompensate Envestra with respect to the BBB+ rated benchmark cost of debt.

However, credit ratings are not a perfect indicator of the risks involved in investing in the provision of reference services. As noted by Standard and Poor's:

> …Standard & Poor's ratings opinions are not intended as guarantees of credit quality or as exact measures of the probability that a particular issuer or particular debt issue will default. Instead, ratings express relative opinions about the creditworthiness of an issuer or credit quality of an individual debt issue, from strongest to weakest, within a universe of credit risk. The likelihood of default is the single most important factor in our assessment of creditworthiness.[41]

Investors use means in addition to credit ratings to determine the risks associated with investing in particular firms. Consequently it is common to observe different yields on bonds with the same credit rating.

The fact that investors take into account information other than credit ratings when assessing the risk of default is supported by recent analysis prepared for the AER by Oakvale Capital. In particular, when explaining the divergence in yields on bonds with similar credit rating, Oakvale suggested that factors such as industry (for example, infrastructure versus financial institution bonds) and liquidity are relevant.[42] Similarly, a report by Associate Professor John Handley stated that empirical evidence may suggest factors other than simply credit risk (as reflected in the assigned credit rating) are taken into account by the market in pricing bonds.[43]

In this context, the AER regards factors specific to regulated energy networks affecting the APT bond to be relevant considerations in setting the benchmark cost of debt. In particular, the default risk of APA Group's operations reflect its large, fixed investments whose returns are set in part under the regimes administered by the AER, with regard to the NGR and NER. The key features of these regimes (with respect to investment risks in unregulated sectors) include "locked in" asset values and periodic resets of prices with respect to updated sales forecasts. Hence, to the extent that investors consider industry specific characteristics in addition to the assigned credit rating, the yields on the APT bond would be expected to produce a rate of return that

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40 AER, *Draft approach for measuring the debt risk premium*, September 2010, p. 3.

41 Standard and Poor's, Guide to credit rating essentials, 2010, p. 4.

42 Oakvale Capital, *Report on the cost of debt during the averaging period: The impact of callable bonds*, February 2011, pp. 2–3.

43 John Handley, *Comments of the CEG Report: Estimating the 10 year BBB+ cost of debt*, 11 February 2011, p. 6.

is commensurate with the risks involved in providing reference services in the case of Envestra.

C.3.3 Stockland bond

In November 2010, Stockland issued a 10 year, A- rated corporate bond. Similar to the APT bond, the tenor and credit rating of this issuance are comparable to the AER's benchmark. However the nature of Stockland's assets and the industry in which it operates differ markedly to that of Envestra.

This notwithstanding, the AER considers that the yield on the Stockland bond provides a point of reference to assess the reasonableness of Bloomberg's BBB fair value estimates and also of the APT bond. In this regard, the yield on the Stockland bond is over 100 basis points below the extrapolated 10-year Bloomberg fair value estimate, while only 10 basis points from the APT bond. The difference from the extrapolated Bloomberg fair value estimate (using the AER's extrapolation method) is likely to be substantially driven by its lower credit rating, however the size of this difference is such that other factors are likely to be relevant. Where Envestra's method of extrapolation is applied, this difference is greater still.

Overall, while the Stockland and APT bonds provide only two points of reference, they both indicate that the extrapolated Bloomberg fair value may not be representative of longer dated, low rated bonds.

C.3.4 Dalrymple Bay Coal Terminal (DBCT) bond

The characteristics of the DBCT bond maturing in 2021 match the benchmark 10 year, BBB+ corporate bond. The AER, however, has previously expressed concerns over the reliability of this bond in comparative analysis.[44] Specifically, Bloomberg has intermittently published observations for the DBCT bonds in the past and they have been previously excluded from Bloomberg's fair value estimates given divergent data feeds.[45]

Further, while the voluntary trading suspension and subsequent market recapitalisation of BBI occurred in the past, market perceptions of the BBI/DBCT bonds may have shifted, despite the official credit rating assigned by Standard and Poor's remaining unchanged.[46] This consideration was supported by Oakvale Capital, who noted that for the period between April and May 2010, the uncertainty surrounding the issuer and the future status of the issue were likely to have been key contributors to the higher yield on the DBCT bond.[47] To the extent that these factors persist—and the large spread on the DBCT bond (around 500 basis points) compared to the smaller spreads on the APT and Stockland bonds supports this—the AER considers that they limit the reliability the DBCT bond for the purpose of assessing the benchmark cost of debt.

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44 AER, *Final decision*, October 2010, pp. 505–506.

45 PwC, *Debt risk premium over the approved averaging period beginning 2 August 2010*, October 2010, pp. 8–10.

46 Application by ActewAGL Distribution [2010] ACompT4, p. 22, paragraph 70.

47 Oakvale Capital, *Report on the cost of debt during the averaging period: The impact of callable bonds*, February 2011, pp. 20–22.

In summary, the lack of corporate bonds with BBB+ ratings and maturities of 10 years makes it difficult to reliability ascertain the appropriate benchmark cost of debt. For the reasons outlined above the AER considers there is a positive case for placing greater reliance on the APT bond in setting the DRP, particularly as the reasonableness of the spreads on this bond are now corroborated by the issuance of the Stockland bond. In recognising the risks in setting a DRP on such limited information, the AER has adopted a cautious approach for the purposes of this decision and considered equally the spreads of the extrapolated 10 year, BBB fair value derived from Bloomberg and of the APT bond when setting the DRP.

C.3.5 Actual cost of debt

Given the limited data available in setting the DRP, the AER considers it prudent to consider the actual costs of debt currently incurred by Envestra. This information has enabled the AER to better consider the appropriateness of applying its DRP. Envestra's actual cost of debt reaffirms that:

- the benchmark cost of debt set by the AER using Bloomberg and the APT bond is consist with providing Envestra with a reasonable opportunity to recover at least the efficient costs (section 24(2) of the NGL)

- the benchmark cost of debt set by the AER is consistent with setting Envestra's reference tariff at a level that allows a return commensurate with the regulatory and commercial risks involved in providing the reference service (section 24(2))

- the benchmark cost of debt set by the AER is appropriate for Envestra having regard to the economic costs and risks of under and over investment (section 24(2)).

To ascertain Envestra's actual cost of debt, the AER issued a notice under section 42 of the NGL requesting information on debt instruments with remaining maturities of greater than 5 years.[48] This information is presented in the confidential appendix B. In supplying this information, Envestra submitted that:[49]

- information on the actual cost of debt is not relevant to determining a benchmark cost of debt

- the information provided in response to the notice reflects instruments negotiated in the past which are not reflective of prevailing conditions

- data published by independent and respected providers provide relevant information on the benchmark cost of debt.

The AER has not based the DRP on the actual cost data provided by Envestra. The AER considers that prevailing conditions have been reflected in the use of data on the APT bond and Bloomberg fair value estimates over the indicative averaging period used for this decision. This data will be updated to reflect prevailing market conditions at the time of the final decision.

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48 AER, *AER notice under section 42(2)(a) of the National Gas Law*, December 2010.
49 Letter from Envestra to the AER, 7 January 2011.

Similarly, the AER has maintained the incentive for Envestra to achieve efficiencies in its cost of capital by using a benchmark rather than referencing its actual cost of debt.

While the AER recognises that this it has obtained historic information, a certain proportion of its debt portfolio was issued during the GFC. Hence, the AER expects Envestra's overall cost of debt to decrease as this debt is retired and new, cheaper debt is raised or refinanced over the forthcoming access arrangement period.

C.3.6 Extrapolation method

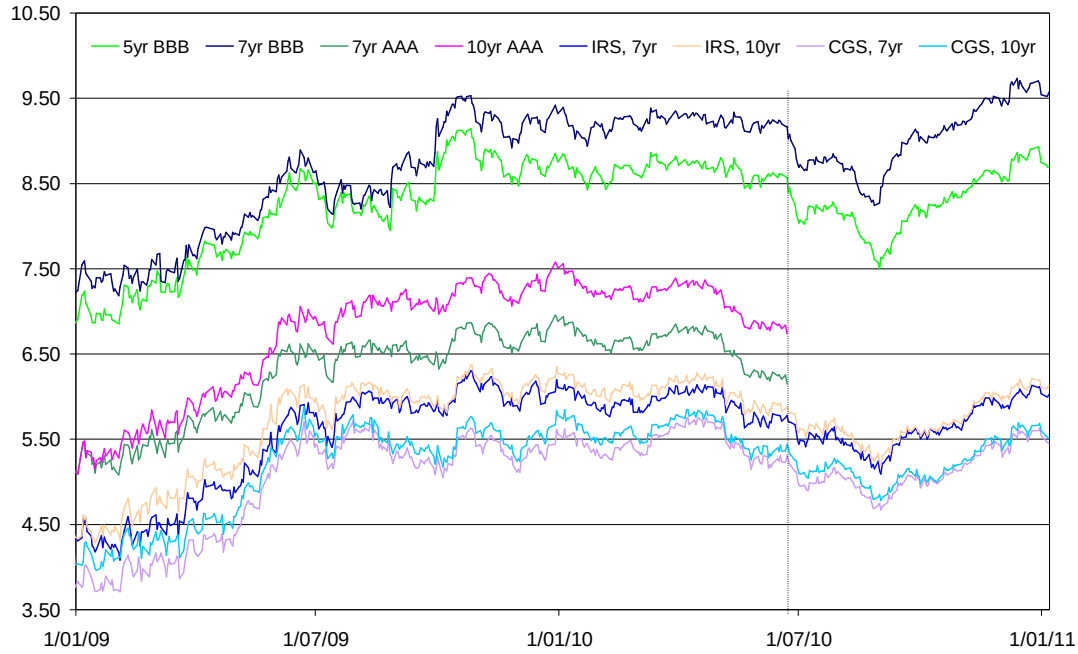
Since Bloomberg only publishes BBB fair value estimates to 7 years, the AER and service providers have been required to extrapolate this curve to a 10 year tenor for the purposes of setting the DRP. The AER has most recently considered that in lieu of Bloomberg publishing a 10 year, BBB rated fair value estimate, the spread on Bloomberg's AAA rated estimates from 7 to 10 years should be added to Bloomberg's 7 year, BBB rated fair value curve.[50] The AER considers that this extrapolation approach provides a better estimate of the 10 year, BBB rated yields than an approach based on linear extrapolation, as proposed by Envestra.

Specifically, the AER has previously demonstrated that a linear extrapolation of Bloomberg's BBB curve (using the change in spread between the 5 and 7 year estimates, and projecting this to 10 years) overcompensates network service providers, both on theoretical grounds (given that yield curves are not linear) and with respect to testing against earlier reported observations of Bloomberg's 10 year BBB fair value estimates.[51] Further, a linear extrapolation of Bloomberg's 7 year, BBB fair value curve results in a 10 year yield estimate which is greater than the observed yield on the DBCT bond, for which the AER has previously expressed its doubts over.

Bloomberg, however, has not published 7 or 10 year, AAA fair value estimates since June 2010. Regardless, the AER considers that the most reasonable extrapolation approach is to add the spread on Bloomberg's AAA rated estimates from 7 to 10 years—as averaged over the last 20 trading days when these estimates were available, ending 22 June 2010—to the most recent estimates of Bloomberg's 7 year, BBB rated fair value curve. This approach implicitly assumes that the spread between Bloomberg's 7 and 10 year, AAA fair value estimates has remained relatively constant over the period since June 2010. Figure C.4, below, supports this assumption.

[50] AER, *Final decision*, October 2010, pp. 510–511.
[51] AER, *Final decision*, October 2010, p. 490.

Figure C.4: Yield curve movements



Source: Bloomberg, AER analysis.

Notably, Bloomberg's 7 year, BBB rated fair value curve has historically moved consistently with Bloomberg's 7 and 10 year, AAA rated fair value curves. Further, these yield estimates have all moved consistently with the Australian dollar interest rate swaps and the Australian CGS. Accordingly, the AER considers it reasonable to infer that had Bloomberg continued to publish 7 and 10 year, AAA rated fair value curves, these curves would likely have continued to move in line with those examples provided above. It follows that the spread between Bloomberg's 7 and 10 year, AAA rated curves reflects as reasonable an extrapolation method now as it did in June 2010.

For these reasons, the AER considers that Envestra's extrapolation methodology does not provide for a rate of return on capital that is reasonably consistent with benchmark levels of efficiency.[52] In contrast, the AER considers its extrapolation approach provides the best estimate possible in the circumstances of Envestra. Substitution of Envestra's method with the AER's approach results in a reduction in the DRP of approximately 35 basis points (based on the indicative averaging period ending 6 January 2011).

C.3.7 Conclusion – debt risk premium

The AER acknowledges that Bloomberg is a well established and independent data service provider, and that Bloomberg's fair value yield curves have been relied upon by the AER in previous regulatory determinations. However, given the concerns raised throughout this section, the AER does not consider that in the current circumstances complete reliance can be placed on Bloomberg's fair value estimates.

[52] Consistent with NGR, r. 87(2).

The AER has also considered other information which it considers relevant to setting the benchmark BBB+ 10 year bond yield. In particular, the AER considers that the credit rating, maturity and similarities between the operations of the APA Group and Envestra are likely to result in the spread on the APT bond being reflective of the default risk associated with investment in the provision of reference services. However, the AER has taken a cautious approach and does not consider that full reliance can be placed on any one individual bond. The AER's decision to consider equally the APT bond and Bloomberg has been substantiated to some extent by observations from the DBCT bond (which the AER has expressed doubts over) and the Stockland bond.

The AER therefore considers that an average of Bloomberg's 10 year, BBB fair estimate curve and the APA Group bond represents the best DRP estimate possible in the circumstances of Envestra.[53] Specifically, in exercising its discretion, the AER has given equal weight to both Bloomberg's fair value yield estimates, and the APA Group bond. This results in a DRP of 3.93 per cent over the indicative averaging period ending 6 January 2011.

The AER also considers that this DRP is appropriate to apply in the case of Envestra, having regard to its expected actual cost of debt.

C.4 Market risk premium

C.4.1 Time periods for historical excess returns

Table C.6: Historical excess returns estimated using geometric means and arithmetic means (assuming an imputation credit utilisation rate of 0.65)

	Historical excess returns (geometric means)	Historical excess returns (arithmetic means)
1883–2010	4.9%	6.3%
1937–2010	4.1%	6.1%
1958–2010	4.1%	6.6%

Source: Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, p. 8.

The starting points for each sample period in table C.6 are consistent with those considered by the AER during the WACC review. SFG stated that if the sample periods starting from 1937 and 1958 considered by the AER had started five years earlier (in 1932 and 1953 respectively) the AER's estimates would be much higher. SFG suggested that the AER's sample periods were intentionally chosen to exclude years of high excess returns and produce downwards biased estimates.[54] SFG's claim of downwards bias in the AER's historical excess returns estimates is incorrect. The AER considered the sample periods noted above for the following reasons, which

[53] Consistent with NGR, r. 74(2)(b).
[54] SFG, The relationship between theta and MRP, pp. 4–5.

were mostly based on the findings of a study by Brailsford, Handley and Maheswaran:

- The period 1883 to 2010 provides a large sample, which incorporates many years of excess returns data as well as large negative and positive market events. However, for the period up to 1937 there is a relatively small sample of stocks available and periods of government stock price controls.[55]

- The period 1937 to 2010 provides a slightly smaller number of observations than the 1883 to 2010 period, but it incorporates a consistently larger sample of stocks and avoids the problems associated with data prior to 1937.

- The two time periods above both incorporate data from the Lamberton data series up to 1958, which is likely to overstate historical excess returns prior to 1958. The Lamberton data series uses an equal weighted rather than value weighted average of stock returns, which results in a bias towards high yielding small stocks. In addition to this, the Lamberton data series comprises dividend paying stocks only, which results in an overstatement of the market average. This is because not all stocks pay dividends. In estimating historical excess returns, Brailsford et. al. adjusted pre-1958 data by a factor of 0.75 and Associate Professor Handley incorporates this adjustment also. However, it is uncertain what the exact adjustment factor should be. Therefore, it is useful to consider estimates using data from 1958 onwards as well.[56]

- The period 1958 to 2010 provides a smaller number of observations, but it avoids the issues associated with data prior to 1958.

C.4.2 The difference between arithmetic and geometric means

Table C.7: Historical excess returns estimated using geometric means and arithmetic means (assuming an imputation credit utilisation rate of 0.65)

	Historical excess returns (geometric means)	Historical excess returns (arithmetic means)
1883–2010	4.9%	6.3%
1937–2010	4.1%	6.1%
1958–2010	4.1%	6.6%

Source: Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, p. 8.

Table C.7 outlines Associate Professor Handley's latest historical excess returns estimates calculated as arithmetic and geometric means. The difference between these estimates demonstrates the variability of excess returns over time.

[55] Brailsford, Handley and Maheswaran, Re-examination of the historical equity risk premium in Australia, Accounting and Finance, vol. 48, pp. 78–79.

[56] Officer and Bishop appear to incorporate this adjustment in their long-term estimates. See Officer and Bishop, Comments on the AER draft distribution determination for Victorian electricity distribution network service providers, July 2010, p. 21.

Arithmetic means are more appropriate when observations are considered independent in a statistical sense. In contrast, geometric returns are more appropriate when observations are related to each other over time (for example, if yearly excess returns are the relevant observations, returns can be expected to accumulate over time). As long as returns vary over time a geometric mean will always be less than an arithmetic mean. The greater the volatility in returns, the greater the difference between arithmetic and geometric means.

The difference between arithmetic and geometric means becomes apparent through a simple example. Suppose an index starts at 100, falls to 80 and then increases again to 100, the arithmetic mean return is 2.5 per cent.[57] The geometric mean return is zero.[58] The arithmetic mean return contemplates two possible scenarios—the index falls by 20 per cent or the index rises by 25 per cent. The geometric mean return contemplates the accumulated return over two years (if the investor had a two year investment horizon, the return over that horizon would be zero). It is clear that over a two year investment horizon, the arithmetic mean would overstate the return. However, if the investment horizon was one year, the arithmetic return would be the correct estimate. To form an expectation about one year in the future based on historical evidence we would look at what is possible over a one year horizon, which could be either a loss of 20 per cent or a gain of 25 per cent. In this case, the geometric mean would be an underestimate of the forward looking return.

The historical excess returns used in Associate Professor Handley's estimates are calculated on a yearly basis.[59] Therefore, for a 10 year horizon the arithmetic mean of yearly excess returns in each of the sample periods (127 years, 73 years, and 52 years) will overestimate the historical return on a 10 year investment. In contrast, the geometric mean for each of the samples will underestimate the historical return on a 10 year investment because the data reflects a cumulative return over the entire sample period.

It may seem appropriate to estimate a 10 year return within each of the sample periods outlined above. However, without any overlap in yearly observations this would significantly reduce the number of observations. The number of observations within each of the samples considered would fall from 127, 73 and 52 yearly observations to approximately 13, 7, and 5 observations.

Therefore, it is not easy to calculate excess returns over a 10 year investment horizon with the available data. Arithmetic means are generally used in estimating expected values and it is also likely that investors 'think' in terms of annual returns, which the AER noted in the WACC review final decision.[60] However, the issues outlined above suggest that the arithmetic mean of yearly excess returns are likely to overstate the excess return over a 10 year horizon.

In the WACC review, the AER noted that Blume, as well as Dimson, Marsh and Staunton have proposed methods that could be used to calculate an expected MRP

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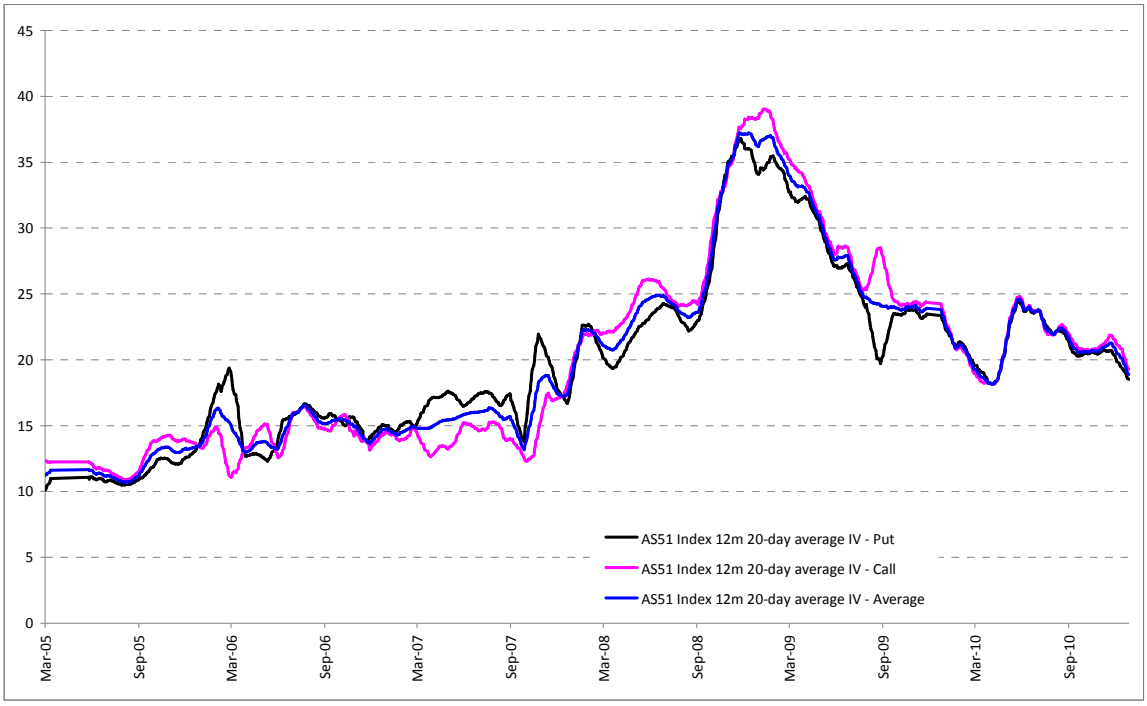
57 A fall of 20 per cent plus a rise of 25 per cent, divided by 2.
58 The square root of (1–0.20)*(1+0.25), minus 1.
59 Handley, An estimate of the historical equity risk premium for the period 1883 to 2010, January 2011, pp. 3–4.
60 AER, Final decision, Review of weighted average cost of capital parameters, 1 May 2010, p. 199.

using both arithmetic and geometric means.[61] The results from these weighted averages produce different results, which makes it harder to determine which form of adjustment is best.Rather than using a complex weighted average or an adjustment approach, which may not add a greater degree of precision to historical estimates, the AER considers that arithmetic averages should be interpreted with the understanding that they may overstate the expected forward looking 10 year MRP to some extent.

C.4.3 Implied volatility and Officer and Bishop's 'glide path' approach

The current level of volatility in the stock market can be estimated using the volatility implied by the Black-Scholes option-pricing formula. However, implied volatility varies significantly and provides only a very short term view of market volatility at any point in time. This can be seen in figures C.5 and C.6.

Figure C.5:Implied volatility from option prices as reported by Bloomberg



Source: Bloomberg, AER analysis.

[61] AER, *Final decision, Review of weighted average cost of capital parameters*, 1 May 2010, pp. 198–199.

Figure C.6: Implied volatility on S&P/ASX200 as reported by the ASX

Source: ASX, http://www.asx.com.au/products/indices/types/sp_asx200_vix_index.htm, viewed 13 January 2011.

Officer and Bishop submitted that an MRP of 8 per cent is appropriate over a five year period to 2016 based on a 'glide path' approach:

- Officer and Bishop estimated the volatility implied from the Black-Scholes option-pricing formula for 12-month ASX200 index call options to be 11.9 per cent. This estimate assumed a market risk per unit of option implied volatility of 0.5. It is a 1-year estimate of the MRP.

- Officer and Bishop then estimated the geometric average MRP over five years assuming the MRP would revert from 11.9 per cent in 2011 to a long run estimate of 7 per cent within a five year period.[62]

Officer and Bishop implicitly assumed there was no structural break in the MRP as a result of the GFC because the MRP is assumed to revert to a long run MRP estimate of 7 per cent.[63] In a previous report, Officer and Bishop advocated using a long term estimate due to the variability in data on market returns.[64] However, Officer and Bishop still incorporate the short term 11.9 per cent option implied volatility into their estimate of the MRP, rather than simply advocating their long term MRP estimate of

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62 Officer and Bishop, *Comments on the AER draft distribution determination for Victorian electricity distribution network service providers*, July 2010, p. 19.

63 The AER has noted above that Officer and Bishop's 7 per cent historical MRP estimate is an arithmetic average and is subject to the data issues related to long term historical MRP estimates outlined above.

64 Officer and Bishop, *Market risk premium, A review paper*, August 2008, pp. 36–37.

7 per cent. Officer and Bishop have previously stated that due to abnormally high levels of volatility, it is appropriate to estimate the forward looking MRP using the current level of implied volatility and a 'glide path approach'. Figures C.4 and C.5 show that implied volatility has dropped significantly since the onset of the GFC. It does not seem reasonable to continue to apply a 'glide path' approach rather than applying a long term historical estimate of the MRP.

The AER also has a number of concerns with the use of implied volatility in providing the best estimate of the MRP over a 10 year time horizon. Officer and Bishop's 11.9 per cent estimate of the 1-year MRP relies on an assumption that the market risk per unit of option implied volatility is constant at 0.5. Officer and Bishop have previously claimed that this approach is justified based on empirical and theoretical support from a paper by Doran et al.[65] However, Doran et al found that short run volatility had a surprisingly small impact on the medium term MRP. Specifically, they found that short term volatility only has a 10% weight in determining the medium term volatility and suggests 'that investors focus more on long-term volatility and are relatively insensitive to short term volatility swings.'[66] Doran et al also found that their implied risk approach produced a negative implied equity risk premium from S&P 500 index option prices during periods of "irrational exuberance".[67] Other research also suggests that option implied volatility is an unreliable estimator of the expected MRP.

Santa-Clara and Yan studied the ex ante risk premiums implied from S&P 500 index option prices. Santa-Clara and Yan's research shows that option implied volatility is much higher than realised market risk. Santa-Clara and Yan stated:[68]

> …the average premium that compensates the investor for the risks implicit in option prices, 11.8%, is about 40% higher than the premium required compensating the same investor for the realised volatility in stock market returns, 6.8 per cent.

Chernov studied the role of risk premia in volatility forecasting and explained why at-the-money option implied volatility is a biased and inefficient forecast of future realised volatility.[69]

Based on the research from Doran et al, Santa-clara and Yan, and Chernov, the AER considers that option implied volatility is too highly variable to be used as a basis for estimating the forward looking 10 year MRP.

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65 James Doran, Ehud Ronn and Robert Goldberg, A simple model for time-varying expected returns on the S&P 500 index, working paper, University of Texas, June 2005. See Officer and Bishop, *Market risk premium, further comments*, January 2009, pp. 7–8.

66 James Doran, Ehud Ronn and Robert Goldberg, A simple model for time-varying expected returns on the S&P 500 index, working paper, University of Texas, June 2005. See Officer and Bishop, *Market risk premium, further comments*, January 2009, p. 17.

67 James Doran, Ehud Ronn and Robert Goldberg, A simple model for time-varying expected returns on the S&P 500 index, working paper, University of Texas, June 2005, p. 19.

68 Pedro Santa-Clara and Shu Yan, 'Crashes, volatility, and the equity premium lessons from S&P options,' Review of Economics and Statistics, 92(2), May 2010, p. 450.

69 Mikhail Chernov, 'On the role of risk premia in volatility forecasting, Journal of Business and Economic Statistics, October 2007, vol. 25, no. 4, pp. 411–426.

Officer and Bishop's 'glide-path' approach incorporates a highly variable 1-year estimate of implied volatility and then combines it with a long term historical estimate of 7 per cent over a five year time horizon. As discussed in chapter 5, realised excess market returns fluctuate significantly between a positive and a negative MRP. It is quite possible that in one year realised excess market returns will be below their long term estimate of 7 per cent (or 6 per cent), but this is not considered in Officer and Bishop's analysis. All that is considered is a level of implied volatility measured as at July 2010, which trends downwards to a long term historical estimate. However, the realised MRP could be below long term estimates in some years (eg. below 6 per cent). Officer and Bishop do not take this into account in their 'glide path' analysis. The AER considers that the significant variability in the short term MRP derived from implied volatility measures makes such estimates an unreliable source of evidence when setting a MRP for a 10-year investment horizon.[70]

[70] Officer and Bishop's approach also looks specifically at a five year, rather than a 10 year time horizon. Within the CAPM, the MRP is calculated as the expected return on the market portfolio minus the risk free rate. For the purposes of this access arrangement review the AER has used the yield on 10 year CGS as a proxy for the risk free rate. As a result the MRP needs to be estimated for a 10 year time horizon as well. Therefore, in addition to other problems with Officer and Bishop's 'glide-path' approach, Officer and Bishop consider a time horizon that is inconsistent with the assumed 10 year period for the risk free rate.

D. AER's consideration of proposed non-tariff terms and conditions and issues raised in submissions

Matter	Description of terms and conditions, submissions and AER's consideration	Amendment required
Part 1: Terms and conditions for which Envestra has proposed revisions		
Delivery of gas (clauses 2.4, 2.5 and 16.6)[1]	Envestra proposed new clauses relating to the delivery of gas. These clauses (clauses 2.4, 2.5 and 16.6) relieve Envestra of any liability, or responsibility to make inquiries, with respect to any gas taken at a delivery point by someone other than a user. Envestra submitted that the clauses clarify its gas delivery obligations.[2] AGL submitted that it does not support these clauses. AGL submitted that: ▪ Envestra should not be able to absolve itself of liability by declining to enquire as to the authority of any person taking gas through a delivery point ▪ Envestra should bear some responsibility for preventing illegal access to its own equipment ▪ if the clauses are to stand, they should be amended so that Envestra must mitigate any losses caused to network users for gas taken without authority, due to illegal access to Envestra's own equipment and assets.[3]	Amendments 13.1 and 13.2.

1 All references to 'clauses' in this appendix relate to annexure G of the access arrangement proposal, unless otherwise stated.
2 Envestra, *Qld Access arrangement information*, October 2010, p. 213.
3 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 4–5.

	In its response to AGL's submission, Envestra submitted that clauses 2.4 and 2.5 reflect reality. Envestra submitted that it does not know who is in every property and whether they are the retailer's customer.[4] The AER does not consider that Envestra has satisfactorily justified inclusion of these new terms and conditions. To the extent that Envestra is in a position to manage the risk of the illegal access to a delivery point, it should be required to do so. The AER requires Envestra to amend clauses 2.5 and 16.6 to the effect that Envestra must use reasonable endeavours to mitigate any loss to users.	
Gas specification: Other users (clause 12.5) Receipt pressures: Other users (clause 13.4)	Envestra proposed a new term and condition (clause 12.5) under which it will have no liability to a user for any loss, cost, damage or expense the user might suffer or incur because someone (other than Envestra) delivers gas that does not comply with the appropriate gas specifications. Envestra proposed a similar term and condition with respect to gas pressures at receipt points (clause 13.4). Envestra submitted that this clarifies liability in respect of gas quality.[5] AGL submitted that Envestra has a responsibility to secure its own network and to ensure gas is delivered in accordance with the appropriate gas specifications and pressure. AGL also submitted that users should not bear any loss. Rather Envestra should bear the burden and seek redress from the entity that delivered the gas if the pressure or specification is incorrect.[6] In its response to AGL's submission, Envestra submitted that it has no control over the gas that is injected into its network and therefore cannot be held liable for the quality of gas delivered by retailers.[7] The AER considers that if Envestra becomes aware of non-specification gas entering its network	Amendments 13.3 and 13.4.

4 Envestra, *Response to AGL's submission*, December 2010, p. 3.
5 Envestra, *Qld Access arrangement information*, October 2010, p. 213.
6 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 14–15.
7 Envestra, *Response to AGL's submission*, December 2010, p. 4.

	and to the extent can take action to prevent it, Envestra should do so. Envestra is required to amend its terms and conditions to take reasonable endeavours to mitigate any loss to users as a consequence of non-specification gas entering the network. Envestra is also required to make a similar amendment with respect to clause 13.4 (receipt pressures).	
Maximum hourly quantity: (clause 4.2)	Clause 4.2 provides that the maximum hourly quantity (MHQ) of gas is the maximum quantity of gas that Envestra is obliged to deliver during a period of 60 minutes. AGL submitted that this is a new clause and sought justification for its inclusion. AGL also sought clarification of how Envestra is obliged to deliver the quantity of gas. AGL submitted it is unclear whether this is by agreement between Envestra and the user.[8] In its response to AGL's submission, Envestra submitted this is an existing clause in the current access arrangement for its South Australian network (clause 5.2). Envestra did not address the other matters raised by AGL.[9] No other references to MHQ (other than clause 4.2) occurs in the terms and conditions in annexure G of the access arrangement. Moreover, there is no reference to MHQ in the specific terms and conditions (specific to individual users). Only the maximum daily quantity (MDQ) is required to be agreed to between Envestra and the user.[10] Therefore, the AER does not understand why this provision is included in the terms and conditions. The AER also agrees with AGL's submission and considers that it is unclear how a user's MHQ is determined. In light of this, Envestra is required to delete clause 4.2 from its terms and conditions.	Amendment 13.5.

8 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 5–6.
9 Envestra, *Response to AGL's submission*, December 2010, p. 7.
10 Envestra, *Qld access arrangement proposal*, October 2010, annexure F, p. 30.

Quantities received (clause 4.5)	Clause 4.5 provides how Envestra will determine, if it is necessary, the quantity of gas delivered through a receipt point on behalf of a user. The current terms and conditions (clause 5.5) do not contain the words 'if it is necessary'.[11] AGL submitted that it should be clarified who deems it necessary and how this is communicated between a user and Envestra.[12] In its response to AGL's submission, Envestra submitted that with the advent of REMCo and more recently AEMO, Envestra no longer needs to determine injection allocations. Envestra submitted that the clause covers any location or circumstances where it might be necessary.[13] The AER accepts AGL's explanation in response to AGL's submission and does not require an amendment.	None.
Daily overruns: MDQ increase (clauses 5.4 and 5.5)	Envestra proposed that the description of a delivery point be revised from 'Telemetered DP' to 'Demand DP'. AGL submitted that Envestra should justify the proposed revision. AGL also submitted that the type of metering that will be installed at a Demand DP needs to be clarified.[14] In its response to AGL's submission, Envestra submitted that 'telemetered' is an outdated term, related to a time when all demand delivery points were not telemetered. Envestra submitted that	None.

11 Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 3.
12 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 6.
13 Envestra, *Response to AGL's submission*, December 2010, p. 7.
14 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 6.

	since all demand delivery points are now telemetered, it is not necessary to identify such points as telemetered demand delivery points.[15] The AER accepts AGL's explanation in response AGL's submission and does not require an amendment.	
Reduction in MDQ (clause 7)	Envestra proposed new provisions relating to requests by a user for a reduction in MDQ. The provisions have been taken from Envestra's terms and conditions for its South Australian network as revised in its access arrangement proposal.[16] Clause 7.1(b) provides that, prior to Envestra agreeing to a user's request for a reduction in MDQ, the user's customer must not have taken delivery of a quantity of gas equal to or in excess of 90 per cent of its MDQ for at least 12 months. Clause 7.7 has the same time period with respect to requests for subsequent reductions in MDQ. Clause 7.8 provides that if a request is refused, the user must wait at least six months before lodging a further request. Origin submitted that the 12 month period is too restrictive as some permanent reductions could take place over a matter of days (for example, a reduction in plant capacity). Origin submitted in cases where the permanent reduction is not immediately evident, the period should be reduced from 12 to 6 months.[17]	Amendments 13.6 to 13.9.

15 Envestra, *Response to AGL's submission*, December 2010, p. 7.
16 Envestra, *SA access arrangement terms and conditions*, October 2010, pp. 5–6.
17 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 6.
18 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 7–11.
19 Envestra, *Response to AGL's submission*, December 2010, pp. 7–8.
20 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 9–10.
21 Envestra, *Response to AGL's submission*, December 2010, p. 7.
22 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 10.
23 Envestra, *Response to AGL's submission*, December 2010, pp. 7–8.

	The AER considers that it is reasonable to allow a period of time in order to gauge whether a reduction in MDQ is permanent. However, the AER also agrees with Origin's submission that it may be obvious before 12 months has elapsed that a permanent reduction in MDQ has occurred. In these circumstances it would be appropriate for Envestra to give due consideration to requests for reduction in MDQ as this could potentially free up spare capacity for potential users. Envestra is required to amend clause 7 to provide that either the condition in clause 7.1(a) or the condition in clause 7.1(b) needs to be satisfied, rather than both conditions. AGL submitted that the terms and conditions are unfair for new customers who have to wait for up to 12 months. AGL submitted that new customers are penalised for a previous occupant's pattern of usage. AGL raised a similar concern with respect to clause 7.7 (subsequent requests for a reduction in MDQ) and clause 7.8 (non-acceptance of previous request, for which the waiting period is six months).[18] In its response to AGL's submission, Envestra submitted that new customers do not have to wait 12 months (or six months with respect to clause 7.8) for a reduction as they are unrelated to existing customers.[19] The AER notes Envestra's response to AGL's submission, but does not consider that the terms and conditions make this clear. Accordingly, Envestra is required to amend its terms and conditions to clarify that clause 7 does not prevent a new MDQ for a delivery point to be agreed on when the customer at the delivery point changes. Clause 7.4 provides that when Envestra agrees to a reduction in MDQ, the MDQ will be reduced from the date specified by the user. AGL submitted that Envestra should justify inclusion of this clause.[20] In its response to AGL's submission, Envestra submitted this is an existing clause in the current access arrangement for its South Australian network (clause 6B.5). Envestra also submitted that it	

	did not understand AGL's concern as the clause merely relates to acceptance and implementation of a request.[21] The AER accepts AGL's explanation in response AGL's submission does not require an amendment. Clause 7.5 provides that, if requested by a user, Envestra will provide the user with an explanation for rejecting a request for a reduction in MDQ. AGL submitted that a reasonable timeframe should be inserted into clause 7.5.[22] In its response to AGL's submission, Envestra submitted this is an existing clause in the current access arrangement for its South Australian network (clause 6B.6). Envestra also submitted that rejection of a request for a reduction in MDQ is rare and it has never been an issue.[23] The AER agrees with AGL and considers that it is appropriate for Envestra to respond in a timely manner. Envestra is required to amendment its terms and conditions to the effect that if will provide an explanation as soon as practicable.	
Temporary increase in MDQ: Demand delivery points (clause 8.1)	Envestra proposed new terms and conditions relating to temporary increases in MDQ. Clause 8.1 provides that a user may request Envestra to deliver a quantity of gas that exceeds the user's MDQ. AGL submitted that Envestra should include an information protocol for advising whether the request has been accepted or rejected.[24] In its response to AGL's submission, Envestra submitted that existing communication protocols (email, letter etc) will continue.[25]	None.

[24] AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 11–12.
[25] Envestra, *Response to AGL's submission*, December 2010, p. 8.
[26] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 12.

Request for temporary increase in MDQ (clause 8.2)	Clause 36 sets out how either party is to notify the other party. In light of this, the AER does not require an amendment. Envestra proposed that requests for a temporary increase in MDQ will be subject to an administration fee of $200 and a fee for an engineering analysis (if required) of $100 per hour. AGL submitted that Envestra should justify these fees.[26] Envestra's proposed fees are the same as those Envestra proposed for its South Australia network. In that case fees are already in place and Envestra proposed increases ($150 to $200 for the administration fee and $85 to $100 per hour for the engineering fee). In its response to AGL's submission, Envestra submitted the level of these fees stem from the access arrangement submission in 2005 (for its South Australian network) and analysis of movements in engineering labour costs justifies the proposed increases. Envestra noted that the fees will be in place until mid 2016.[27] The AER approves Envestra's proposed fees for its South Australian network.[28] Given that the work involved is likely to be similar for its Queensland network, the AER also approves Envestra's proposed fees for that network and does not require an amendment.	
Maintenance and renewal of metering equipment (clause 9.3)	Envestra proposed a new term and condition that users will bear the costs of the removal of telemetry and interval metering equipment. AGL submitted that Envestra should justify the introduction of this provision. AGL submitted that it is not clear how the costs will be calculated.[29]	Amendment 13.10.

[27] Envestra, *Response to AGL's submission*, December 2010, p. 3.
[28] AER, *Draft Decision, Envestra access arrangement proposal for the SA gas network*, February 2011, Appendix D, part 1.
[29] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 13.
[30] Envestra, *Response to AGL's submission*, December 2010, p. 4.

	In its response to AGL's submission, Envestra submitted that the costs are not included in tariffs. Further, Envestra submitted that the clause reflects current and historical practices of the user paying.[30] While the AER notes Envestra's submission, Envestra has not provided details to the AER of what the costs are and has provided no evidence that they are excluded from the costs that are recovered by reference tariffs. In the absence of evidence to the contrary the AER considers that the costs are likely to be factored into reference tariffs. Therefore, Envestra is required to delete this part of clause 9.3. However, when making its final decision the AER will reconsider this matter if Envestra provides evidence that the costs are not included in the costs recovered through reference tariffs.	
Inaccurate meters (clause 10.6)	Envestra proposed changing the margin of accuracy of meters from 'plus or minus 3%' to 'that is permitted by law'. Envestra submitted that the metering tolerance has been superseded by new metering standards, and the reference has been changed to refer to the level of tolerance that is permitted by law.[31] AGL submitted that it is unclear what law is being referenced. AGL further submitted that if the law allows a greater margin than 3 per cent, it is a detrimental change.[32] In its response to AGL's submission, Envestra submitted that laws, regulations and approvals from technical regulators change over time and differ from state to state. Envestra also submitted that new terms are to be applied consistently in South Australia and Queensland and soon in Victoria, where allowed standards differ.[33]	Amendment 13.11.

31 Envestra, *Qld Access arrangement information*, October 2010, p. 213.
32 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 13–14.
33 Envestra, *Response to AGL's submission*, December 2010, p. 4.

	The AER considers that Envestra has not provided sufficient justification for the proposed change and that the proposed change is unclear in terms of what the margin is. The AER requires Envestra to retain the margin of accuracy of plus or minus 2 per cent if no margin of accuracy is prescribed by law. However, when making its final decision the AER will reconsider this matter if Envestra provides further evidence of the new terms that Envestra submits are to be applied consistently in South Australia and Queensland.	
Delivery pressure (clause 14.1)	The current terms and conditions provide that Envestra will deliver gas at a pressure (or range) prescribed by law, or agreed to by the parties, or at no less than 1.13 kpa (clause 13.1).[34] Envestra proposed to delete the reference to a pressure of less than 1.13 kpa. AGL submitted that Envestra should provide the basis for the proposed revision.[35] In its response to AGL's submission, Envestra submitted that the delivery of 1.13 kpa is obsolete as some areas are now being reticulated at higher pressures.[36] The AER accepts Envestra's explanation in response to AGL's submission and does not require an amendment.	None.
Supply curtailment: Notice of curtailment	The current terms and conditions (clause 16.2) state that Envestra must give four days notice for planned maintenance or augmentation of the network. For other reasons for curtailment Envestra will give 'whatever notice is reasonable in the circumstances'.[37] Envestra proposed to revise this clause to 'such period of notice as required by law'.	None.

[34] Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 8.
[35] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 16.
[36] Envestra, *Response to AGL's submission*, December 2010, p. 8.
[37] Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 10.

(clause 17.2)	AGL submitted that the four days notice for planned maintenance and augmentations should be retained.[38] In its response to AGL's submission, Envestra submitted that curtailment requirements are set out in various jurisdictional codes (soon to be replaced by the NECF framework/obligations) and replicating them is unnecessary and results in inconsistencies.[39] Envestra's proposed revision will align clause 17.2 with the equivalent provision in its current access arrangement for its South Australian network. The AER accepts Envestra's explanation in response to AGL's submission and does not require an amendment.	
Order of priority (clause 17.3)	Clause 17.3 outlines the order of priority if Envestra intends to interrupt or curtail gas deliveries. The current terms and conditions (clause 16.3) state that where two or more delivery points fall within a particular category, Envestra will determine the order of priority. Clause 16.3 also provides that Envestra will not set the order based on the identity of the relevant users.[40] Envestra proposed to delete this qualification. AGL submitted that Envestra should provide reasons for the proposed revision.[41] In its response to AGL's submission, Envestra submitted that the words are unnecessary as Envestra is obliged not to discriminate in all its dealings.[42] It is not clear to the AER to what Envestra is referring when it states it is obliged not to discriminate in all its dealings. The AER considers that it is appropriate that Envestra should not discriminate by	Amendment 13.12.

38 AGL, *Envestra's Qld gas network access arrangement*, November 2010, pp. 16–17.
39 Envestra, *Response to AGL's submission*, December 2010, p. 8.
40 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 10.
41 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 17.
42 Envestra, *Response to AGL's submission*, December 2010, p. 8.

	setting the order based on the identity of the relevant users. Envestra is required to amend its terms and conditions to retain this provision.	
Ancillary reference services: Standards (clause 18.1) Payment of charges (clause 18.2)	As part of its ancillary reference services, Envestra proposed to change 'Envestra will Disconnect and Reconnect DPs (delivery points)' to 'Envestra will undertake Disconnection and Reconnection of DPs'. AGL submitted that the use of the word 'undertake' may mean Envestra could charge for an attempt to undertake the request, as opposed to performing the request. AGL submitted that the word 'undertake' should be deleted.[43] In its response to AGL's submission, Envestra submitted that the revisions reflect the defined terms in the list of definitions.[44] The AER notes that the words 'Disconnect' and 'Reconnect' are not defined terms in Envestra's glossary, whereas 'Disconnection' and 'Reconnection' are. The AER considers that the proposed change merely reflects this and the meaning of the clauses is unchanged. The AER does not consider that the word 'undertake' extends to instances where the work is not performed. The AER does not require an amendment. The current terms and conditions (clause 18.4) provide that Envestra will have no obligation to read metering equipment unless the user has paid for the service (or, where permitted by Envestra, agreed to pay).[45] Envestra proposed a revision to extend this requirement to disconnections and reconnections (clause 18.2). Envestra provided no reasons for the proposed revision. AGL submitted that it does not support the inclusion of this clause. AGL submitted that this clause,	Amendment 13.13.

[43] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 18.
[44] Envestra, *Response to AGL's submission*, December 2010, p. 4.
[45] Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 12.

	along with clauses 19 (other services) and clause 25.3 (right to suspend services), means that the benefits flowing to Envestra and consequential detriment to users would be grossly disproportionate and amount to an unfair term.[46] It is not clear to the AER that the benefits to Envestra and the detriment to users would be 'grossly disproportionate', as submitted by AGL.[47] Nevertheless, Envestra has provided no reasons why it needs to be paid for these services prior to carrying them out. As Envestra has provided no justification for the revision, the AER rejects it and requires clause 18.2 to be amended accordingly.	
Other services (clause 19)	Envestra proposed a new term and condition that Envestra may provide a user with other services requested by the user from time to time. Charges will be as agreed to between Envestra and the user or, in the absence of agreement, the charges previously notified by Envestra or reasonably determined by Envestra. Envestra submitted that this provision clarifies that Envestra may provide other services on request.[48] Origin submitted that it does not understand the justification for this provision and that prices should be transparent and subject to publication.[49] AGL noted that charges will not be approved by the AER. AGL submitted that it does not support inclusion of this clause. AGL submitted that this clause enables Envestra to commence charging for services it performs without agreement from the user.[50] In its response to AGL's submission, Envestra submitted clause 19 allows retailers to request	Amendment 13.14.

46 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 19.
47 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 19.
48 Envestra, *Qld Access arrangement information*, October 2010, p. 213.
49 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 7.
50 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 20.
51 Envestra, *Response to AGL's submission*, December 2010, p. 8.

	services other than reference services. Envestra also submitted that Envestra must determine the charges for such services on a reasonable basis and that this is how the access arrangement has operated since its inception.[51] It is unclear to the AER what Envestra contemplates as other services and why this provision is included in the terms and conditions, rather than the services policy, which already includes a negotiated service. It is unclear how the 'other services' in the terms and conditions fit with the 'negotiated service' in the services policy. Given this uncertainty the AER requires clause 19 to be deleted.	
Correction of billing errors (clause 21)	The current terms and conditions (clause 20) provide that a user will not make a claim for an error in an invoice if more than 12 months from the date of the invoice has elapsed.[52] Envestra proposed to change the period to 11 months. Origin submitted that an exception should be made if Origin is required by law to pursue a claim on behalf of a customer, as there is no time limitation in these circumstances.[53] AGL submitted that it does not agree with the reduction in the time period from 12 months to 11 months. AGL further submitted that Envestra should justify the reduction.[54] The AER does not consider that the reduction from 12 months to 11 months is significant and accepts Envestra's revision. The revision is in line with the 11 months period in Envestra's current and proposed terms and conditions for its South Australian network (clauses 20 and 21 respectively).[55]	Amendment 13.15.

52 Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 14.
53 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.
54 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 21.
55 Envestra, *SA access arrangement terms and condition*s, October 2006, p. 27; Envestra, *SA access arrangement terms and condition*s, October 2010, p. 19.

	The AER does agree with Origin's submission, however. The AER considers it appropriate that any claims that a user is required to pursue by law should not be subject to the 11 month time period. Envestra is required to amend clause 21 to exempt any claim a user is required to make by law on behalf of a customer.	
Delivered quantities (clause 23)	The current terms and conditions (clauses 21.1 and 21.7) refer to the quantity of gas delivered or estimated to have been delivered.[56] Envestra proposed to add the words 'or expected to be delivered' to these terms and conditions (clauses 23.1 and 23.7). AGL submitted that it is unclear why the additional words have been included.[57] In its response to AGL's submission, Envestra submitted that these proposed revisions merely reflect that some invoicing is in advance.[58] Unlike its South Australian network, Envestra does not invoice in advance for its Queensland network. While the additional words 'expected to be delivered' are consistent with the access arrangement for Envestra's South Australian network, they are inconsistent with the access arrangement for its Queensland network. In light of this the AER requires their deletion. In two instances, Envestra proposed to revise its terms and conditions by changing the term 'on a reasonable basis' to 'whatever basis Envestra considers reasonable'. They relate to the estimate of quantities delivered if no meter reading is taken (clause 23.4(c)) and the allocation of deliveries in certain circumstances (clause 23.5(c)). The proposed revisions revert to terminology proposed by Envestra at the previous review, but which was rejected by the QCA.[59]	Amendments 13.16 and 13.17.

[56] Envestra, *Qld access arrangement terms and condition*s, June 2006, pp. 14–15.
[57] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 22.
[58] Envestra, *Response to AGL's submission*, December 2010, p. 5.
[59] QCA, *Final Decision, Revised Access Arrangement for Gas Distribution Networks: Allgas Energy*, May 2006, pp. 12–13.

	The AER requires an amendment to clarify that Envestra's estimation or allocation must be on a reasonable basis. Envestra is required to make an amendment by replacing 'on whatever basis Envestra considers reasonable' to 'on a reasonable basis'. This is consistent with clause 4.5(c) (quantities received) and 10.7(c) (basis for corrections) which use the terminology 'on a reasonable basis'.	
Method of payment (clause 24.1)	The current terms and conditions (clause 22.1) provide that a user may make a payment to Envestra by telegraphic transfer or electronic funds transfer.[60] Envestra proposed to delete electronic funds transfer as a payment option. AGL submitted that it seeks the basis for the removal of this payment option.[61] Origin submitted that the term 'telegraphic transfer' should be explained. Origin further submitted that payment by electronic funds transfer should be allowed.[62] Envestra did not address this issue in its response to AGL's submission. Envestra's proposed revision will align clause 17.3 with the equivalent provision in its current access arrangement for its South Australian network. The AER considers that clause 24.1 allows for payment by electronic funds transfer, if agreed between Envestra and the User.	None.
Failure to pay: Right to set off unpaid amounts	Under the current terms and conditions (clause 23.2) Envestra may set off any amount it owes to a user against any amount due but not paid by the user, other than amounts that are under dispute. Similarly, under the current terms and conditions (clause 23.3) Envestra may suspend services if a	Amendments 13.18 to 13.20.

60 Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 15.
61 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 22.
62 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.

(clause 25.2) Right to suspend services (clause 25.3)	user fails to pay an invoice by the due date, other than amounts that are under dispute. Envestra proposed to delete the qualification that exempts payments in dispute.[63] AGL submitted that it seeks the reasoning behind the removal of the relevant text.[64] Envestra did not address this issue in its response to AGL's submission. The AER considers that it would be unreasonable for services to be suspended because of non-payment of amounts in dispute, particularly as the terms and conditions provide for a user to withhold payments in dispute (clause 22.1). Therefore, Envestra is required to amend its clause 25.3 to exclude payments in dispute and also make consequential amendments to clause 25.1 (overdue interest) and clause 26.2(a) (termination by Envestra). In relation to clause 25.2, AGL submitted that the types of payment that fall within the definition of 'any amount' need to be clarified.[65] In its response to AGL's submission, Envestra submitted that the clause is a generic one used in contracts.[66] The AER notes that clause 25.2 refers to 'any amount due to Envestra under the Agreement'. The AER considers that the meaning and intent of clause 25.2 are clear and is not convinced by AGL's submission that an amendment is required.	

63 Envestra, *Qld access arrangement terms and conditions*, June 2006, p. 16.
64 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 23.
65 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 23.
66 Envestra, *Response to AGL's submission*, December 2010, p. 5.

Holding over (clause 26.8)	Envestra proposed a new term and condition that if gas continues to be delivered after the term of an access agreement expires, Envestra and the user will be deemed to have entered into an access agreement on the same terms and conditions. This arrangement will continue until a new agreement is entered into, or the delivery point is disconnected, or the user ceases to be the current user of that delivery point. Envestra submitted that this new provision reflects existing agreements with retailers.[67] Origin submitted that the circumstances under which clause 26.8 operates should be clarified. AGL submitted that it interprets this clause to mean that the user remains responsible for gas even if the flow of gas is due to Envestra.[68] AGL submitted this would allow Envestra to recover the costs associated with the delivery of gas, notwithstanding that the loss was due to an act or omission by Envestra.[69] In its response to AGL's submission, Envestra submitted that this new clause has been adopted from existing agreements with retailers, who have requested its inclusion. Envestra also submitted that clause 26.8 provides that gas will continue to flow in the event that a new contract is not finalised before a current contract expires.[70] The AER understands the intent of the new provisions and considers that they have merit. However, the AER shares the concerns expressed by AGL and Origin. The AER does not consider that users should continue to pay for gas that is not required, but continues to be delivered due to the negligent act or omission on the part of Envestra (or Envestra's officers, servants, agents or contractors). Envestra is required to amend clause 26.8 accordingly.	Amendment 13.21.

67 Envestra, *Qld Access arrangement information*, October 2010, p. 213.
68 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.
69 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 24.
70 Envestra, *Response to AGL's submission*, December 2010, p. 8.

Service provider's liability: Contributions (clause 27.2)	Clause 27.1 specifies the circumstances under which Envestra will indemnify a user for damage and injury. Envestra proposed a new clause 27.2 which reduces Envestra's obligations under clause 27.1 to the extent that the user contributes to the damage or injury. AGL submitted that it seeks justification for this new clause. AGL further submitted that Envestra seems to have no liability compared with users.[71] In its response to AGL's submission, Envestra submitted this is an existing clause in the current access arrangement for its South Australian network. Envestra submitted it is a standard clause in agreements.[72] The AER understands that terms and conditions of this nature limiting a party's liability is common in commercial contracts. The AER considers that it is reasonable for one party's liability to be reduced because of the acts or omissions of the other party. The AER does not require an amendment.	None.
Mitigation (clause 27.4)	Envestra proposed a new term and condition that users must use reasonable endeavours to mitigate every claim it might have against Envestra. AGL submitted Envestra should justify inclusion of this new provision. AGL submitted that it suggests that users 'are agents (of Envestra) and responsible for the action or inaction.'[73] In its response to AGL's submission, Envestra submitted that this is a common clause in agreements. Envestra submitted an example of AGL becoming aware that its supplier was delivering	None.

71 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 25.
72 Envestra, *Response to AGL's submission*, December 2010, p. 8.
73 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 26.

	non-specification gas, in which case AGL should use reasonable endeavours to instruct its supplier to cease supplying that gas.[74] The AER understands that mitigation clauses are common in commercial contracts. The AER does not require an amendment.	
Force majeure: Consequences of force majeure (clause 29.2)	Clause 29.2 provides that either party is excused from its obligations as a consequence of a force majeure event. Envestra proposed to add a qualification that either party must take whatever precautions ought reasonably to have been taken to ensure that a force majeure event does not prevent performance of its obligations. AGL submitted that it seeks to understand what is meant by 'whatever precautions ought reasonably to have been taken'.[75] In its response to AGL's submission, Envestra submitted that the obligations are reciprocal and the words appear self-explanatory.[76] Envestra's proposed revision will align clause 29.2 with the equivalent provision in its current access arrangement for its South Australian network. The AER considers that it is reasonable to expect that both parties will take whatever action they reasonably can to limit the impact of a force majeure event. The AER accepts Envestra's explanation in response to AGL's submission and does not require an amendment.	None.
Notice of entry	The current terms and conditions (clause 31.2) state that Envestra must give notice of entry as required by law.[77] Envestra proposed to revise this clause by adding that if no notice is required by	None.

[74] Envestra, *Response to AGL's submission*, December 2010, p. 6.
[75] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 26.
[76] Envestra, *Response to AGL's submission*, December 2010, p. 8.

(clause 33.2)	law, Envestra must give reasonable notice. AGL submitted that what constitutes 'reasonable notice' should be clarified.[78] In its response to AGL's submission, Envestra submitted that what constitutes reasonable notice is whatever is reasonable in the circumstances.[79] Envestra's proposed revision will align clause 33.2 with the equivalent provision in its current access arrangement for its South Australian network. The AER accepts Envestra's explanation in response to AGL's submission and does not require an amendment.	
Dispute resolution: Selection of expert (clause 35.5)	The current terms and conditions (clause 33.5) provide that in the event that the parties cannot agree on a person to be appointed as an independent expert, they will request the Institute of Arbitrators to nominate a person.[80] Envestra proposed to change 'Institute of Arbitrators' to 'the Regulator'. AGL submitted that it seeks to understand the basis of Envestra's proposed revision.[81] In its response to AGL's submission, Envestra submitted that it considers that the AER would be more familiar with the issues.[82] The AER does not consider that it has the authority under the NGL to assume this role. Envestra is required to amend clause 35.5 by replacing 'Regulator' with 'Institute of Arbitrators'.	Amendment 12.22.

77 Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 22.
78 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 27.
79 Envestra, *Response to AGL's submission*, December 2010, p. 8.
80 Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 24.
81 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 28.
82 Envestra, *Response to AGL's submission*, December 2010, p. 8.

Automatic amendments (clause 38.2)	Envestra proposed that whenever the terms and conditions of the access arrangement are amended in accordance with the NGL, the access agreement between Envestra and the user will also be amended, except to the extent that Envestra otherwise notifies the network user. This is a revision to the current clause 36.2, which states that the access agreement between Envestra and the user will also change 'unless otherwise agreed.'[83] It also contrasts with the access arrangement information, which states that Envestra and a user may agree that some or all of the terms and conditions of their access agreement will not change (in the event that the terms and conditions in annexure G of the access arrangement change).[84] The effect of the proposed revision would give Envestra sole discretion to determine whether the terms and conditions of an existing access agreement with a user continue in the event that the terms and conditions of the access arrangement change. In respect of Envestra's South Australian network, AGL submitted that that Envestra should not be able to unilaterally decide not to change an access agreement.[85] In response to AGL's submission, Envestra submitted that a user's agreement may contain specific terms and conditions that have the effect of varying a standard term approved by the regulator. Subsequent amendments to standard terms therefore would not be applicable to the user's agreement.[86] The NGL (section 322) provides for service providers and users to negotiate terms and conditions different to those contained in an access arrangement. In the event that the terms and conditions of an access arrangement change, the parties should be permitted to determine whether or not the terms and conditions of their existing access agreement should also change. The AER does not consider, however, that it is reasonable for a service provider to have sole discretion to determine this.	Amendment 13.23.

[83] Envestra, *Qld access arrangement terms and condition*s, June 2006, p. 36.
[84] Envestra, *Qld Access arrangement information*, October 2010, p. 215.
[85] AGL, *Envestra's SA gas network access arrangement*, November 2010, pp. 17–18.
[86] Envestra, *Response to AGL's submission*, December 2010, p. 5.

	Therefore, the AER does not approve Envestra's proposed revision and Envestra is required to amend its terms and conditions arrangement accordingly.	
Part 2: Terms and conditions for which Envestra has not proposed revisions		
Daily overrun charges (clause 5)	Clause 5 provides that users will be charged for exceeding their MDQ. Origin submitted that this creates considerable administrative burden and challenges for Origin. Origin submitted that the extra cost of customers who overrun MDQ could be captured through the MDQ 'ratchet mechanism' set out in clauses 5.4 and 5.5.[87] The AER is unclear about how Origin considers that the terms and conditions should be amended. The AER also considers that it is reasonable for Envestra to charge users for exceeding their MDQ. Therefore, the AER does not require an amendment.	None.
Gas specifications: Notice to Envestra (clause 12.4)	A user must notify Envestra as soon as practicable if there is the possibility of non-specification gas being delivered into the network by or on behalf of the user. Origin recommended that Envestra should be required to reciprocate and notify users of non-specification gas in the network, particularly as sometimes it will be the network which is the cause of the non-specification gas.[88] The AER agrees with Origin's submission and considers that it is appropriate for Envestra to notify users if Envestra becomes aware of non-specification gas in its network. Envestra is required to amend its terms and conditions accordingly.	Amendment 13.24.

[87] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 5.
[88] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 6.

Delivery pressure (clauses 14.1 and 14.2)	Clause 14.1 provides that Envestra must ensure that delivered gas is at a pressure within the range determined by law or as agreed with the user. Clause 14.2 sets out the conditions under which Envestra is excused from liability for a breach of clause 14.1. Envestra is excused from liability irrespective of whether or not Envestra was aware of those circumstances. Origin submitted that the condition 'due to the technical, practical and physical limitations of the Network' (clause 14.2(a)) should be deleted. Origin submitted that it is so broad that it is difficult to understand under what circumstances Envestra could be held to its obligations under clause 14.1. Origin further submitted that the physical and practical limitations of the network are factors that should be taken into account when determining delivery pressures.[89] In its response to a submission by AGL relating to Envestra's South Australian network, Envestra submitted that clause 14.2 reflects the situation that Envestra cannot be accountable for matters that are outside its control. Envestra further submitted that it should not be required to design a network to take account of 1 in 100 year events, as such a cost would be inefficient and inconsistent with the NGR. The AER agrees with Envestra's response to AGL's submission and considers that the clause reflects matters that are outside Envestra's control. Regarding Origin's submission concerning the technical, practical and physical limitations of the network, the AER agrees that these are factors that should be taken into account when determining delivery pressures. The AER notes that clause 14.1 provides for Envestra and a user to agree on delivery pressures and the factors mentioned above would be relevant to the negotiations. However, the AER requires an amendment to clarify that Envestra is not relieved of its obligations if the failure to deliver gas within the range of pressures is due to its negligence.	Amendment 13.25.

[89] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 6.

Invoicing and payment (clause 20)	Clause 20 sets out the terms and conditions concerning the invoicing and payment for references services. AGL submitted that it does not support invoicing in advance.[90] In its response to AGL's submission, Envestra submitted that it doesn't invoice in advance for its Queensland network.[91] In light of this, the AER does not require an amendment.	None.
Payment of invoices (clause 20.6)	Clause 20.6 provides that a user must pay the amount shown in any valid tax invoice. AGL submitted that the word 'valid' should be defined.[92] In its response to AGL's submission, Envestra submitted that it doesn't understand the issue, but that it is willing to delete the word 'valid'.[93] The AER considers that the provisions are clear and no amendment is required.	None.
Set off arrangements: No set off (clause 24.2)	Clause 24.2 provides that a user must pay amounts owing to Envestra in full without any right to withhold and set off amounts owing by Envestra to the user. In contrast, Clause 25.2 provides that if a user does not pay any amount owing to Envestra, Envestra may withhold and set off any amount owing by Envestra to the user. In relation to Envestra's South Australian network AGL submitted that both parties should have the	Amendments 13.26 and 13.27.

90 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 2.
91 Envestra, *Response to AGL's submission*, December 2010, p. 7.
92 AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 21.
93 Envestra, *Response to AGL's submission*, December 2010, p. 5.

Right to set off unpaid amounts (clause 25.2)	same rights with regards to set off arrangements.[94] In its response to AGL's submission, Envestra submitted that payments are from AGL to Envestra, and not vice versa.[95] The AER agrees with AGL's submission and considers that it is reasonable for set off arrangements to be reciprocal. While the AER notes Envestra's submission that payments are from a user to Envestra, there may be occasions when Envestra owes money to a user (for example, as a result of an overpayment). Envestra is required to amend its terms and conditions accordingly.	
Overdue interest (clause 25.1)	Clause 25.1 provides that Envestra may charge interest on any amount unpaid by the due date. In relation to Envestra's South Australian network, AGL submitted that the word 'any' needs to be defined so that it is clear what types of payments are captured by this clause.[96] In its response to AGL's submission, Envestra submitted that it does not understand the issue.[97] The AER notes that Clauses 25.2 (right to set off unpaid amounts) and 25.3 (right to suspend services) clauses 25.2 and 25.3 refer to 'any amount due to Envestra under the Agreement', but clause 25.1 does not. The AER considers that the same words should be inserted into clause 25.1 for clarity. Envestra is required to amend its terms and conditions accordingly.	Amendment 13.28.
Termination	Clause 26.2 sets out the circumstances under which Envestra can terminate an agreement, while	Amendment 13.29.

94 AGL, *Envestra's SA gas network access arrangement*, November 2010, p. 14.
95 Envestra, *Response to AGL's submission*, December 2010, p. 5.
96 AGL, *Envestra's SA gas network access arrangement*, November 2010, p. 14.
97 Envestra, *Response to AGL's submission*, December 2010, p. 5.
98 Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.

(clauses 26.2 and 26.3)	clause 26.3 sets out the circumstances under which a user can terminate an agreement. Origin submitted that the same opportunities available to Envestra to terminate an agreement should also be available to users (such as, insolvency of Envestra or the network ceasing to be a covered pipeline under the NGL).[98] The AER agrees with Origin's submission. The AER considers that it is reasonable for the provisions to be reciprocal. Envestra is required to amend clause 26.3 to include Envestra's insolvency and revocation of coverage[99] of the network as conditions under which a user may terminate an access agreement.	
Liabilities Limitation period (clause 27.5) User's liabilities (clauses 27.6 and 27.7)	Clause 27.5 provides that Envestra will have no liability to a user unless full particular details of any claim are lodged within three months after the claim becomes known to the user. Origin submitted that a three month period is insufficient to put together full particulars of a claim. Origin submitted that in the absence of such a clause both parties would be entitled to a statutory limitation period of 6 years.[100] The AER considers that it is appropriate that users should promptly lodge claims with a service provider. As Origin has not submitted what it considers to be a reasonable time period, the AER is not convinced by Origin's submission that three months is an unreasonable time period. Clause 27.6 provides that Envestra will have no liability to a user for economic or consequential loss. Clause 27.7 provides that Envestra's liability for any claim by a user is capped at $100m. Origin submitted that the liabilities and indemnities are unequally weighted in favour of Envestra.	Amendments 13.30 and 13.31.

[99] NGL, ss. 102–108.
[100] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 7.
[101] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, pp. 6.–7.

	Origin submitted that a user's liability should be capped and indirect and consequential losses excluded, as is the case for Envestra (clauses 27.6 and 27.7).[101] The AER agrees with Origin's submission and considers that it is reasonable for these provisions to be reciprocal. Envestra is required to amend its terms and conditions to cap a user's liability (clause 27.6) and exclude consequential loss from a user's liability (clause 27.7).	
Consumer contract limitation: Limitation of liability (clause 28.2)	Clause 28.2 limits the liability of Envestra under the *Trade Practices Act 1974*. Origin submitted that this clause will need to be updated to reflect changes to the *Trade Practices Act 1974* that come into effect on 1 January 2011.[102] The AER agrees with Origin that clause 28.2, as well as clauses 28.3 and 28.4, need to be updated to reflect the provisions of the new *Competition and Consumer Act 2010*, which replaced the *Trade Practices Act 1974* and came into effect on 1 January 2011. Envestra is required to submit revisions to its terms and conditions to reflect this, or otherwise delete clause 28 from its terms and conditions.	Amendment 13.32.
Force majeure: Key obligations (clause 29.4)	Clause 29.4 states that a force majeure event does not relieve a user from its obligations to ensure; gas delivered into the network meets specifications (clause 12.1), is within specified receipt pressure (clause 13.1), and the user has good title to the gas (clause 16.1). In contrast, Envestra is relieved of its obligation to deliver gas at the prescribed delivery pressure (clause 14.1). Origin submitted that clause 29.4 is at odds with the well accepted concept of force majeure, which is an event that prevents the performance of obligations to the parties. Origin submitted that the clause be either deleted, or modified to a reasonable endeavours basis.[103]	Amendment 13.33.

[102] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 7.

	The AER agrees with Origin's submission. The AER does not consider that users should be expected to continue to perform their obligations when prevented by a force majeure event. Envestra is required to make an amendment to delete clause 29.4. In relation to Origin's alternative proposal that clause 29.4 could be modified to a reasonable endeavours basis, the AER does not consider this is necessary. Clause 29.5 requires Envestra and users to use all reasonable endeavours to overcome or remedy as soon as possible any force majeure event which prevents performance of any obligation.	
Network user to assist (clause 30)	Clauses 30.1 and 30.2 require a user to provide information and assistance to Envestra in certain circumstances. Origin submitted that it does not oppose these terms and conditions in principle, but considers that there should be an equivalent requirement on both parties. Origin further submitted that if Envestra is able to charge for ad hoc requests, a user should not have an open obligation to provide whatever assistance Envestra reasonably requires. Otherwise the user should be able to charge for these requests.[104] The AER agrees with Origin's submission on these issues and considers that it reasonable for the arrangements to be reciprocal. The AER considers it appropriate that either party should provide the other with whatever information it reasonably requires. Clause 30.3 states that Envestra may provide information to an upstream operator in certain circumstances. Origin submitted that Envestra should be required, rather than have discretion, to provide	Amendments 13.34 and 13.35.

[103] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 7.
[104] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.
[105] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 8.

	information, as users are so required.[105] The AER agrees with Origin's submission and considers that it is reasonable that Envestra should provide an upstream with whatever information the upstream operator reasonably requires. Envestra is required to amend clause 30.3 to provide that Envestra will provide an upstream operator only with information that it reasonably requires.	
User's insurance: Claims enforcement (clause 32.5) Claims settlement (clause 32.6)	Clause 32.5 provides that a user must promptly notify Envestra of any event that might give rise to a claim under any insurance policy which the user maintains under its access agreement with Envestra. Clause 32.6 provides that a user must not settle or compromise an insurance claim without the consent of Envestra, which will not be unreasonably held. Origin submitted that clause 32.5 implies that the network user must maintain insurance specific to its agreement with Envestra. Origin submitted that this is unworkable because Origin maintains group insurance policies that cover exposure to a wide range of agreements. Origin proposed that the clause should read 'insurance held pursuant to' rather than 'insurance held under'.[106] Origin submitted that clause 32.6 is unworkable as Origin may have claims on its group insurance to matters unrelated to Envestra. Moreover, Origin submitted that even if the claim did relate to Envestra, it is unclear why Envestra should have a right to withhold consent to Origin in settling a claim with its insurers.[107] The AER agrees with Origin's submission. The AER requires clause 32.5 to be amended to clarify that it only relates to claims in relation to Envestra's Queensland network. The AER also requires that clause 32.6 be deleted.	Amendments 13.36 and 13.37.

[106] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 9.
[107] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 9.

No notice (clause 33.3)	Clause 33.3 sets out the circumstances under which Envestra does not have to give notice of entry. This includes to undertake routine meter replacement or reading of meters. AGL submitted that it understands that it would be difficult to provide notice in times of an emergency, a routine meter reading or illegal use. However, AGL submitted that it requests the removal of routine meter replacement from this clause, as notice in those circumstances would assist the user or the user's customer to provide access for entry.[108] Envestra did not address this matter in its response to AGL's submission. The AER notes AGL's submission. However, it is not clear to the AER why routine meter replacement should be treated any differently to routine reading of meters. The AER is not convinced by AGL's submission and does not require an amendment.	None.
Confidentiality (clause 34)	Clauses 34.1 to 3.4 set out a user's obligations concerning confidentiality. Clause 34.5 provides that Envestra must comply with any confidentiality obligations imposed on it pursuant to the NGL. Origin submitted that the obligations regarding confidentiality should also apply to Envestra.[109] Part 16 of the NGR outlines a service provider's obligations concerning confidentiality. In light of this and the inclusion of clause 34.5 the AER does not require Envestra to amend clauses 34.1 to 34.4 to provide that they also apply to Envestra. However, the AER requires an amendment to clause 34.5 so that it refers to both the NGL and the NGR. The AER also considers that it is reasonable for confidentiality provisions to survive the termination or expiration of an access agreement. In this manner confidential information is protected after an	Amendments 13.38 and 13.39.

[108] AGL, *Envestra's Qld gas network access arrangement*, November 2010, p. 27.
[109] Origin, *Envestra (Qld) and APT Allgas access arrangement proposals*, November 2010, p. 9.

	access agreement expires or is terminated. Envestra is required to amend its terms and conditions accordingly.	
Notices (clause 36.1)	Clause 36.1 provides the manner by which notices can be sent by either party. In response to AGL's submission with respect to Envestra's South Australian network,[110] Envestra indicated that it is willing to amend clause 36.1 of the terms and conditions for that network to provide for email.[111] Given that Envestra has agreed to amend its terms and conditions the AER requires an amendment to give effect to this.	Amendment 13.40.
Entire agreement (clause 40.4)	Clause 40.4 states that an access agreement constitutes the entire agreement between Envestra and a user and supersedes all prior agreements, representations and understandings. It also states that all implied warranties, terms and conditions are excluded to the extent permitted by law. In relation to Envestra's South Australian network, AGL submitted that the provision excluding all implied warranties, terms and conditions is unnecessary and should be removed.[112] In its response to AGL's submission, Envestra submitted that this is a standard clause in agreements.[113] The AER understands that this is a common clause in contracts and does not require an amendment.	None.

110 AGL, *Envestra's SA gas network access arrangement*, November 2010, p. 16.
111 Envestra, *Response to AGL's submission*, December 2010, p. 5.
112 AGL, *Envestra's SA gas network access arrangement*, November 2010, pp. 21–22.
113 Envestra, *Response to AGL's submission*, December 2010, p. 6.

E. Annual reporting requirements

In a number of chapters of this draft decision, the AER has indicated that Envestra will have to report certain information on an annual basis. This information is generally required for the administration of an incentive mechanism, to ensure compliance with an approved tariff variation mechanism, or to otherwise monitor Envestra's performance and compliance with this decision.

This appendix provides a summary of the information Envestra must report to the AER during the access arrangement period. The AER anticipates that some of this information would be reported annually, for example as part of an annual tariff variation proposal. Otherwise, the AER anticipates this information will be collected by the AER via a regulatory information instrument. This appendix is not exhaustive of the information the AER may seek through any regulatory information instrument.

Information contained in the table below has been drawn from the chapters in this draft decision.

Table E.1: Annual reporting requirements

Reference	Reporting requirement	Purpose
Capital contributions – chapter 3	For each year, provide details of the nature and value of capital contributions received from users.	To identify the nature and value of capital contributions. Rules 82(2) and 82(3) of the NGR allow the AER to roll into the capital base a capital contribution, provided that the access arrangement contains a mechanism to prevent the service provider from benefitting through increased revenue from the user's contribution to the capital base.

Reference	Reporting requirement	Purpose
Incentive mechanism – chapter 7	Where there is a change in approach to classifying costs as either capex or opex, a detailed description of the change and a calculation of its impact on forecast and actual opex. Details to quantify and substantiate scope changes which impact on the original benchmarks. Details of specific uncontrollable costs incurred and reported by Envestra, which Envestra proposes the AER considers for exclusion from the operation of the incentive mechanism in accordance with the NGL and NGR. An outline of the calculation of the efficiency carryover amount for the year including identification of any adjustments made to actual or benchmark costs (e.g. exclusions).	To identify the actual total controllable opex costs for the purposes of the incentive mechanism. To identify the actual opex amounts attributable to each approved excluded cost category during each regulatory year. To determine the efficiency carryover amount each year for the application of the incentive mechanism.
Annual reference tariff variations – chapter 12	For each year, on or around 15 April, notify the AER in respect of any reference tariff variations such that variations occur on 1 July, and include: ■ the proposed variation to reference tariffs ■ an explanation and details of how the proposed variations have been calculated ■ an independent statement to support the gas quantity inputs in the tariff variation formula. The statement should be independently audited or verified and the quantity input will reflect the most recent actual annual quantities available at the time of tariff variation assessment. The actual quantity should be provided as four quarters of gas quantity data reconciling to an annual total quantity of gas.	Annual tariff variation approval.

F. Debt raising costs

Debt raising costs are transaction costs—such as legal fees, underwriting fees or credit rating fees—incurred as debt is raised or refinanced. The AER does not consider that the unit rate for debt raising costs proposed by Envestra (20.3 basis points per annum, bbpa) has been estimated on a reasonable basis, nor that it is the best estimate available.[1] The AER requires Envestra to use its standard method for the estimation of debt raising costs.[2] The resulting unit rate of 10.9 bppa is applied to the benchmark debt component of the capital base to estimate the total allowance for debt raising costs for the access arrangement period.

F.1 Access arrangement proposal

Envestra commissioned a consultant report from Deloitte Touche Tohmatsu (Deloitte) on debt raising costs.[3] Envestra requested that Deloitte provide estimates for the benchmark efficient service provider accessing two types of debt funding: domestic bonds (Medium Term Notes (MTN)) and syndicated bank debt.[4]

Envestra stated that the estimates provided by Deloitte were more accurate than the estimates, based on a 2004 report by the Allen Consulting Group (ACG),[5] which the AER has relied upon in recent decisions.[6] Based on the Deloitte report, Envestra proposed a unit rate of 10.1 bppa for standard debt raising costs, assuming the use of domestic MTN on a 10 year refinancing cycle.[7]

Envestra also proposed an additional allowance of 10.2 bppa to cover bridging finance for six months prior to the issuance of the debt.[8] Deloitte stated that this was necessary to meet the refinancing requirements from Standard and Poor's for

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1 See r. 74 of the NGR.

2 This standard methodology, based on the 2004 ACG report, has been refined by the AER across previous regulatory decisions, and is explained in detail below.

3 Deloitte, *Debt Financing Costs*, September 2010, included as attachment 9.4 to Envestra access Queensland, Access arrangement information, October 2010.

4 Deloitte, *Debt Financing Costs*, September 2010, p. 3 (section 1.3).

5 ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004.

6 AER, *Final decision, Powerlink Queensland transmission network revenue cap 2007–08 to 2011–12*, 14 June 2007, pp. 94–97; AER, *Final decision, SP AusNet transmission determination 2008–09 to 2013–14*, 31 January 2008, pp. 148–150; AER, *Final decision, ElectraNet transmission determination 2008–09 to 2013–14*, 11 April 2008, pp. 84–85; AER, *Final decision, New South Wales distribution determination 2009–10 to 2013–14*, 28 April 2009, pp. 541–560 (Appendix N: Benchmark debt and equity raising costs); AER, *Final decision, Queensland distribution determination 2919–11 to 2014–15*, May 2010, pp. 197–199; AER, *Draft decision, South Australia draft distribution determination 2010–11 to 2014–15*, 25 November 2009, pp. 235–239, 507–532 (Appendix I: Benchmark debt raising costs), 572–575 (Appendix K: Benchmark debt raising costs for the completion method – CONFIDENTIAL); AER, *Final decision, South Australia distribution determination 2010–11 to 2014–15*, May 2010, pp. 124–133, 371–384 (Appendix J: Debt raising completion method); AER, *Final decision - appendices, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, pp. 474–501 (Appendix N: Debt raising costs).

7 Envestra, *Qld access arrangement information*, October 2010, p. 139.

8 Envestra, *Qld access arrangement information*, October 2010, p. 139.

companies with an investment grade credit rating. This led to a total debt raising cost unit rate of 20.3 bppa.[9]

F.2 AER's consideration

Issues with the Deloitte report

The AER's standard method for estimating debt raising costs is based on the 2004 ACG report, but this does not mean it is seven years out of date. The method uses a five year rolling window of up to date bond data in order to reflect current market conditions.[10] The individual cost components have been indexed to accommodate inflation.[11] Further, the AER has refined the ACG method several times to reflect changing circumstances.[12] The AER considers it misplaced for Envestra to state that the Deloitte report is more accurate because there have been 'significant changes in debt markets since 2004',[13] when the AER's standard method already accounts for any such changes.

The AER considers there are several reasons to conclude that the AER's method produces a better estimate than that derived in the Deloitte report. The Deloitte report:

- makes no allowance for multiple bond issues,[14] when the AER's method correctly recognises that because multiple issues spread fixed costs they reduce the unit rate[15]
- does not adjust for the time value of money,[16] when the AER's method appropriately amortises up front costs[17]
- uses the median bond issue size from 2004 ($175m),[18] instead of the more up to date estimates used by the AER method[19]
- uses BBB+ rated bonds only,[20] when the AER's method uses a larger and therefore more statistically reliable sample with no loss of relevance[21]

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9 Although the Deloitte report also provided debt raising costs for syndicated bank debt (on an ongoing basis), this figure was not proposed by Envestra.

10 ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004, pp. 49–50; see also AER, *Final decision, South Australia distribution determination 2010–11 to 2014–15*, May 2010, pp. 131–132.

11 AER, *Draft decision, South Australia draft distribution determination 2010–11 to 2014–15*, 25 November 2009, pp. 525–527.

12 For instance, when the WACC increased to such a level that simple division of up front costs might result in under compensation, the AER adjusted the method to allow amortisation. See AER, *Draft decision, South Australia draft distribution determination 2010–11 to 2014–15*, 25 November 2009, pp. 527–530.

13 Envestra, *Qld access arrangement information*, October 2010, p. 139

14 Deloitte, *Debt Financing Costs*, September 2010, pp. 7–9.

15 AER, *Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, pp. 368–369.

16 Deloitte, *Debt Financing Costs*, September 2010, p. 4.

17 AER, *Draft decision, South Australia draft distribution determination 2010–11 to 2014–15*, 25 November 2009, pp. 527–530.

18 Deloitte, *Debt Financing Costs*, September 2010, p. 8 (footnote 7).

19 AER, *Final decision, South Australia distribution determination 2010–11 to 2014–15*, May 2010, pp. 131–132.

- is not transparent with regard to many key data attributes.[22]

Early refinancing costs

Several recent proposals to the AER have stated that the benchmark firm needs to obtain debt in three or more months in advance of when the debt is actually needed to retire maturing debt or pay for capex.[23] The Deloitte report provides a cursory examination of this issue and on this basis Envestra includes the cost of bridge financing in its unit rate for debt raising costs.[24]

Nothing in the Deloitte report changes the AER's conclusion on early refinancing costs in general, which have been set out in previous decision documents:[25]

- Management of refinancing risk has always been a key consideration for the benchmark entity with its investment grade credit rating
    - This is not a new requirement introduced by credit rating agencies in the time since the 2004 ACG report
    - There is no reason to conclude that the 2011-2016 access arrangement period will be different in this regard[26]
- The refinancing plan will include a variety of measures to address this risk, which may include the completion, commitment and underwriting methods but may also a broader range of actions.
    - Costing one particular form of early refinancing (in this case, bridging finance through syndicated bank debt) does not mean the benchmark firm should be compensated at this level.

As in these previous decisions, the AER considers that the standard debt raising cost allowance includes sufficient provision for the management of refinancing risk and it would be inappropriate to add the costs of bridging finance to this allowance.

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20 Deloitte, *Debt Financing Costs*, September 2010, p. 7.

21 In particular, debt raising costs are invariant across all investment grade credit ratings. See ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004, pp. xv–xix, 12–13, 15–16, 19–20, 52; AER, *Final decision, New South Wales distribution determination 2009–10 to 2013–14*, 28 April 2009, pp. 545–549; AER, *Final decision, South Australia distribution determination 2010–11 to 2014–15*, May 2010, pp. 131.

22 For example, identifying the number of bonds used as data for tables 5–7 or the derivation of a 5 bppa allowance for credit rating fees. Deloitte, *Debt Financing Costs*, September 2010, pp. 4, 8–9.

23 For example, ETSA Utilities, *ETSA Utilities revised regulatory proposal 2010–2015*, 14 January 2010, pp. 130–132; and Citipower, *Revised regulatory proposal 2011–15*, 21 July 2010, p. 173.

24 Deloitte, *Debt Financing Costs*, September 2010, pp. 5, 9–10.

25 AER, *Final decision, South Australian distribution determination, 2010–11 to 2014–15*, May 2010, pp. 371–384 (Appendix J: Debt raising costs for completion method); AER, *Final decision - Appendices, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, October 2010, pp. 479–499 (section N.4.2: Early refinancing costs).

26 Further, the context for the quote from Standard and Poor's (dated April 2008) refers only to the market conditions that year. Deloitte, *Debt Financing Costs*, September 2010, pp. 9–10, citing Standard and Poor's, *RatingsDirect: Refinancing and liquidity risks remain, but Australia's corporates are set to clear the debt logjam*, 22 April 2008.

Consistency

The AER considers that there needs to be consistent estimation of debt raising costs and the cost of debt. This is because of the potential for an inverse relationship between these two cost categories—higher debt raising costs may be associated with a lower cost of debt, and vice versa. Table F.1 compares the costs for the two main types of debt in the Envestra proposal and Deloitte report:

Table F.1: Relationship between cost of debt and debt raising costs (in bppa)

Type of debt	Debt raising costs	Cost of debt (spread to CGS)	Total cost
Syndicated bank debt	40	250	**290**
Corporate bonds (MTNs)	10	335	**345**

Source: Deloitte, *Debt Financing Costs*, September 2010, pp. 8–9, 11; AER analysis.
Note: This table shows the Deloitte/Envestra figures as proposed, and the AER does not endorse these figures as correct (see later in chapter).

On the figures presented by Deloitte, syndicated bank debt has much higher debt raising costs than corporate bonds. However, this is offset in part by the fact that bank debt has a much lower cost of debt than corporate bonds. It would be inconsistent to take the higher debt raising costs (from bank debt) and combine them with the higher cost of debt (from MTNs). That is, although the Deloitte report correctly states that the use of a bridge to market facility increases the issuer's overall debt raising costs,[27] it should also be noted that this decreases the total debt payments.

The issue of consistency is raised by the Deloitte report with regard to the use of international underwriting fees by the AER's method. The Deloitte report states that since the AER has 'recently' determined that debt raising costs should be based on Australian capital markets, it can no longer use this international data as proposed in the ACG report.[28]

There has been no change in the AER's position—the benchmark firm sources capital in Australia, and both the cost of debt and debt raising costs have always been based on Australian data. As the ACG report makes clear, international fees are used **as a proxy** for Australian fees because Australian data are not available.[29] As in any case where a proxy is used, it is important to consider whether this is an unbiased estimate of the underlying parameter.[30] In this particular case, the theoretical expectation is that the Australian and overseas markets will equilibrate over time, and there is no empirical evidence to the contrary. Neither ACG nor Deloitte could obtain data on

27 Deloitte, *Debt Financing Costs*, September 2010, p. 9.
28 Deloitte, *Debt Financing Costs*, September 2010, p. 7.
29 The ACG quote making this point is printed in the Deloitte report. Deloitte, *Debt Financing Costs*, September 2010, pp. 6–7; quoting ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004, p.53.
30 AER, *Final decision, New South Wales distribution determination 2009–10 to 2013–14*, 28 April 2009, pp. 550–553.

Australian underwriting fees, so the AER method uses international underwriting fees as an appropriate proxy, and there is no inconsistency.[31]

Applying the AER's standard method

The AER will continue to apply its standard method, based on the ACG report (and subsequent refinements), using updated data. Table F.2 shows the build up of debt raising costs.

Table F.2: Indicative direct debt raising costs with a nominal vanilla WACC of 9.96 per cent

Fee	Explanation	1 Issue	2 Issues	3 Issues	4 Issues	5 Issues
Amount Raised	Multiples of median MTN ($245m)	$245m	$490m	$735m	$980m	$1225m
1. Gross underwriting fee	Median gross underwriting spread, up front per issue, amortised	7.31	7.31	7.31	7.31	7.31
2. Legal and roadshow	$115K upfront per issue, amortised	0.76	0.76	0.76	0.76	0.76
3. Company credit rating	$50K per annum	2.04	1.02	0.68	0.51	0.41
4. Issue credit rating	4 basis points up front per issue, amortised	0.65	0.65	0.65	0.65	0.65
5. Registry fees	$3.5K per issue, per annum	0.14	0.14	0.14	0.14	0.14
6. Paying fees	$4/$1million per annum	0.04	0.04	0.04	0.04	0.04
Total	**Basis points per annum**	10.9	9.9	9.6	9.4	9.3

Source: ACG, Bloomberg, AER analysis.

Envestra (Queensland) has an opening capital base of $316 million, which leads to a notional debt component of $190 million at the assumed gearing ratio (60 per cent). This amount of debt requires one standard size ($245m) bond issue. After adjusting for the indicative discount rate (9.96 per cent) the appropriate unit rate estimate is 10.9 bppa. This leads to the debt raising allowance set out in table F.3:

Table F.3: AER's conclusion on debt raising costs ($m, 2010–11)

Description	Unit rate	2011–12	2012–13	2013–14	2014–15	2015–16	Total
Envestra Proposal	20.3 bppa	0.34	0.37	0.40	0.42	0.45	1.97
Amendment		-0.14	-0.16	-0.18	-0.19	-0.21	-0.88
AER Draft Decision	10.9 bppa	**0.20**	**0.21**	**0.22**	**0.23**	**0.24**	**1.10**

Source: Envestra Queensland, Access arrangement information - PTRM, AER analysis
Note: Numbers may not add due to rounding

[31] ACG, *Debt and Equity Raising Transaction Costs, Final Report to the Australian Competition and Consumer Commission*, December 2004, pp. 41–45, 49–53.

F.3 AER conclusion

The AER does not approve the forecast operating expenditure for debt raising costs from the access arrangement proposal, since it does not meet the requirements of r. 74 and r. 91 of the NGR. The AER considers that the debt raising costs shown in table F.3 are:

- consistent with the expenditure that would be incurred by a prudent service provider acting efficiently, in accordance with r. 91 of the NGR
- arrived at on a reasonable basis and represent the best estimate possible in the circumstances, in accordance with r. 74 of the NGR.

The AER requires Envestra to amend its debt raising costs as outlined in amendment F.1.

F.4 Required amendments

Amendment F.1: make all necessary amendments to the access arrangement proposal and access arrangement information in order to be consistent with table F.3

G. Submissions

The AER received submissions on Envestra's proposal from the following entities:

- AGL Energy Limited
- Origin Energy Retail Ltd

Glossary

AAG	access arrangement guideline
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACIL Tasman	ACIL Tasman Pty Ltd
AEMO	Australian Energy Market Operator
AGL	AGL Energy Ltd
APT Allgas	APT Allgas Energy Pty Limited
ASX	Australian Stock Exchange
BOM	Bureau of Meteorology
bppa	basis points per annum
CAPM	Capital Asset Pricing Model
CDI	CHESS Depository Interest
CEG	Competition Economists Group
CFC	Construction Forecasting Council
CGS	Commonwealth Government Securities
CPRS	carbon pollution reduction scheme
DNSP	distribution network service provider
DRP	debt risk premium
EBA	enterprise bargaining agreement
EBSS	efficiency benefit sharing scheme
EGW	electricity, gas and water
EMRF	Energy Market Reform Forum

Envestra	Envestra Ltd
FFM	Fama–French three factor model
FRC	full retail contestability
FTE	full time employee
GDP	gross domestic product
GFC	global financial crisis
GJ	gigajoule (1 000 000 000 joules)
HIA	Housing Industry Association
IPART	Independent Pricing and Regulatory Tribunal
IRR	internal rate of return
IT	information technology
KPI	key performance indicator
LME	London Metal Exchange
LRMC	long run marginal cost
MDQ	maximum daily quantity
MHQ	maximum hourly quantity
MIRN	meter installation reference number
MRP	market risk premium
MTN	medium term notes
NECF	National Energy Customer Framework
NERA	NERA Economic Consulting
NIEIR	National Institute of Economic and Industry Research
NPV	net present value
NYMEX	New York Mercantile Exchange

OESR	Office of Economic and Statistical Research
Origin	Origin Energy Retail Ltd
O&M	operating and maintenance
ORER	Office of the Renewable Energy Regulator
PJ	petajoules (equal to 1000 terajoules)
PTRM	post-taxation revenue model
QLD	Queensland
RBA	Reserve Bank of Australia
REES	Residential Energy Efficiency Scheme
RFM	roll forward model
RIN	regulatory information notice
ROLR	retailer of last resort
SA	South Australia
SEO	seasoned equity offering
SFG	Strategic Finance Group Consulting
STTM	short-term trading market
TAB	tax asset base
TJ	terajoules (equal to 1000 gigajoules)
Tribunal	Australian Competition Tribunal
UAG	unaccounted for gas
WACC	weighted average cost of capital
WAPC	weighted average price cap
Wilson Cook	Wilson Cook & Co Limited