



Access Arrangement Information

for Envestra's
Queensland Network

September 2005

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1. INTRODUCTION

1.1. Purpose of this Document

This document is the Access Arrangement Information in relation to the Access Arrangement revision for the Envestra Limited ('Envestra') Queensland Network ('the Network') and is submitted by Envestra (ABN 19 078 551 685) to the Queensland Competition Authority (QCA)('the Regulator') in accordance with section 2.28 of the Code.

The purpose of this document is to set out such information as is necessary to enable Users and Prospective Users to understand the derivation of the elements of the Access Arrangement and to form an opinion as to the compliance of the Access Arrangement revisions with the provisions of the Code.

Envestra submitted its first Access Arrangement proposal to the QCA in October 2000. The QCA delivered its Final Decision on the proposal on 3 October 2001. Envestra subsequently amended its proposal and the current Access Arrangement was approved by the QCA on 21 December 2001. Revisions to the current Access Arrangement are due to come into effect on 1 July 2006.

1.2. The Network

The Network is defined to mean the distribution mains, inlets, regulators, meters and ancillary equipment that are the subject of the Access Arrangement from time to time. The Network serves the Brisbane Region (including Ipswich and suburbs north of the Brisbane River), and the Northern Region (serving Rockhampton and Gladstone). A map providing an overview of the Network in metropolitan Brisbane (where almost 90% of the Network exists) plus a map depicting the Regions are available from Envestra's website www.envestra.com.au. Statistics and further information relating to the Network are included in sections 20 and 21 of this Access Arrangement Information.

Envestra also provides services in Queensland through a small number of non-Covered Pipelines, as well as several network extensions ('significant' extensions) that Envestra has elected to treat as non-Covered Pipelines. Haulage services in relation to these significant extensions (Excluded Assets) make use of a portion of the Covered Network. In those instances, the Regulator has determined an allocation of costs for those sites. These costs are not recovered from Services provided via the Covered Network.

1.3. Interpretation

Terms used in this Access Arrangement Information have the same meaning as they have in the Access Arrangement (see clause 2 of the Access Arrangement).

In the Access Arrangement Information, unless the context otherwise requires, where a word or meaning is capitalised it has:

- The meaning given to that word or phrase in the Code; or
- The meaning given to that word or phrase in the glossary contained in the Access Arrangement.

Monetary values shown in tables are in nominal dollars unless indicated otherwise.

It should be noted that numerical values in tables may not add due to arithmetic rounding.

1.4. Contact Details

The contact person for further details in relation to this Access Arrangement Information and the Access Arrangement to which it relates is:

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2. SUMMARY AND OVERVIEW

2.1. Introduction

Envestra submits this Access Arrangement Information under section 2.28 of the Code and believes that it is consistent with the requirements of sections 2.6 and 2.7 of the Code.

Section 2.6 requires the Access Arrangement Information to contain such information as in the opinion of the Regulator would enable Users and Prospective Users to understand the derivation of the elements in the proposed Access Arrangement and to form an opinion as to the compliance of the Access Arrangement with the provisions of the Code. Envestra believes it has provided sufficient information to allow Users and Prospective Users to understand both the derivation of elements of the Access Arrangement and how it complies with the Code. Envestra therefore believes that it meets section 2.6 of the Code.

2.2 Background

In order to place this access arrangement in its appropriate context, it is necessary to provide an overview of the current environment within which Envestra operates its Queensland network.

The Queensland gas market is a small but growing market. Gas represents approximately 7 per cent of energy consumed in Queensland, the lowest of any State and well below the national average of around 18 per cent. Within the Queensland distribution market, Envestra delivers approximately 2 PJ of gas (2004/05) to domestic and commercial customers, compared with, for example, 10.5 PJ in South Australia. Envestra services around 73,000 customers in Queensland, compared with some 350,000 in South Australia and 470,000 in Victoria.

As in other Australian jurisdictions, volume consumers (consuming less than 10 TJ per year) account for the vast majority of Envestra's Queensland customers (but account for lower gas sales compared to demand consumers (greater than 10 TJ per year)). Envestra's typical residential gas customer in Brisbane consumes around 10 GJ per year (2004/05), with some residential customers consuming less than 4 GJ per year (essentially using gas only for cooking). In contrast Envestra's typical residential customer in Adelaide and Melbourne consumes around 23 and 55 GJ per year.

The size of Envestra's Queensland market and the profile of consumption in that market must be taken into account by the Authority in considering Envestra's access arrangement.

As with any market, Envestra believes there is a critical market size at which significant benefits for both the service provider and customers can be achieved (especially through economies of scope and scale). Below that level it is likely that both the service provider and the customer will achieve less than optimal outcomes. Envestra believes that its current Queensland market size is below that critical level

Envestra's aim in the next Access Arrangement Period is to increase gas consumption in the Queensland market (through new connections and increased average consumption, especially average residential consumption) to a sustainable level to foster economies of both scope and scale. This will provide direct benefits to all consumers in the form of reduced tariff increases. Envestra is also planning to invest to improve the quality of the gas distribution infrastructure so as to improve the long-term viability of the Network.

2.2. Summary

The revisions to Envestra's Access Arrangement reflect an examination of the experience gained by Envestra of the way in which the Code applies to Envestra's assets and reflect consultation with Users. In preparing revisions to an Access Arrangement, it is necessary to take in to account many competing objectives. Envestra's approach has been to develop an access arrangement that meets the long term needs of customers in terms of pricing impact, access to natural gas services and quality of service whilst at the same time providing a sufficient allowance for Envestra to operate its Network in a prudent and efficient manner.

In balancing these competing objectives, Envestra has determined that it will not be able to charge cost reflective tariffs in the Second Access Arrangement Period. If the Authority accepted the proposed forecasts in Envestra's Revision, tariffs would need to rise by around 14 per cent in the first year of the Access Arrangement. Such an increase could not be sustained in the gas market in Queensland as it:

- would reduce demand (this would be counter-productive to Envestra's aim of promoting gas usage);
- would lead to retailers incurring losses as Envestra understands that the retail price controls in Queensland do not allow a pass-through for increased network charges; and
- would counteract the Network Development efforts that are planned in Queensland, which aim specifically to improve the way in which natural gas is perceived, to increase new connections and to increase average gas consumption.

Envestra is therefore proposing to limit tariff increases in the Second Access Arrangement Period to a market sustainable level of CPI + 2%. This will be achieved through deferring recovery of depreciation. Assuming the Authority were to approve Envestra's proposed forecasts, around 60% of depreciation calculated using the straight line methodology would need to be deferred to future access arrangement periods. The reduced depreciation would lower the Total Revenue Requirement and consequently network tariffs to customers.

The deferred depreciation will be recovered in future access arrangement periods. As the demand for natural gas is expanded, and as current structural distortions in the market are corrected, Envestra anticipates that it will be able to recover the deferred depreciation, whilst maintaining gas prices at market sustainable levels (see section 6). Deferral of depreciation is in the interests of gas customers in Queensland in that they will continue to have access to a reliable and safe gas distribution at affordable prices.

Other features of this revision include:

- Continuation of key aspects of the existing Access Arrangement where they have worked well and where Users have not requested changes;
- An expansionary operating plan to provide Queensland consumers with improved security of supply throughout the network. (There are a number of areas where the supply mains are not looped, which could result in significant disruption to consumers if key mains are damaged);
- Replacement of 70km/yr of cast iron and unprotected steel mains, which will reduce UAFG and leak repair costs. This program will result in all of the cast iron/steel pipe in Brisbane being replaced during the Second Access Arrangement Period, with approximately 75km remaining in Ipswich. This program continues that which was initiated in 1996. To date, just over 1,000 km of mains have been replaced;
- Upgrading of IT systems to replace and modernise the current antiquated systems;
- An increase in Network Development expenditure to combat decreasing average consumption and other

threats to the business;

- Increased operating costs to address challenges to be faced by Envestra including the requirement to adhere to stringent excavation practices in Brisbane. These initiatives have been developed by the Brisbane City Council to minimise disruptions to road users and to maximise safety to road users;
- A post-tax nominal WACC of 8.8%. This is slightly higher than the 8.5% QCA approved for the electricity businesses but consistent with the greater risk profile of natural gas relative to electricity. The proposed WACC is lower than that of 9.26% currently applying;
- Revised demand forecasts to take into account the decline in average consumption per customer that has been occurring over the last decade;
- Maintenance of the current strong commitment to service quality by Envestra;
- No change to the number or structure of Reference Tariffs;
- A revised tariff control mechanism, being a tariff basket approach rather than a price path approach;
- A real increase in Haulage Reference Tariffs of 2%. While this increase will not provide cost reflective tariffs, Envestra believes that the increase strikes an appropriate balance between cost reflectivity and the interests of Users. (As stated earlier, Envestra has used the concept of economic depreciation to defer some depreciation expense, thereby keeping tariff increases to a minimum). The tariff increase will mean that the annual bill of a 10GJ/yr customer will increase by \$9 per year (less than 20 cents per week); and
- Revised Terms and Conditions that reflect the outcomes of contractual negotiations with Retailers over the First Access Arrangement Period.

A key concern of the QCA in the 2001 Final Decision was the need to put in place a set of tariff controls to ensure that cost reflective tariffs were achieved for the two tariff classes within the five-year regulatory period. The QCA also considered the need for cost reflectivity within the Volume class, particularly for the smaller customers in that class, and imposed side constraints for Volume consumers to limit price increases for individual consumers. The price path and side constraints proposed in the Final Decision were followed in each annual tariff submission made to and approved by the QCA. However, while the price paths proposed in the Final Decision were implemented at the "average" level, Envestra understands there was an expectation within the Authority that tariffs for small customers (consuming less than 11 GJ pa) would be increased at a faster rate than that actually achieved. This was not done as there were a number of significant constraints in the current Access Arrangement period that prevented Envestra from implementing a more aggressive price for these customers. This is discussed in detail in section 12.1.

In preparing this revision, Envestra has been conscious of the need to continue to work towards achieving cost reflective pricing as required by the QCA at the last review. However, taking into account the experience over the last access arrangement period, Envestra has determined that it would be inappropriate to increase tariffs further to small customers (those using less than 11 GJ pa). Rather Envestra is proposing a series of initiatives in this Revision that will help to achieve the Authority's objectives for achieving cost reflectivity. Three key and interrelated aspects of Envestra's approach are:

- the use of economic depreciation to reduce price shocks to consumers in the Second Access Arrangement Period;
- an expanded Network Development strategy that will increase gas load and penetration in Queensland providing increased economies of scale and scope and lower tariffs in the longer term; and
- the introduction of a Tariff Basket Approach for setting tariffs to provide greater flexibility in setting tariffs.

These three initiatives are in the long-term interests of customers and Users.

Envestra engaged WorleyParsons to conduct a benchmarking study examining the performance of the business relative to other natural gas distribution businesses and to review the appropriateness of Envestra's forecasts (see Attachment 2). The results confirmed that Envestra's current operating costs are those that would be incurred by an efficient distributor operating in the Queensland environment. WorleyParsons identified the following factors as contributing to a challenging environment for operating the Network:

- the customer density is much lower than in other states (e.g. in new estates the customer penetration is 50% while in South Australia it is 95%);
- the average consumption is much lower than in other states (e.g. the average annual domestic consumption is 10 GJ compared to 55 GJ in Victoria and 23 GJ in South Australia);
- the size/length of the Network is smaller, and the volume throughput is lower, meaning that fixed costs are spread over a smaller asset base and lower loads;
- A significant proportion of mains are located in roadways (as opposed to verges), resulting in more costly repairs and maintenance;
- The Network has one of the highest proportions of old cast iron mains, which require either high maintenance costs or high capital costs to replace.

The above factors give rise to higher KPIs such as cost/km, cost/customer and cost/GJ. Consequently WorleyParsons cautioned about placing too much emphasis on benchmarking analysis in terms of making conclusions on efficiency.

In relation to the forecasts for the Second Access Arrangement Period, WorleyParsons is of the view that the forecasts provided in this submission are those that would be incurred by a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice, to achieve the lowest sustainable cost of delivering Reference Services.

2.3. Outcome of First Access Arrangement Period

The QCA's determination of target revenue to be recovered in the First Access Arrangement Period (adjusted for actual inflation) together with actual revenue received (and forecast to be received) by Envestra is set out in the following table.

Revenue Variance \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
QCA Approved Revenue	n/a	29.8	31.8	33.5	35.1	130.3
Actual Revenue	n/a	29.2	31.0	32.6	34.3	127.1
Variance from Target Revenue \$m (nominal)	n/a	(0.7)	(0.8)	(0.9)	(0.9)	(3.2)
Variance from target revenue (%)	n/a	(2.2)%	(2.5)%	(2.7)%	(2.4)%	(2.5)%
<i>Variance from target revenue \$m (31 Dec 2004)</i>	n/a	(0.7)	(0.8)	(0.9)	(0.8)	(3.2)

Table 1 Actual versus QCA forecast revenue

Envestra is unable to provide actual revenue for the 2001/02 financial year because revenue in that year was determined according to commercial arrangements negotiated between Envestra and Boral Energy on the

formation of Envestra in 1997. The arrangements negotiated applied to Envestra's combined South Australia and Queensland networks. A Queensland-specific tariff was not specified in the commercial arrangements. Those arrangements were viewed as interim, pending formal approval by the QCA of access prices pursuant to the Code. The interim arrangements terminated on 30 June 2002.

Total revenue since 2002/03 is expected to be \$3.2m less than that forecast by the QCA. Thus Envestra will under-recover the cost reflective revenue proposed by the QCA in the Final Approval for the 2002/03 to 2005/06 period.

A significant factor contributing to the lower revenue has been the fact that the gas demand forecasts set by the QCA¹ did not materialise. Envestra had submitted that this was likely to be the case at the time, but the QCA chose to use forecasts produced by its consultants. As shown in the following table, gas delivered to the Volume market segment has been consistently below the forecast each year. (Revenue from the Demand market is not directly related to the volume of gas consumed as tariffs for that market sector are set on a MDQ basis).

< 10 TJ Gas Demand (TJ)	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
QCA Forecast	1,843	1,910	1,979	2,048	2,130	9,910
Actual	1,717	1,815	1,837	1,919	1,950	9,238
Variance from forecast (TJ)	(125.7)	(95.1)	(141.9)	(129.5)	(179.1)	(671)
% Variance from forecast	(6.8)%	(5.0)%	(7.2)%	(6.3)%	(8.4)%	(7)%

Table 2 Actual versus QCA forecast gas delivery - Volume Customers

The lower than forecast gas delivery has resulted from lower gas consumption per domestic consumer and the number of gas consumers being less than forecast by the QCA. The table below compares the number of customers actually connected to the Network with the forecasts approved by the Authority in 2001. During the Access Arrangement Period, Envestra will connect approximately 3300 customers to the Network. This is significantly less than 6,030 customers provided for in the 2001 Final Decision.

< 10 TJ/a Customer Numbers ('000)	2001/02	2002/03	2003/04	2004/05	2005/06f	Total Connections
QCA Forecast	73,620	75,173	76,760	78,381	79,650	6030
Actual	72,187	73,048	73,481	74,641	75,577	3300
Variance from forecast ('000)	(1433)	(2125)	(3279)	(3740)	(4073)	2730
% Variance from forecast	(1.9)%	(2.8)%	(4.3)%	(4.8)%	(5.1)%	(45)%

Table 3 Actual versus QCA forecast - Volume Customers

Average gas consumption per domestic customer also continued to decline over the period. This is due to general climatic warming and the use of higher efficiency appliances in new dwellings coupled with higher energy efficiency dwellings. For example, Envestra has calculated that the average consumption of a typical residential gas consumer in Brisbane has declined from 10.7 GJ per year in 1999/2000 to 10.0 GJ per year in 2004/05 (see

¹ In the Final Decision, the QCA required that the gas demand forecasts proposed by Envestra be increased.

the report titled "Average Residential Gas Consumption in Qld" that is incorporated in Attachment 5).

Notwithstanding the revenue shortfall, Envestra's actual expenditure on Non-Capital Costs is expected to exceed the QCA forecast by \$7m over the First Access Arrangement Period, due to the forecasts generally allowing insufficient costs to operate and maintain the Network.

Non-Capital Cost \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
QCA Approved Forecast	11.5	11.8	12.2	12.5	12.7	60.7
Actual	14.5	12.2	13.3	14.0	13.7	67.6
Variance from forecast \$m (nominal)	3.0	0.5	1.0	1.5	1.0	7.0
% Difference	25.6%	3.8%	8.6%	11.9%	8.2%	11%
Variance from forecast \$m (31 Dec 2004)	3.2	0.5	1.1	1.5	1.0	7.2

Table 4 Actual versus QCA forecast - Non-Capital Costs

Non-Capital Costs and New Facilities Investment costs are now subjected to external audit by Deloitte Touche Tohmatsu on an annual basis. The audit confirms that costs are fairly represented in accordance with the requirements of the General Accounting guidelines issued by the QCA.

New Facilities Investment over the period is expected to be about \$15m below the forecast.

New Facilities Investment \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
QCA Approved Forecast	13.1	13.1	12.8	13.3	13.0	65.2
Actual	8.5	7.9	9.5	10.0	14.6	50.5
Variance from forecast \$m (nominal)	(4.6)	(5.2)	(3.2)	(3.4)	1.6	(14.8)
% Difference	(35.5)%	(39.7)%	(25.3)%	(25.2)%	12.7%	(23)%
Variance from forecast \$m (31 Dec 2004)	(5.0)	(5.5)	(3.3)	(3.4)	1.6	(15.5)

Table 5 Actual versus forecast - New Facilities Investment

The lower than forecast expenditure is partly due to the lower number of customers having to be connected (compared to the QCA forecast). Also, a significant portion of Envestra's New Facilities Investment approved by the QCA was its mains replacement programme. When forecasts for the First Access Arrangement Period were prepared, the Queensland network was experiencing consistently high UAFG levels of around 500 TJ per annum. Similarly, large numbers of leaks were being reported on the network and in the financial year 2000/01 a total of 1,589 public leak reports were recorded. Given these factors, prevailing cost drivers supported the requirement for a comparatively high level of mains replacement and a mains replacement forecast of 520 km was formulated on this basis.

During the First Access Arrangement Period, however, substantial improvements were observed in overall network performance and UAFG declined from around 600 TJ per annum in 2000 to around 220 TJ by 2002. Leak performance also improved dramatically through this period with the number of public leak reports falling from a peak of 1,589/yr in the year leading up to the start of the current Access Arrangement Period down to less than 700/yr by the middle of the current period. This led to a winding back of the mains replacement program to about 40-45 km/yr.

However, it has subsequently become clear that the significant reductions in UAFG were not being maintained and an upward trend in UAFG levels then began from 2003 onwards. Leak results also began to plateau during this period and although public leak reports halved during the first two years of the current period, leak numbers beyond 2003 began to show only a very modest rate of improvement. These deteriorating trends again made mains replacement more economically viable and as a result, replacement levels were increased to about 60 km/yr. It is not clear whether this level is sufficient to halt an increasing rate of UAFG, and Envestra believes it prudent to increase the length of mains replaced to 70 km/yr through the Second Access Arrangement Period, in the expectation that this will cause UAFG volumes to fall.

Envestra has sought advice from WorleyParsons, engineering consultants with expertise in the gas industry, to provide an assessment of Envestra's current costs. Following an extensive review of Envestra's operations associated with the Network, WorleyParsons concluded that Envestra's current costs are consistent with that of a prudent and efficient operator. As part of their review, WorleyParsons undertook an audit of a random sample of projects, which confirmed that the expenditure has been undertaken in a prudent manner.

Envestra's operations are also subject to auditing by specialist engineering consultants and the Department of Natural Resources and Mines, with a view to ensuring that the Network is appropriately maintained, and that Envestra adheres to internal and external standards. Those audits also confirm that Envestra has been operating the Network appropriately and in accordance with the numerous regulatory and industry standards.

2.4. Proposed Tariffs for Second Access Arrangement Period

Envestra is proposing to retain the number and structure of its Reference Tariffs for the Second Access Arrangement Period. Reference Tariffs will be rolled forward at $(1+CPI) * (1-X)$, where the X factor is "-0.02".

2.5. Maintaining Past Service Levels

Envestra:

- provides a high quality distribution service, with:
 - only 17 complaints received by Envestra in 2003/04 and 21 in 2004/05 where there were issues with quality of service. These were balanced by 10 compliments received during 2003/04 and 13 during 2004/05. Furthermore, many of the complaints were of a minor nature (e.g. tyre marks left behind after a job, noise from jackhammer); and
 - a very low number of gas outages – network operations resulted in only 2 incidents of unplanned loss of gas supply to consumers in 2003/04 and 3 incidents in 2004/05. Of these incidents, 2 were the result of damages to gas mains by external third parties. It is noted that the rapid response to network problems that is required for safety reasons also ensures that impacts on consumers are minimised.
- reports to the Regulator on service quality in relation to gas outages, promptness of customer connections and other parameters (including customer complaints); and
- intends to maintain its current service levels to customers over the Second Access Arrangement Period.

Envestra arranges an independent technical audit of various aspects of its operations on an annual basis. Those audits confirm that the Network is operated and managed safely, appropriately and in accordance with relevant standards and good industry practice.

3. REGULATORY FRAMEWORK

3.1. Introduction

This section provides a brief overview of the regulatory environment in which Envestra is submitting revisions to its Access Arrangement, in particular the provisions of the Code and the accept/reject model that the Code implies, in order to provide Users and Prospective Users with an understanding of the Access Arrangement revisions process under the Code and recent relevant policy and legal decisions.

This is important because there have been a number of disputes in recent times concerning interpretation of various provisions of the Code. Some of these disputes have resulted in Service Providers appealing decisions handed down by the Relevant Regulator.

Recent regulatory decisions give guidance to the Regulator and to Users on how the Code should be applied when approving revisions to an Access Arrangement. This section provides a summary of those appeals where relevant, including:

- the GasNet Appeals decision;
- the Epic Energy (WA) court case;
- the EAPL appeal decision; and
- the Epic Energy (SA) decision.

Envestra believes that while regulatory decisions and appeals are important, there are also a number of recent developments which have significant implications for the application of the Code to Access Arrangements. These are detailed in this section and include:

- the Productivity Commission Review of the Gas Code, as outlined in section 3.6. The conclusions and recommendations of that review are pertinent to the Access Arrangement review process; and
- the current and proposed amendments to the national access regime and national regulatory arrangements being overseen by the Ministerial Council of Energy (MCE). The uncertainties and changes resulting from this process comprise an element of regulatory uncertainty which Envestra must take into account in its revisions to its Access Arrangement.

3.2. Revisions Process under the Gas Code

Code Provisions

The revisions to Envestra's Access Arrangement are submitted pursuant to section 2.28 of the Code. That section provides that by the date provided for in the Access Arrangement, the Service Provider must "*submit to the Relevant Regulator proposed revisions to the Access Arrangement together with the applicable Access Arrangement Information.*"

Under section 2.29 of the Code, the Access Arrangement as revised by the proposed revisions may "*include any relevant matter but must include at least the elements described in sections 3.1 to 3.20.*"

Under section 2.46 of the Code, the Relevant Regulator:

- (a) is only entitled to approve revisions to an Access Arrangement if satisfied the revised Access Arrangement will contain the elements and satisfy the principles set out in sections 3.1 to 3.20; and

- (b) must not refuse to approve proposed revisions "*solely for the reason that the Access Arrangement as revised would not address a matter that sections 3.1 to 3.20 do not require an Access Arrangement to address.*"

Section 2.46 then provides that in assessing proposed revisions to an Access Arrangement, "*the Relevant Regulator:*

- (a) *must take into account the factors described in section 2.24; and*
- (b) *must take into account the provisions of the Access Arrangement."*

That is, three fundamental principles emerge from clause 2.46:

- (i) a revised Access Arrangement must contain the elements and satisfy the principles set out in sections 3.1 to 3.20 but that failure to address additional matters is not grounds for rejection of a revised Access Arrangement;
- (ii) the Regulator's discretion to accept or reject revisions to an Access Arrangement is to be exercised taking into account the factors in section 2.24; and
- (iii) in assessing the revisions to an Access Arrangement, the Regulator must take into account the provisions of the existing Access Arrangement.

In respect of the third principle, the intent of this principle is to maintain congruity between Access Arrangements. Third principle is not merely stating the obvious – that is, in considering revisions to an Access Arrangement regard must be had to the existing arrangement so a determination may be made as to what is being revised.

Rather the intent is that in considering revisions to an Access Arrangement regard should be had to the fact that an existing structure is already in place, on the basis of which structure a Service Provider will have managed its business and made investment decisions. The third principle suggests that the Code contemplates that there will be a degree of consistency between Access Arrangements and not fundamental overhauls at the time of submission of revisions.

Accept / Reject Model

As is clear from the sections cited above, the Code works on the basis of an accept/reject model. That is, it is the Service Provider's right and obligation to submit the revisions to an Access Arrangement (section 2.28). The Regulator's role is then to review those revisions and accept the Access Arrangement if it complies with the requirements of the Access Code and require modification to the Access Arrangement if it does not.

In certain circumstances, the Code gives the Regulator limited or no discretion in carrying out the review of whether an Access Arrangement complies with the Code. For example, the Regulator cannot reject the use of the Capital Asset Pricing Model as a basis to determine the return on debt and equity funds (section 8.31). In contrast, section 8.44 confers a wider discretion, providing "*The Reference Tariff Policy should, wherever the Relevant Regulator considers appropriate, contain a mechanism that permits the Service Provider to retain all, or a share of, any returns to the Service Provider from the sale of a Reference Service during an Access Arrangement Period that exceeds the level of returns expected at the beginning of the Access Arrangement Period.*"

However even where a wider discretion is conferred, it is not a discretion at large. The discretion is to be exercised having regard to the factors in section 2.24 and the provisions of the existing Access Arrangement

(section 2.46). Nor do the discretions cut across the fundamental principle that it is for the Service Provider to design and submit the Access Arrangement. The Code is not a mechanism for a Regulator to design what they consider the ideal form of Access Arrangement. It is a mechanism for ensuring that the terms upon which a Service Provider offers to provide access to its pipeline system contain specific elements and satisfy certain principles.

3.3. Recent Appeals and Regulatory Decisions

While there is not yet a comprehensive body of case law on the application of the Access Code, decisions of the Australian Competition Tribunal and the Supreme Court of Western Australia have provided guidance on the manner in which the Access Code is to be applied.

These decisions, which are discussed below, relate to functions carried out by the ACCC and the Economic Regulation Authority. The powers and functions of ESCOSA in performing its statutory obligations under the Access Code are identical to those of the ACCC and the Economic Regulation Authority and, therefore, the decisions outlined below which address the manner in which the Regulator should exercise its functions under the Access Code are directly relevant to ESCOSA.

GasNet Decision

In *Application by GasNet Australia (Operations) Pty Ltd* the Australian Competition Tribunal considered whether the ACCC had acted correctly in requiring GasNet to use a modified form of the Capital Asset Pricing Model. The Tribunal held that the ACCC made an error of law in seeking to apply the Capital Asset Pricing Model in a manner different to its conventional manner of application. If GasNet choose to adopt the Capital Asset Pricing Model, then the ACCC did not have a discretion to require GasNet to use another model, or a modified form of the Capital Asset Pricing Model.

In its decision, the Tribunal made the following observations in relation to the Access Code:

- (a) *"The task which confronted the ACCC, as the Relevant Regulator under the Code, was to determine whether, in its opinion, the Revised AA (and the Reference Tariff and the Reference Tariff Policy included in it) proposed by GasNet complied with the Reference Tariff Principles described in s8 of the Code."*
- (b) *"It is important to recall that the preparation of a proposed AA together with the proposed AAI, begins with the Service Provider of a Covered Pipeline. It is the obligation of the Service Provider to design a proposed AA with AAI which is consistent with the provisions of the Code and to lodge it with the Relevant Regulator."*
- (c) *"The choices available under the Code are for the Service Provider to make, subject only to the limitation that the implementation of the choice must be consistent with the principles contained in s 8 of the Code."*
- (d) *"Where the Reference Tariff Principles produce tension, the Relevant Regulator has an overriding discretion to resolve the tensions in a way which best reflects the statutory objectives of the Law. However, where there are no conflicts or tensions in the application of the Reference Tariff Principles, and where the AA proposed by the Service Provider falls within the range of choice reasonably open and consistent with the Reference Tariff Principles, it is beyond the power of the Relevant Regulator not to approve the proposed AA simply because it prefers a different AA which it believes would better achieve the Relevant Regulator's understanding of the statutory objectives of the Law."*

This follows because the power of the Relevant Regulator to require amendments, or to itself draft and approve its own AA, does not arise until it is of the opinion that the AA proposed by the Service Provider does not comply with the Code, and in determining the question of compliance, it must act in accordance with s2.24 of the Code."

- (e) *"Contrary to the submission of the ACCC, it is not the task of the Relevant Regulator under s8.30 and s8.31 of the Code to determine a 'return which is commensurate with prevailing conditions in the market for funds and the risk involved in delivering the Reference Service'. The task of the ACCC is to determine whether the proposed AA in its treatment of Rate of Return is consistent with the provisions of s8.30 and s8.31 and that the rate determined falls within the range of rates commensurate with the prevailing market conditions and the relevant risk."*

What is made clear from the decision is that it is the role of the Service Provider to design an Access Arrangement and it is the role of the Regulator to determine whether that Access Arrangement complies with the Access Code. It is not the role of the Regulator to seek to redesign the submitted Access Arrangement to endeavour to give effect to the Regulator's view as to the Access Arrangement which will best give effect to the principles of the Access Code.

EAPL Decision

In a similar manner to the GasNet decision, in *Application by East Australian Pipeline Limited*, the Tribunal considered that the ACCC had made an error of law in modifying the conventional application of a valuation methodology (in this case, the ORC methodology).

The Tribunal made the following comments:

- (a) *"It was contended that it was a fundamental error in principle for the ACCC to put aside known valuation methodologies and devise a methodology of its own which adjusted ORC in a novel fashion. It was submitted that this had no support in the Code or the material on the subject received by the ACCC and is properly described as idiosyncratic. In our opinion that submission is correct."*
- (b) *"It was incorrect and unreasonable to adopt a methodology which does not reflect the terms of the Code and which is not supportable in principle."*
- (c) *"Counsel for EAPL submitted that it can be concluded from the various decisions that the ACCC has consistently reasoned to produce a predetermined result as to the ICB, namely that which would reflect the price paid for the MSP by EAPL in 1994, on the basis that to allow a greater ICB would be to give a 'windfall' to the purchaser of the privatized asset....It was also submitted that the conclusion of predetermination is supported by the reasoning of the ACCC on other aspects of the Final Decision, which was arbitrary and not in accordance with principle. It will be apparent from these reasons that there is some substance in that submission."*
- (d) *"A regulator in the position of the ACCC has a delicate task. It must be conscious of the interests of parties other than the proponent of the access arrangement and is bound to scrutinize carefully the information provided in support of it. On the other hand, it must have regard to the legitimate business interests of the proponent and should not put itself in an adversary position in relation to the proponent so that it may be perceived as a champion of other interests such as those of consumers."*

- (e) *"As our earlier discussion of the Code shows, the primary quest is for a proper contemporaneous value from which to deduce a tariff that will replicate a hypothetical competitive market. It is not to provide subsidies to customers. Pricing below a tariff based upon true value would not replicate a competitive market."*

The EAPL Decision is an example of the dangers of attempting to reason to a pre-determined result. This is not the role of the Regulator. The Regulator's role is to apply the tests set out in the Access Code and not to modify those tests to produce a result that the Regulator considers more desirable. Consequently it is not appropriate for the Regulator to purport to modify accepted valuation methodologies to produce a particular result. Nor is it the role of the Regulator to act to further the interests of one group affected by the Access Arrangement at the expense of the Service Provider. The Regulator must take account of the legitimate interests of the Service Provider.

A second issue which arose in the EAPL Decision was whether a 10% contingency allowance should be included in the calculation of ORC.

The ACCC had rejected use of a contingency allowance on the basis that to make allowance for all contingencies and which allowance produced a cost estimation at the high end of the feasible range was contrary to the objectives of sections 8.1(a) and (b).²

In response to this the Tribunal stated:

"The reference to s 8.1(a) and s8.1(b) is misconceived in this factual context. The task is to fix an estimate of the cost of an optimized pipeline. The only issue in question was whether or not to include the contingency."

That is, the criteria in s 8.1(a) and (b) are not a basis for refusing to include an amount in determining the cost of a pipeline when proper estimation and valuation techniques require that such an amount should be included.

The Tribunal held that the ACCC was "wrong and unreasonable" in excluding an allowance for contingencies. *"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' DORC value."*

Epic SA Decision

The case of *Application by Epic Energy South Australia Pty Ltd* concerned an appeal by Epic against the ACCC's determination of the initial capital base for the Moomba-Adelaide Pipeline.

The principal issue in the case was whether the determination by the ACCC of the cost of the line pipe of the Moomba-Adelaide Pipeline was appropriate. Epic also successfully appealed against the ACCC's decision to require inclusion within the Access Arrangement of an expansion of the capacity of the Moomba-Adelaide Pipeline to provide capacity to Pelican Point Power Limited.

The issue between the ACCC and Epic was that in determining the cost of line pipe the ACCC had selected the lowest price in a range of observed prices provided to the ACCC by its consultants.

² Efficient costs and replicating the outcomes of a competitive market.

The Tribunal held that in doing so the ACCC had acted unreasonably. Where a pipeline operator had received responses to a specific, actual, tender then it was reasonable to assume that the pipeline operator would choose the lowest quotation (provided that it satisfied other criteria, such as being of appropriate quality and being provided on commercially acceptable terms). However, for planning purposes, a Service Provider would not plan on the basis that the lowest prices quoted in the market place are those that would be obtained by the Service Provider.

The Tribunal stated:

"The Tribunal does not accept, as the ACCC asks it to do, that s 8.1(a) and s 8.1(b) of the Code require the ACCC to adopt the lowest stated figure in the Microalloying Report.³ Epic must be allowed the opportunity to earn a revenue stream that recovers the efficient costs of operating the Reference Service, and the need to replicate the outcomes of a competitive market does not demand the use of the lowest indicative price based on general, albeit informed, inquiries."

The Tribunal found the ACCC's decision unreasonable in all the circumstances.

The decision demonstrates that the Access Code does not direct the Relevant Regulator to strive to minimise the costs that are to be taken into account in determining the Reference Tariff. What is required is a commercially realistic assessment of the efficient costs of operating a pipeline system and "efficient costs" does not automatically translate into lowest costs.

In appropriate circumstances and with all other factors being equal, an efficient Service Provider will select the lowest cost option available to it. In other circumstances, commercial prudence and reality dictates that a Service Provider should not assume that the lowest cost option will necessarily be available.

Epic (WA) Decision

Re: Dr Ken Michael AM; ex parte EPIC Energy (WA) Nominees Pty Ltd & Anor concerned the successful appeal by Epic against the determination of the initial capital base for the Dampier to Bunbury Natural Gas Pipeline ("DBNGP") by the WA Regulator.

The Full Court of the Supreme Court of Western Australia considered that the WA Regulator had made a number of errors of law in his determination of the appropriate valuation methodology for the DBNGP.

In the course of its judgment, the court made the following observations:

- (a) the Regulator is required by section 2.24 of the Access Code to take the factors set out in that section into account and *"give them weight as fundamental elements in assessing a proposed Access Arrangement with a view to reaching a decision whether or not to approve it"*; and
- (b) in determining how to reconcile the competing considerations in section 8.1, the Regulator is required to have regard to the considerations set out in section 2.24.

The court also emphasized that the determination of the initial capital base was not to be determined solely by

³ The consultant's report setting out the observed line pipe prices.

reference to abstract economic principle. It was open to the Regulator to take into account, and necessary for the Regulator to consider, the actual investment made by Epic in the DBNGP. There is no inconsistency between these statements and the GasNet Decision and the EAPL Decision. The effect of those two decisions was that a Regulator cannot take accepted valuation methodologies and adjust them to derive a result the Regulator considers more appropriate. The effect of the Epic (WA) Decision was that the Regulator was required to have regard to the purchase price paid by Epic in determining whether DAC and DORC valuation methodologies were appropriate or whether another alternative recognized valuation methodology should be used.

3.4. National Policy Developments

Productivity Commission Review

The Productivity Commission *Review of the National Access Regime*, completed in September 2001, provided the first comprehensive examination of Australia's third party access framework contained in Part IIIA of the *Trade Practices Act*. This review re-examined Part IIIA and its operation since the original Hilmer reforms of a decade ago. It found that Part IIIA was deficient in some respects, but that retention of an overarching framework for third party access was justified.

The flaws the Commission found in the structure and operation of Part IIIA were a lack of guidance on the objectives of the national regime and what pricing principles should be used by regulatory authorities in decision-making. The Commission also found that regulatory risk under the regime was higher than it needed to be, and that existing regulatory approaches created a substantive risk of under-investment in the medium term which would lower overall community welfare.

In February 2004 the Commonwealth Government released a national response to the final report of the *Review of the National Access Regime*. This response endorsed the broad thrust of the Commission's report, and largely adopted the recommendations proposed by the Commission.

After the review of the national access framework, the Commonwealth Government initiated a review of the industry-specific gas access regime embodied in the National Gas Code. In August 2004 the Productivity Commission's final report on the *Review of the Gas Access Regime* was released. The report found significant shortcomings in the gas access regime, including:

- a lack of effective guidance for establishing regulated access prices;
- the potential for distorted investment outcomes, including under-investment; and
- an inadequate recognition in the framework of the risk of regulatory error.

The report made 54 recommendations to improve the regime. These will not be detailed here but suffice to say that the outcomes of the review are relevant to Envestra's Access Arrangement review in that many of the findings provide independent guidance on Code interpretations and application.

For example, the Productivity Commission highlights, in relation to WACC, that there is "inevitable imprecision and subjectivity that occurs when regulators are required to approve reference tariffs"⁴ and that "the Relevant Regulator must take account of the fact that there is no single correct method to determine a Rate of Return and that there is often a range of plausible estimates that could be used in applying a Rate of Return method"⁵.

⁴ Finding 7.5, pLIII, *Review of the Gas Access Regime*, Productivity Commission, June 2004

⁵ Recommendation 7.9, pLII, *ibid*

Such findings underpin the view concerning the risk of regulatory error and its potential to result in less than efficient outcomes. A consistent theme of the Productivity Commission reviews and other reviews⁶ has been the need for cautious and balanced regulatory outcomes on access pricing issues which protect the medium-term interests of the community by ensuring the avoidance of costly under-investment in essential infrastructure.

It is therefore incumbent upon ESCOSA to recognise the risk of regulatory error and to err on the side of higher, rather than lower, reference tariffs. This would ensure that community interests are maintained over the medium and long term.

Ministerial Council on Energy

In December 2003, the MCE agreed to a package of reforms to Australia's energy markets as part of its forward program of national oversight and coordination of energy sector policy development.

A significant reform deliverable for the MCE is the development of a national framework for distribution and retailing (D&R Framework) - with the stated goals of streamlining and improving the quality of economic regulation across energy markets, lowering the cost and complexity of regulation facing investors, enhancing regulatory certainty and lowering barriers to competition. At the time the original reform package was developed, the issue of transferring responsibility for retail pricing to the Australian Energy Regulator (AER) was expressly excluded at the insistence of the Queensland government, and ongoing political sensitivity regarding this issue is anticipated.

In August 2004, the MCE initiated consultation on the D&R Framework through the release of an Issues Paper. The Issues Paper was widely criticised for focusing on the harmonisation of existing regulatory instruments (and their content) without strategic context. In recognition of this criticism, focus turned to the development of a preferred economic and legal architecture for distribution and retail regulation, with the detailed content of the resulting regulatory instruments largely left for future consideration by the market institution and in some instances, the jurisdictions.

The MCE's Options Paper was intended to be released for consultation in July 2005, with the aim of the AER assuming responsibility of the D&R Framework from late 2006. This has not yet occurred and, as it stands, neither Envestra, nor any other owner of monopoly infrastructure in Australia, is able to accurately forecast or predict the nature of the regime that will determine the revenues it may earn in the future.

Ongoing pressure from the MCE to meet self-imposed time constraints – being the commencement of the rule creation process in January 2006 and the full commencement of the Australian Energy Regulator in January 2007 creates risks for infrastructure owners. There is a real risk, at the date of submission of this Access Arrangement revision, that the regulatory framework will be endorsed by the MCE in late 2005 in the absence of a full appreciation of the implications and risks of the D&R Framework for Governments and energy market participants.

3.5. Implications for Assessment of the Revision by the Regulator

The collective impact of the Code requirements, recent regulatory precedent through the appeals processes and the national policy developments, must be taken into account by the Regulator in assessing Envestra's revisions,

⁶ the Independent Panel *Report on Electricity Distribution and Service Delivery for the 21st Century* (Somerville Report)

in that:

- The function of the Regulator is not to determine the precise level of efficient costs for a regulated business. Rather it is to determine whether Access Arrangements proposals made by a Service Provider are consistent with the Code and whether costs fall within a plausible range;
- Regulators need to recognise the inherent uncertainty in replicating competitive markets; and
- The costs and benefits of a poor regulatory decision are asymmetric. The Productivity Commission, the 2004 Queensland 'Somerville' Report, and the recent decision by the Queensland Competition Authority in relation to the Dalrymple Bay Port all recognised the long terms costs of under-investment in infrastructure and the impacts that the regulatory regime can have on incentives to invest.

4. TOTAL REVENUE FORMULA

In accordance with section 8.4 of the Code, Envestra has adopted a Cost of Service approach in the calculation of the Total Revenue requirement. The Total Revenue requirement is made up of revenue from the provision of Reference Services and Non-Reference Services.

Reference Services revenue consists of:

- Haulage Reference Services revenue – this revenue requirement comprises a return on Network assets attributable to the provision of Demand and Volume Haulage Reference Services, depreciation on those assets, plus associated Non-Capital Costs;
- Ancillary Reference Service revenue – this revenue comprised the forecast revenue for the Ancillary Reference Service, based on
 - the forecast demand for the Service; and
 - the proposed tariff for the Service. The tariff for the service is based on the cost of providing the service. (It is proposed that the current tariff rolls forward.)

Non-Reference Services revenue is based on an extrapolation of current revenue. Analysis indicates that future revenue is not expected to be materially different from current revenue (in real terms).

The Total Revenue Requirement (TR) is established using the formula below:

$$TR = (AV \times WACC) + D + NC + E$$

where

AV = average Capital Base value

WACC = weighted average cost of capital

D = depreciation

NC = Non-Capital costs

E = efficiency carry-over

The revenue attributable to the Ancillary Reference Service is then deducted from the Total Revenue Requirement in order to derive the revenue to be obtained from haulage Services.

The Total Revenue Requirement is calculated using:

- a Capital Base of \$236m as at 1 July 2006, adjusted each year for:
 - forecast New Facilities Investment (see section 7 of this Access Arrangement Information)
 - depreciation calculated on a straight-line basis⁷ (section 6)
 - forecast disposals (section 5.5)
 - inflation (Section 5.6)
- a nominal post-tax rate of return of 8.80% (section 8.1)
- Non-Capital Costs (section 9)
- efficiency carryover (section 13.3).

Each of these matters is discussed in more detail in the referenced sections.

⁷ see section 6.2 for discussion on the treatment of deferred depreciation.

5. CAPITAL BASE

The approach for rolling forward the Capital Base from 1 July 2001 to 1 July 2006 is based on the following formula:

$$\begin{aligned}
 & \text{Opening Asset Value} \\
 & \textit{plus} 50\% \text{ Net Capital Expenditure} \\
 & \textit{less} 50\% \text{ Regulatory Depreciation} \\
 & \textit{plus} \text{ Inflation of opening asset base} \\
 & \textit{plus} 50\% \text{ Net Capital Expenditure} \\
 & \textit{less} 50\% \text{ Regulatory Depreciation} \\
 & \text{Closing Asset Value}
 \end{aligned}$$

Where:

All values are expressed in nominal terms

Escalation_i = inflation_i x Opening Asset Value_i;

Depreciation is expressed in current cost terms

The inputs used by Envestra to roll forward the Capital Base are described below.

5.1. Opening Asset Value

The QCA determined that the Initial Capital Base as at 1 July 2001 was \$180.2m.

5.2. New Facilities Investment over the First Access Arrangement Period

Gross New Facilities Investment over the First Access Arrangement Period is set out in the following table. Actual expenditure is provided for 2001/02 to 2004/05. New Facilities Investment for 2005/06 is set at the latest forecast prepared by Envestra. This represents the best estimate of New Facilities Investment that will be undertaken by Envestra in 2005/06. Also shown is the value of customer contributions, with the forecast for 2005/06 being based on Envestra's latest information. Envestra believes that the forecast is reasonable and that it meets the requirements of the Code, i.e. that the forecast represents best estimates arrived at on a reasonable basis.

The net New Facilities Investment is derived by subtracting the customer contributions from the Gross New Facilities Investment.

Net New Facilities Investment \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06
Gross New Facilities Investment	9.7	9.5	10.9	11.2	16.0
Less: Customer Contributions	(1.2)	(1.6)	(1.3)	(1.3)	(1.4)
Net New Facilities Investment \$m (nominal)	8.5	7.9	9.5	10.0	14.6
Net New Facilities Investment \$m (31 Dec 2004)	9.2	8.3	9.7	10.0	14.3

Table 6 Net New Facilities Investment 2001/02- 2005/06

It is proposed that any difference between actual expenditure and forecast expenditure in 2005/06 be taken into consideration in setting the Capital Base at the commencement of the Third Access Arrangement Period.

For example, if actual expenditure in 2005/06 exceeds forecast expenditure by \$1m, then the equivalent of \$1m inflated annually would be added to the Capital Base on 30 June 2011.

A breakdown of the New Facilities Investment over the First Access Arrangement Period is shown in the following table.

New Facilities Investment \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06f
Mains	5.4	4.1	5.6	6.5	8.8
Inlets	1.6	1.7	1.8	1.7	2.7
Meters	1.4	1.5	1.5	1.2	2.0
Telemetry	0.0	0.1	0.0	0.0	0.3
IT Systems	0.0	0.0	0.4	0.3	0.0
Other Distribution System Equipment	0.0	0.1	0.1	0.1	0.4
Other	0.0	0.4	0.2	0.1	0.5
New Facilities Investment \$m (nominal)	8.5	7.9	9.5	10.0	14.6
Net New Facilities Investment \$m (31 Dec 2004)	9.2	8.3	9.7	10.0	14.3

Table 7 Net New Facilities Investment 2001/02- 2005/06

Envestra submits that all of the New Facilities Investment undertaken or proposed to be undertaken during the First Access Arrangement Period meets the requirements of the Code. Envestra has commercial incentives to ensure that expenditure it undertakes is prudent, and more particularly has clear incentives to:

- minimise expenditure – under a price cap regime, lower expenditure implies higher returns, which means that a Service Provider is discouraged from “gold plating” or unnecessary expenditure;
- require a customer contribution where a project would be uneconomic –as a Service Provider is permitted to require a customer contribution for that part of capital expenditure that does not pass the Economic Feasibility Test, it is possible to infer that the remaining expenditure passes the Economic Feasibility Test, and can be included in the Capital Base.

Accordingly, Envestra submits that the New Facilities Investment in the First Access Arrangement Period has satisfied the requirements of the Access Code (section 8.16) and should therefore be rolled in to the Asset Base. This is consistent with the approach adopted by the Essential Services Commission of Victoria, which stated in its 2002 Final Decision for Victorian gas distributors:

“Regarding capital expenditure, the Commission noted that it remained of the view that the most effective means of ensuring that the distributors’ capital expenditure meets the requirements of the Gas Code is to provide the distributors with the commercial incentives to achieve this outcome, which existed over the first regulatory period. Accordingly, the Commission concluded that it was appropriate for the distributors to include in their regulatory asset bases their actual capital expenditure”⁸.

It is also noted that the ACCC endorses the inclusion of actual capital expenditure in the regulatory asset base in its Statement of Principles for the Regulation of Transmission Revenues.

⁸ p133, ESC Final Decision for the Review of Gas Access Arrangements (2002)

The above supports Envestra's view that New Facilities Investment undertaken in the First Access Arrangement Period should be rolled in to the Capital Base. Where New Facilities Investment is yet to be undertaken (i.e. in 2005/06), Envestra has used best estimates arrived at on a reasonable basis.

5.3. Regulatory Depreciation over the First Access Arrangement Period

Regulatory depreciation over the First Access Arrangement Period has been set equal to the depreciation approved by QCA in 2002 and is as shown in the following table.

Depreciation \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
QCA Approved Forecast	4.8	5.2	5.7	6.1	6.4	28.2

Table 8 Regulatory Depreciation 2001/02- 2005/06

5.4. Redundant Capital

Detailed consideration was given to the issue of redundant assets during the 2002 review of gas distributors' access arrangements in Victoria. It was concluded by the ESCV in that instance that "there are likely to be substantial benefits to both customers and distributors from a policy of minimising the risk to distributors associated with recovering the regulatory value of their assets" (p153 Final Decision) and consequently the ESCV undertook not to identify or remove redundant assets.

It is also noted that the above approach has been supported by the Western Australian regulator in the recent Final Decision for Alinta Gas Networks⁹.

There has been no Redundant Capital in the First Access Arrangement Period and Envestra is not forecasting any Redundant Capital for the Second Access Arrangement Period.

5.5. Disposals

Envestra has few assets that do not form part of the gas distribution system. No disposals of assets have taken place to-date during the First Access Arrangement Period and no disposal of any material value is planned for the remainder of the First Access Arrangement Period, or for the Second Access Arrangement Period.

5.6. Inflation

For the purposes of rolling forward the regulatory asset base, Envestra has used the "actual percentage change in the CPI" as required under section 3.3.3.2 of the approved Access Arrangement. The Consumer Price Index is defined in the Access Arrangement as the "All Groups Weighted Average for the Eight Capital Cities, as published by the Australian Bureau of Statistics or its successor".

⁹ paragraph 270, p51, Final Decision on the Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, Economic Regulation Authority, 12 July 2005

5.7. Opening Asset Values as at 1 July 2006

Using the inputs outlined above, the Initial Capital Base has been rolled forward to 1 July 2006 as follows:

Capital Base \$m (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06f
Opening Asset Value	180.2	194.8	203.2	214.2	222.4
<i>plus</i> 50% Net Capital Expenditure	4.2	3.9	4.8	5.0	7.3
<i>less</i> 50% Regulatory Depreciation	(2.4)	(2.6)	(2.8)	(3.0)	(3.2)
<i>plus</i> Inflation of opening asset base	10.9	5.8	7.1	4.3	5.3
<i>plus</i> 50% Net Capital Expenditure	4.2	3.9	4.8	5.0	7.3
<i>less</i> 50% Regulatory Depreciation	(2.4)	(2.6)	(2.8)	(3.0)	(3.2)
Closing Asset Value	194.8	203.2	214.2	222.4	236.0
Average Asset Value (\$m nominal)	187.5	199.0	208.7	218.3	229.2
Average Asset Value (\$m 31 Dec 2004)	197.8	202.9	208.7	213.3	218.5

Table 9 Roll forward of the Capital Base 2001/02- 2005/06

6. FORECAST DEPRECIATION

6.1. Forecast Depreciation by Category

Envestra has used a straight-line approach as a basis for forecasting depreciation. This is consistent with the requirements of the Code. In particular, the straight-line approach ensures that:

- depreciation is allocated over the entire useful lives of the Network assets; and
- depreciation is consistent with the stable growth in demand that is forecast to occur over the Access Arrangement Period.

The straight-line approach also has the advantage of being:

- readily understandable;
- transparent; and
- easily capable of being replicated on an ongoing basis.

Envestra notes that the straight-line approach to depreciation has also been adopted by other regulated gas businesses and has been accepted by regulators throughout Australia.

The economic useful life (EUL) of each asset type is shown in the following table. Envestra is using the asset lives as approved by the QCA for the First Access Arrangement Period.

Asset Type	Life (years)
Mains	75
Inlets	75
Meters	31
Telemetry	10
IT Systems	10
Other Distribution System Equipment	75
Other	75

Table 10 Asset Lives (years) for Network Assets

As foreshadowed in section 2, Envestra then modified the forecasts of depreciation (that were based on the straight line methodology) to provide a more appropriate balance of the needs of Envestra and Users. If Envestra were to allow the full cost calculated under the building block approach to flow through to customers, then Reference Tariffs would need to rise by around 14 per cent in the first year of the Second Access Arrangement Period. Such an increase in tariffs could not be sustained in the Queensland gas market.

On determining the extent of the tariff increase required to fully recover costs, Envestra re-examined the operating plan proposed in the Revision to determine whether there were some aspects of its expenditure, especially New Facilities Investment, which could be deferred. Based on this review and taking into account Worley Parsons findings, it was concluded, that deferral of expenditure was not prudent.

Envestra considers that a more prudent approach for the next Access Arrangement Period to maintain tariffs at market sustainable levels is to defer capital returned through depreciation charges. Envestra proposes that the remaining un-recovered depreciation (calculated as the residual under the straight-line methodology) be deferred

and the NPV of this deferred depreciation added to the regulatory asset base at the end of the Access Arrangement Period. This will provide an opportunity for Envestra in its future revenue streams to recover the foregone capital costs and to earn its allowed rates of return over the lives of the assets.

Envestra intends to reduce the return of capital allowance by approximately 60% in the Second Access Arrangement Period, without adjusting the remaining lives of the assets. The levels of economic depreciation sought by Envestra in the Second Access Arrangement Period are lower than would otherwise be sought if a straight-line method of depreciation was to be applied. The following table shows the forecast depreciation over the Second Access Arrangement Period for each category of asset, after allowing for the deferred depreciation.

Total Depreciation \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Mains & Inlets	1.8	1.9	2.0	2.2	2.3
Meters	0.6	0.7	0.7	0.8	0.9
Telemetry	0.0	0.0	0.0	0.0	0.1
Other Distribution Equipment	0.1	0.1	0.1	0.1	0.1
IT Systems	0.1	0.1	0.2	0.3	0.3
Equipment, Vehicle & Other	0.0	0.0	0.0	0.0	0.0
TOTAL \$m (nominal)	2.6	2.8	3.1	3.5	3.7
Total Depreciation \$m (31 Dec 2004)	2.5	2.6	2.8	3.1	3.2

Table 11 Forecast Depreciation

Should the QCA reject, adjust or modify the forecasts proposed by Envestra, then Envestra will recalculate the impacts of these amendments on the required amount of deferred depreciation.

6.2. Code Compliance

Envestra's use of a straight-line approach to depreciation as a basis for calculating depreciation is consistent with the requirements of the Access Code. The asset lives adopted in deriving the Initial Capital Base are consistent with those used for the First Access Arrangement Period and were approved by the QCA.

The economic depreciation approach advanced by Envestra is consistent with Section 8.33 of the Code, which specifies that the Depreciation Schedule should be designed:

- (a) so as to result in the Reference Tariff changing over time in a manner that is consistent with the efficient growth of the market for the Services...;*
- (b) so that each asset or group of assets ...is depreciated over the economic life of that asset or group of assets;*
- (c) so that ...the depreciation schedule for each asset or group of assets ...is adjusted over the life of that asset or group of assets to reflect changes in the expected economic life of that asset or group of assets; and*
- (d) that an asset is depreciated only once...*

Accordingly, subject to the requirements specified in (b), (c) and (d) above, the calculation of notional depreciation can be used as a means of adjusting reference tariffs to accommodate efficient growth of the market.

There are a number of factors working to temporarily increase the price of natural gas to end consumers in Queensland. First, and as mentioned before, the volume of gas being distributed through the Network is low relative to other networks, giving rise to diseconomies of scale and scope. As Envestra's plans to grow the market are implemented, prices to consumers will decline. Also the current stay in business capital requirements of the Network are unusually high due to the need to replace cast iron and steel mains and improve security of supply. Over time the high levels of stay in business capital expenditure will reduce to more normal levels, increasing the capacity for the Network to recover depreciation costs without increasing network tariffs to unsustainable levels. Finally, Users of natural gas in Queensland are subjected to contractual arrangements that are artificially increasing the price of natural gas. Envestra understands that these contracts will expire in the Third Access Arrangement Period, providing capacity for Envestra to recover the deferred depreciation without increasing tariffs to consumers.

Efficient market growth is best obtained through smooth rather than sharp annual tariff movements. Deferral of depreciation provides a mechanism to manage the impact of these short-term distortions of the price for natural gas so as to achieve smooth annual tariff movements over time. Section 8.33(a) of the Code, specifically provides for depreciation costs to be adjusted in the manner proposed by Envestra to achieve efficient market growth. Deferring depreciation as proposed by Envestra provides for revenue neutrality over the lives of the assets because the assets are depreciated only once over their useful lives.

The practice of adjusting depreciation to achieve appropriate pricing outcomes has been used in a number of previous regulatory decisions. The most closely related precedents are:

- The 2000 ACCC decision in respect of the Central West pipeline. AGL sought to use economic depreciation in this instance to provide for the under-recovery of revenue in the early years of the Central West pipeline's life, and sought to offset this against over-recovery in the later years of operation. The ACCC¹⁰ was guided in particular by section 8.1(a) of the Code which provides the objective that the Service Provider should have the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the Reference Services over the expected life of the assets used in delivering the service. It's final decision was that applying economic depreciation as a type of levelising mechanism to recoup under-recoveries in the early period of the pipeline life was consistent with Code principles;
- The 1999 Essential Services Commission Decision in respect of Envestra's Mildura network. Envestra sought a fixed principle which reflected the need for an under-recovery of revenue in the early years of the greenfields site in exchange for an over-recovery in later years of the life of the pipeline. The Final Decision¹¹ noted that Envestra would quantify the under-recovery with reference to actual revenues and actual costs over the period (rather than forecast revenues and costs);
- The 2004 Essential Services Commission Decision in relation to Envestra's proposed Bairnsdale network. Envestra sought to use economic depreciation to account for low anticipated usage (and revenue) in the early years of the Bairnsdale project. The mechanism approved by the ESC¹² allowed for the economic depreciation of the project during its early years of operation to be rolled into the regulatory asset base of the existing Envestra Access Arrangement. The ESC decided that the economic depreciation of the project would be calculated according to a prescribed formula, which included the use of a pre-tax WACC

¹⁰ Page 71 of the Final Decision, 2000

¹¹ Page 34 of ESC Final Decision for Mildura Gas Distribution System, 1999

¹² Page 11 of ESC Final Decision for Application by Envestra for Approval of New Facilities Investment in Bairnsdale, 2004

as the discount rate, the use of actual revenue received and costs incurred, and a specific algorithm for deriving the economic depreciation amount; and

- IPART's 2004 Final Decision¹³ in relation to the network revenue allowable for Country Energy's distribution network. Country Energy sought to use a mechanism for deferring depreciation in order to avoid price shocks to customers. IPART found that its decision to constrain the Service Provider's price path to a real increase of 7% in 2004/05, followed by 2.5% thereafter, would leave Country Energy short of its notional revenue requirements in the final year of the regulatory period. IPART allowed a deferral of depreciation equal to the present value of the revenue loss consequent to capping Country Energy's price path.

¹³ Page 82 of IPART Final Decision for Electricity DNSPs, 2004

7. NEW FACILITIES INVESTMENT

7.1. Summary

New Facilities Investment forecast to occur within the Second Access Arrangement Period is based on the forecast level of capital expenditure necessary to allow Envestra to meet the forecast growth in demand for Services, to meet system augmentation and replacement requirements and to generally deliver the Services.

Envestra's Asset Management Plan (Attachment 1) describes how Envestra maintains and operates the gas distribution system, and how it plans for future growth and expansion. This comprehensive document has been reviewed by WorleyParsons who have confirmed that the way Envestra operates and plans to operate its assets is of an appropriate standard, in keeping with good industry practice.

New Facilities Investment forecast for the Second Access Arrangement Period is as shown in the following table, taking into account customer contributions.

Net New Facilities Investment \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Gross New Facilities Investment	19.4	19.3	26.8	20.7	23.1
<i>Less:</i> Customer Contributions	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)
Net New Facilities Investment \$m (nominal)	18.1	17.9	25.4	19.4	21.7
Net New Facilities Investment \$m (31 Dec 2004)	17.2	16.6	23.0	17.1	18.8

Table 12 Net New Facilities Investment

The Net New Facilities Investment forecast for the Second Access Arrangement Period has been forecast according to the categories set out in the following table. Further detail on the categories is provided in sections 7.2 and 7.3.

New Facilities Investment \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Stay in Business					
Mains/Inlets	6.9	7.2	7.4	7.7	7.2
Periodic meter changes	0.9	0.9	0.9	1.0	1.0
IT Systems	0.0	0.0	5.7	0.0	0.1
Telemetry & Regulators	0.5	0.5	0.5	0.5	0.6
Other	0.5	0.5	0.5	0.5	0.4
Total Stay in Business	8.8	9.1	15.1	9.7	9.4
Growth					
Mains/inlets/meters	5.9	5.9	5.4	6.1	6.4
Network Development	1.3	1.6	2.0	2.4	2.9
IT Projects	1.0	0.1	0.0	0.0	0.0
Major Projects	1.1	1.1	2.9	1.2	3.0
Total Growth	9.3	8.8	10.3	9.7	12.3
Total New Facilities \$m (nominal)	18.1	17.9	25.4	19.4	21.7
Total New Facilities \$m (31 Dec 2004)	17.2	16.6	23.0	17.1	18.8

Table 13 Forecast New Facilities Investment

Where the above forecasts are dependent upon forecasts of gas demand and number of customers, the forecast expenditure is based on Envestra's demand forecasts for the Access Arrangement Period as contained in section 17 of this document.

As explained in the following sections, New Facilities Investment in the Second Access Arrangement Period is materially higher than in the First Access Arrangement Period. This is predominantly due to:

- Increased replacement of aging cast iron and unprotected steel mains;
- Security of supply projects that will provide consumers with a much higher degree of reliability of gas supply;
- Increased meter replacements (approximately 35% higher than current numbers); and
- IT expenditure that will provide Envestra with a robust, long-term IT capability for the business.

It is noted that at the time of preparation of this Access Arrangement revision, the Queensland government has mandated a requirement for the extension of retail contestability to customers using more than 1TJ of gas per annum. Because the means of achieving this outcome is unclear at this time, Envestra is unable to forecast costs relating to the implementation of this government policy. **This Access Arrangement revision therefore contains no costs related to the extension of retail contestability in Queensland.** Envestra expects that such costs will be recouped either through an application of an impost pass-through, once the specific requirements for contestability become known, or as a supplementary submission prior to final approval of the Access Arrangement revision.

7.2. Stay in Business Capital Expenditure

Mains Replacement

The Network has one of the highest percentages of cast iron and unprotected steel mains in comparison to other networks in Australia. This category provides for the replacement of gas mains and inlet services on a planned basis. In the absence of mains replacement, the annual volume of UAFG will trend upwards as a result of deterioration in the condition of cast iron and unprotected steel mains.

A certain critical length of cast iron and unprotected steel must be replaced annually in order to offset the effect of this deterioration. If this critical length is not replaced the annual volume of UAFG will rise. If a greater length is replaced, the annual volume of UAFG will fall. It is difficult to assess this critical length because it depends upon many factors including the total length and overall condition of cast iron and unprotected steel mains within the Network. Further, UAFG volume cannot be measured directly, but is assessed in arrears, and is also affected by other factors.

As discussed in section 2.1, Envestra is planning to replace 70km of mains per year through block replacement. The prudence of the proposed level of replacement is also underpinned by economic analysis. Before Envestra undertakes a mains replacement programme, it assesses a number of factors pertinent to the ability of the gas mains to continue to provide adequate service. Such factors include leak history and the age, condition and material type of the main concerned. Economic analysis is then used to compare the cost of replacing mains with the forecast cost of

- (a) continuing to repair leaks as they arise;
- (b) gas lost from leakage; and
- (c) ancillary tasks, such as attending to water ingress problems.

Where economic analysis indicates it is more prudent to replace a main, it is prioritised and scheduled for replacement, taking into account manpower/contractor resources and network planning considerations. All of the mains replacement forecast for the Second Access Arrangement Period either passes Envestra's economic test for replacement or is required to be replaced for operational reasons.

As explained above, the level of mains replacement is materially higher than the level undertaken in the First Access Arrangement Period, meaning that the associated cost for this activity is materially higher.

Meter Changes

Envestra is required to periodically change gas meters in order to test them for metering accuracy. A continuous changeover and testing programme is in place to ensure that each gas meter continues to operate within prescribed tolerances.

About 2,800 meters were changed over in 2004/05, with the number increasing to 4,500 per year during the Second Access Arrangement Period, in accordance with regulatory requirements for changeover. The numbers are reflective of the age and types of meters in service. Due to the higher number of PMCs in the Second Access Arrangement Period, the cost for PMCs is higher than for the First Access Arrangement Period.

Security of Supply

Gas networks are continually reviewed to ensure that the risk of gas outages are minimised, and that in the event a gas outage occurs, that the impact of any outage is minimised. The forecasts allow for reinforcement of those sections of the Network that are vulnerable to gas supply problems, as well as improvements to reduce the

likelihood of outages occurring. A comprehensive plan has been compiled that will deliver a high level of reliability, consistent with good industry practice and with the expectations of consumers.

Envestra's Asset Management Plan provides details of the process undertaken that underpins the security of supply projects. Envestra has undertaken relatively little expenditure on such projects in recent years, and while the Network has been fortunate in not enduring significant incidents of disruption to supply, good industry practice dictates that risks of outages be minimised. These security of supply projects therefore represent a material variation in expenditure when compared to similar expenditure over the First Access Arrangement Period.

Other

This category includes:

- Regulator Stations and Valves

This category provides for on-going replacement and improvement of regulator stations and valve pits across the Network. There are over 150 district regulators, with many of the older ones located in above ground kiosks which are prone to vandalism and vehicle damage. Capital expenditure is required to relocate and "underground" these regulator stations.

Other 'one-off' expenditure is required to:

- Upgrade Ipswich regulators to comply with current standards (active monitor setup); and
- Rectify deficient regulator installations at commercial installations in the CBD - a programme is required to carry out appropriate modifications to ensure venting of regulators is not compromised by the redevelopment works that have taken place around meter installations over the years;

- Information Technology

The introduction of FRC throughout Australia has seen Envestra expend considerable resources in the development and installation of the required IT systems. Envestra has now turned its attention to developing a strategy to drive increased business performance from its suite of IT investments. Envestra reviewed its IT systems in Queensland to ensure that they provide a robust, cost effective and service-oriented capability into the long term.

Due to the critical nature of IT and the significant costs involved in this area of the business, Envestra engaged IBM to develop and cost such a strategy. IBM identified a number of issues that needed to be addressed for Envestra to close key capability gaps. These issues and the associated IT programmes to address them are detailed in a report to Envestra titled "Envestra IT Strategy Planning (1 April 2005)" (see Attachment 3, provided to the QCA in confidence). In developing the strategy, IBM conducted a thorough review of Envestra's IT requirements and took into consideration industry standards and practice (both in Australia and New Zealand) to ensure that the outcomes were prudent and efficient and in accordance with what would be expected of a utility business like Envestra's.

The IT forecast in this section relates primarily to the rollout of a works management system. This system will ensure that works are controlled and managed in an efficient manner and in accordance with best practice, while providing transaction management and reporting abilities.

It should be noted that this Access Arrangement revision excludes costs that may be associated with

the extension of retail contestability.

Other

These costs will allow Envestra to continue to operate up-to-date SCADA and odorising systems, e.g. replacement of valves and pumps at odorising stations.

7.3. Growth Capital Expenditure

Mains/Inlets/Meters

This category provides for:

- growth of the network (mains) for the provision of Services to new Delivery Points. New mains (or mains extensions) range from large projects undertaken in order to provide gas to new housing estates, to small mains extensions in existing gas areas in order to connect a new customer. New large (Demand) customers sometimes also require significant mains extensions. Such extensions are evaluated on a case-by-case basis and in accordance with the Code, taking into consideration the forecast load demand for the customer;
- Inlets associated with growth of the network - the inlet service is the pipework that runs from the gas main to the gas meter. These can vary in length and size depending on the gas demand of the customer. The cost per service is also affected by the terrain and environmental characteristics of the site being connected, e.g. it is easier and cheaper to connect gas to a new home than to an existing home or to an existing building in the CBD;
- Meters associated with growth of the network - the cost associated with gas meters includes the cost of installation of the meter box, meter and gas regulator, and the subsequent commissioning that ensures that gas is supplied in a safe manner in accordance with Envestra's obligations as a gas distributor; and
- Mains and associated facilities that are constructed on a routine basis to improve security of supply to consumers.

Network Development

This category provides for the capital expenditure required for the additional connections resulting from the Network Development Non-Capital Cost that is additional to that undertaken in the current Access Arrangement Period. The additional Non-Capital Cost is expected to increase the number of connections in a cost effective manner, such that the long-term benefits attained from the new connections outweigh the capital and operating cost of achieving the new connections.

Information Technology

The IT forecasts in this section, which are as recommended by IBM, allow for IT initiatives that will address current capability gaps, as outlined in Attachment 3.

Major Projects

This category provides for the capital involved in connecting very large industrial customers. Such connections do not occur routinely, but when they do, involve capital intensive works. Envestra is aware, from market information and enquiries, of a number of large potential gas customers that are likely to be established over the Second Access Arrangement Period.

7.4. Expert Review of New Facilities Investment

Envestra engaged WorleyParsons to review current and forecast New Facilities Investment (see Attachment 2). WorleyParsons conducted a benchmarking study that examined the expenditure of the business relative to other natural gas distribution businesses (see Attachment 2). As part of their review, WorleyParsons undertook an audit of a random sample of projects, which confirmed that justifications and economic analysis undertaken for capital works provides a sound basis for ensuring that all such expenditure is prudent.

The work undertaken by WorleyParsons showed that Envestra's New Facilities Investment is currently within a range that would be considered to be prudent and efficient for a distributor operating in the Queensland environment.

WorleyParsons then examined the trends and changes pertaining to Envestra's New Facilities Investment forecast for the Second Access Arrangement Period. This included analysis of the various categories of expenditure and underlying assumptions and parameters. In addition, WorleyParsons examined Envestra's forecast expenditure, in terms of KPIs, in the context of what WorleyParsons considered to be an efficient range of KPIs. WorleyParsons consequently concluded that Envestra's New Facilities Investment is within a range of values that WorleyParsons considers to be efficient for Envestra's Queensland network.

As a result of that analysis, WorleyParsons endorses the New Facilities Investment forecast for the purposes of the Code.

7.5. Code Compliance

In respect of New Facilities Investment, section 8.20 of the Access Code provides:

"Consistent with the methodologies described in section 8.4, Reference Tariffs may be determined on the basis of New Facilities Investment that is forecast to occur within the Access Arrangement Period provided that the New Facilities Investment is reasonably expected to pass the requirements in section 8.16 when the New Facilities Investment is forecast to occur."

Section 8.16 provides:

"The amount by which the Capital Base may be increased is the amount of the actual capital cost incurred (New Facilities Investment) provided that:

- (a) that amount does not exceed the amount that would be invested by a prudent Service Provider acting efficiently, in accordance with accepted good industry practice, and to achieve the lowest sustainable cost of delivering Services; and*
- (b) one of the following conditions is satisfied:*
 - (i) the Anticipated Incremental Revenue generated by the New Facility exceeds the New Facilities Investment; or*
 - (ii) the Service Provider and/or Users satisfy the Relevant Regulator that the New Facility has system-wide benefits that, in the Relevant Regulator's opinion, justify the approval of a higher Reference Tariff for all Users; or*
 - (iii) the New Facility is necessary to maintain the safety, integrity or Contracted Capacity of Services."*

The New Facilities Investment described in this Chapter 7 satisfies the requirements of section 8.16. As

confirmed by the WorleyParsons report the investment is consistent with that which would be invested by a prudent Service Provider acting efficiently, in accordance with accepted good industry practice, and to achieve the lowest sustainable cost of delivering Services.

Various aspects of clause 8.16(b) are satisfied depending on the nature of the New Facilities Investment. For example, where the forecast relates to mains extensions required for servicing new customers, clause 8.16(b)(i) is applicable. Where the forecast relates to items such as security of supply projects and SCADA system improvements, aspects of clause 8.16(b)(ii) and 8.16(b)(iii) are satisfied.

All of the New Facilities Investment satisfies clause 8.16 of the Code.

8. COST OF CAPITAL

8.1. Envestra Approach

The regulatory rate of return, cost of capital or weighted average cost of capital ('WACC'), is a key input to the revenue determination. Envestra has used the CAPM formula as a basis for estimating WACC.

Envestra advocates the pre-tax approach to WACC because it is less intrusive, less data intensive and simpler to implement. These views were made clear to the QCA as part of the deliberations associated with the 2001/02 – 2005/06 Access Arrangement. However, all regulatory decisions handed down by the QCA have used the post-tax approach in calculating the rate of return. While not agreeing with this approach, Envestra has based its calculated WACC on the QCA's preferred nominal post-tax basis using the following formula:

$$\text{WACC (nominal, post-tax)} = R_e \cdot \frac{E}{V} \cdot \frac{1 - t_c}{(1 - t_c(1 - \gamma))} + R_d \cdot \frac{D}{V} \cdot (1 - t_c)$$

Where:

R_e	Risk adjusted post-tax cost of equity required by investors derived from the CAPM
E	The benchmark level of equity expressed as a percentage
D	The benchmark level of debt expressed as a percentage
V	Sum of assumed debt level plus assumed equity level ($V = D + E$)
γ	Value of imputation credits
t_c	Statutory corporate tax rate
R_f	The nominal risk-free rate of return
D_m	Debt risk margin
R_d	Cost of debt ($R_f + D_m$)

Implementation of Envestra's approach to forecasting WACC requires definition of ranges for the following critical parameters

- Risk free rate;
- Capital structure;
- Cost of equity, calculated by the Capital Asset Pricing Model;
- Cost of debt;
- Gamma; and
- Equity beta

These ranges were defined having regard to extensive research that exists pertaining to the estimation of WACC parameters. The range of values for each WACC parameter is summarised in the following table. Details concerning the approach and assumptions used in deriving these ranges of parameters is provided in Attachment 4 to this document.

WACC Parameters	Value Range	
Nominal Risk Free Rate	5.43%	6.25%
Expected Inflation	2.5%	3.0%
Debt Margin	1.38%	1.48%
Debt to Assets	60%	60%
Market Risk Premium	6.0%	7.0%
Equity Beta	1.0	1.1
Nominal Post-Tax WACC	8.75%	10.31%
Nominal Post-Tax WACC point estimate	8.80%	

Table 14 WACC Parameters

The analysis indicates a range for nominal post-tax WACC for the Network of between 8.75% and 10.31%. Envestra has elected to use a point estimate of WACC of 8.8% as the rate of return for determining revenue. This estimate falls within the plausible range of estimates of WACC identified above. It is slightly higher than the 8.5% approved by the Authority for electricity businesses earlier this year. The additional premium is in line with the higher risk profile of a gas distribution business compared to an electricity business. An 8.8% return is therefore consistent with the prevailing conditions for funds in the Queensland energy market, and the risk involved in delivering the Reference Service. Envestra believes this rate of return is sufficient to enable Envestra to continue to invest in the Covered Pipeline.

8.2. Code Compliance

In respect of Rate of Return clauses 8.30 and 8.31 of the Access Code provide:

"8.30 The Rate of Return used in determining a Reference Tariff should provide a return which is commensurate with prevailing conditions in the market for funds and the risk involved in delivering the Reference Service (as reflected in the terms and conditions on which the Reference Service is offered and any other risk associated with delivering the Reference Service).

8.31 By way of example, the Rate of Return may be set on the basis of a weighted average of the return applicable to each source of funds (equity, debt and any other relevant source of funds). Such returns may be determined on the basis of a well accepted financial model, such as the Capital Asset Pricing Model. In general, the weighted average of the return on funds should be calculated by reference to a financing structure that reflects standard industry structures for a going concern and best practice. However, other approaches may be adopted where the Relevant Regulator is satisfied that to do so would be consistent with the objectives contained in section 8.1."

Envestra has calculated its cost of capital using the Capital Asset Pricing Model, being a model which is permitted by clause 8.31 of the Access Code. As noted in the *GasNet Australia (Operations) Pty Ltd* decision, this election must be given effect to by the Regulator. That is, provided Envestra employs a method of determining its cost of capital that meets the requirements of clauses 8.30 and 8.31, the Regulator cannot refuse to accept the methodology employed by Envestra.

Clause 8.30 requires the rate of return to be commensurate with prevailing conditions in the market for funds and the risks involved in delivering the reference service. The parameters set out in section 8.1 have been determined so as to meet this requirement.

9. NON-CAPITAL COSTS

9.1. Summary of Non-Capital Costs

Envestra's forecasts of efficient non-capital costs for the Second Access Arrangement Period are shown in the following table.

Non Capital Costs Summary \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Operating & Maintenance	16.8	16.9	17.1	17.6	18.2
Administration and general	1.8	1.9	2.3	2.4	2.4
Network development	1.7	1.8	1.9	2.0	2.2
IT Projects	0.1	0.2	0.2	0.2	0.2
TOTAL \$m (nominal)	20.4	20.7	21.5	22.2	23.0
TOTAL \$m (31 Dec 2004)	19.4	19.3	19.5	19.6	19.8

Table 15 Non-Capital Cost Forecast

Envestra considers that its 2004/05 expenditure on network operating costs represents a reasonable basis for forecasting for the Second Access Arrangement Period because:

- The cost drivers in 2004/05 were reflective of a normal year in terms of service standards and general asset management costs; and
- 2004/05 included operating efficiencies which Envestra considers are maintainable.

In forecasting the network operating costs over the Second Access Arrangement Period, Envestra has used its actual 2004/05 costs as a baseline. The costs for the covered pipeline have been derived in accordance with the cost allocation principles set out in Envestra's annual ring fencing report to the QCA.

Envestra considers these costs are the most recent indicator of the prudent costs necessary to operate the Network. These costs have then been increased to allow for anticipated movements in labour, material and contract costs in the Second Access Arrangement Period. In relation to wages costs, BIS Shrapnel was engaged by Envestra to provide an expert opinion regarding the level of wages growth that Envestra should incorporate into its forecasts of costs over the period. For the purposes of estimating wage cost changes in Envestra's operating expenses, BIS Shrapnel recommended that movements in average weekly ordinary time earnings (AWOTE) for the electricity, gas and water sector should be used.

AWOTE forecasts provided by BIS Shrapnel are about 1.2 per cent higher than the national AWOTE average of 4.8 per cent per annum over the next six years to 2010/11. The faster wages growth in the electricity, gas and water sector of the market has been evident for the past 15 years. The expected wages growth in this sector is above the national average because of the relatively high levels of job vacancies in the sector and the current skills shortages. BIS Shrapnel's recommended AWOTE forecasts have been applied to the wages costs in the forecasts.

The resultant costs represent the 'base costs', to which variances are then applied. These variances account for:

- changes to expenditure to account for increases in the size of the network (number of customers as well as

physical size) compared to 2004/05; and

- changes to the scope of work undertaken. Envestra has conducted a thorough analysis of its operations with a view to identifying material changes to its baseline expenditure over the next six years. In relation to network operating costs, Envestra has adjusted its forecasts to account for several material changes to the operating and commercial environment and which pose additional costs. Other increases reflect the need for additional expenditure in areas where Envestra has been constrained in its expenditure due to the benchmarks set by the QCA over the First Access Arrangement Period.

Details concerning the increased costs are set out in section 9.7.

Envestra believes that its forecast network operating costs over the Second Access Arrangement Period are efficient because it has a continuous improvement philosophy whereby costs are rigorously assessed, not only when budgets are formulated, but as opportunities arise. For example, where positions become vacant, recruitment is not undertaken if alternative and more efficient options are available. Such prudent management is expected to continue to result in labour savings over the Second Access Arrangement Period, and it has been assumed that productivity gains resulting from additional IT infrastructure, the mains replacement programme and other initiatives proposed by Envestra for the Second Access Arrangement Period will result in productivity improvements increasing over the period to approximately \$1.3m per year by year 5 of the period.

A discussion of each component of Non-Capital Costs is set out below.

9.2. Operating & Maintenance Costs

Network operating costs are the costs of operating and maintaining the gas distribution system. These costs cover the following functions:

- Network management;
- Network maintenance;
- Meter reading and billing;
- Network planning;
- UAFG supply;
- Cost of tax;
- Facilities management; and
- Regulatory fees

9.3. Administration and General Costs

Envestra's administration and general costs include:

- Accounting and finance costs;
- Human Resource Management and Administration;
- Information Technology costs;
- Regulatory functions; and
- Insurance costs

9.4. Network Development Costs

Network Development costs are those costs that are incurred to maintain and grow gas demand throughout the network and comprise:

- Gas Connection processing costs, such as processing connection orders and mains extension requests, site visits to determine gas meter locations, coordinating inlet and meter installation with customers and/or inlet contractors and delivering meter boxes to builders; and
- Market Development costs, as discussed in Attachment 6 (supplied to the QCA in confidence). This expenditure relates to activities and schemes that are necessary to maintain and improve gas penetration, such as:
 - Performance based incentives to encourage consumers to increase natural gas consumption. Envestra has developed programs under which it provides a financial incentive to consumers if they choose to connect to natural gas or increase gas load. The incentive payments are set at a level such that the cost of making the payments is less than the benefit consumers on the network receive through lower prices as a result of the additional load. In this way, these programs are performance based, where every dollar spent generates a benefit to all customers.
 - Representation to identify, build and maintain channels to market through customers and key influencers (e.g. working with appliance retailers to ensure that gas appliances are available for sale).
 - Strategic partnerships to optimise outcomes from key influencers over which Envestra has no direct control (e.g. with builders and housing developers to ensure that gas appliances are specified in their developments).
 - Targeted marketing campaigns, aimed at specific segments.
 - Generic marketing activity, to promote and position natural gas, which is essential because all houses and businesses are connected to electricity, whereas the decision to connect to natural gas is discretionary.

The gas connection processing costs account for approximately 60% of Network Marketing costs approved by the Authority in December 2001. These activities are required to connect new customers to the Network. It is essential that these costs be approved in the Second Access Arrangement Period in order for customers to be connected.

Envestra has used the remaining \$200,000 of Network Marketing Costs approved by the Authority in 2001 for Network Development activities described above. However, this amount of expenditure has been grossly inadequate to develop the Network. The limited Network Development expenditure has been reflected in new connections being around one-half of that forecast by the Authority in 2001. Envestra's Queensland Network requires additional Network Development in the Second Access Arrangement Period in order to increase penetration and grow load and to realise economies of scale and scope.

Envestra has prepared a Market Development plan to increase gas load and penetration. Detailed supporting information and costs on Market Development are contained in the report in Attachment 6. In summary, the report details:

- each key activity and why it is undertaken, i.e. a description of the qualitative benefits and why it is prudent for Envestra to undertake such activities;
- the forecasts costs for each key activity; and

- the financial/quantitative benefits forecast for each activity.

In deriving the cost benefits of Market Development activities, Envestra has set out clearly the assumptions and factors underpinning the additional customers and loads anticipated as a result of the programmes it will be undertaking. The increased customer numbers and consumption has been factored into Envestra's forecasts for the Second Access Arrangement Period.

Envestra believes the Market Development costs are efficient because it has been demonstrated that each of the relevant activities provides a benefit to all customers, by lowering unit transportation costs. This is consistent with section 8.37 of the Code in that the expenditure is necessary in order to obtain the "lowest sustainable cost of providing the Reference Service".

It is noted that, as detailed in Attachment 5, average domestic gas consumption is reducing for a number of reasons, including climatic warming and increasing appliance efficiency. If this was to continue, and Envestra were not to actively embark on programs designed to efficiently increase average consumption, customers would experience gradual increases in reference tariffs over time as load reduced.

9.5. Unaccounted For Gas Costs

The level of UAFG in the Network is impacted by leakage arising from aging cast iron and unprotected steel mains. As discussed in section 7.2, the rate of replacement of old mains has varied over the First Access Arrangement Period in response to changes in the level of UAFG. The current rate of mains replacement may be sufficient to keep UAFG at the current level. However, with the higher rate of mains replacement over the Second Access Arrangement Period, the level of UAFG is expected to decrease, with an expected level of about 214 TJ by the end of the period. The forecast level has been calculated according to an average rate of gas leakage per km of cast iron and unprotected steel main. This rate is applied to determine the reduction in UAFG volume for each year of the Access Arrangement Period. Based on the proposed mains replacement of 70 km/yr, this results in an annual reduction in UAFG volume of 21 TJ.

Given that the higher rate of mains replacement will not commence until 06/07, the full reduction in UAFG volume will not be realised until 2007/08. The following table sets out the current and forecast UAFG volume.

Year	04/05	05/06	06/07	07/08	08/09	09/10	10/11
UAFG (TJ)	298	298	298	277	256	235	214

Table 16 Yearly UAFG

The cost of supplying UAFG for the Network reflects the cost incurred by Envestra in purchasing the required gas. Envestra has recently undertaken a tender process to ensure that the price it pays for UAFG gas is the lowest possible. This cost has been incorporated into the Operating and Maintenance cost, to preserve the confidentiality of the price of gas.

9.6. Cost of Tax

Envestra advocates the pre-tax approach to WACC because it is less intrusive, less data intensive and simpler to implement. This is particularly evident in the context of the new Tax Consolidation regime introduced subsequent to the last QCA decision. While Envestra recognizes its right under the "propose/reject" model to propose a pre-tax approach, all regulatory decisions handed down by the QCA have used the post-tax approach in calculating the rate of return. Indeed, a condition of approving the current Access Arrangement was that forecasts of the cost

of tax for each year of the regulatory period be included in the forecast cash flows (amendment E33, page 241 of Final Decision). While Envestra believes the QCA should change from this approach in approving the Access Arrangement for 2006/07 – 2010/11, Envestra is currently proposing a post –tax approach to highlight the difficulties it creates. Hence, Envestra has calculated a Cost of Tax for inclusion in the forecast cash flows for the 2006/07 - 2010/11 period. However, in doing so it is important to recognize that individual entities within a company group do not pay company tax. Company tax is payable by the head entity within a consolidated group structure. The tax payable by an individual company within a group will be higher or lower than that paid in aggregate by the group. This is a function of differences in taxable income and deductions generated by companies within the group.

The Cost of Tax used in the Access Arrangement necessarily relates to the notional entity that is the regulated Queensland gas distribution network. It is a notional entity because the assets attributable to the Queensland gas distribution network are a subset of the Envestra Ltd group assets. Hence, differences between the tax paid at the group level and the tax attributable to the regulated Queensland gas distribution network for regulatory purposes are not relevant. The Cost of Tax is the benchmark tax allowance for the purposes of setting the regulated revenue requirement for the notional Queensland gas distribution network. In deriving the Cost of Tax for the regulated Queensland gas distribution network a number of assumptions had to be made to maintain consistency with other inputs to the revenue calculation, such as gearing and the Cost of Debt used to derive the WACC, and to account for the fact there is not a separate legal entity that holds the Queensland gas distribution network assets.

The Cost of Tax is included as a Non-Capital Cost in the Operating and Maintenance expenditure forecasts. The Post Tax Revenue Requirement excluding the Cost of Tax is determined in nominal terms as the sum of Return on Assets, Economic Depreciation, Customer Contributions¹⁴ and Operating and Maintenance expenditure less deductions of Operating and Maintenance expenditure, Tax Depreciation and Interest Expense. The prevailing corporate tax rate is then applied to the Post Tax Taxable Income to derive the Tax Expense. The Tax Expense is then adjusted for the value of franking credits¹⁵ to account for the post-tax nature of the income stream and to derive the Tax Payable. The benefit available to the price setting equity providers from franking credits ('Franking Benefit') is then calculated as Tax Payable multiplied by the value of franking credits.

The Cost of Tax is then calculated as Tax Payable less the Franking Benefit.

The value of imputation credits ('gamma' or 'γ') has been a contentious issue in the determination of the regulatory WACC. The table below summarises recent gas transmission and distribution decisions relating to gamma. There is a large amount of regulatory precedent for a gamma of 0.5 but the recent empirical analysis does not support the use of this value.

¹⁴ Customer Contributions are treated as taxable income

¹⁵ The adjustment to Tax Expense is: $\text{Tax Expense} \div (1 - \text{Tax Rate} * (1 - \text{Gamma}))$

Regulator	Network Owner	Date of Final Decision	Gamma
IPART	AGLGN	Apr-05	0.3 - 0.5
ERA	AlintaGas	Jul-05	0.3 - 0.6
ICRC	ActewAGL	Oct-04	0.3 - 0.5
ACCC	GasNet	Nov-02	0.5
ESC	Vic GDB's	Oct-02	0.5
SAIPAR	Envestra	Dec-01	0.5
QCA	Qld GDB's	Oct-01	0.5

Envestra has prepared an analysis of the value of gamma, which is provided in Attachment 7. This analysis shows that the plausible range for the value of gamma is between 0.35 and zero. For the purposes of calculating the cost of tax we have selected the mid-point of the plausible range, i.e. 0.18.

The cost of tax calculation is described in the following table.

Cost of Tax Calculation

	Post Tax Revenue Requirement <i>excluding</i> Cost of Tax (Return on Assets + Economic Depreciation + O&M + Customer Contributions)
<i>less</i>	Operating and Maintenance expenditure
<i>less</i>	Tax Depreciation Tax Base from first regulatory period rolled forward incorporating capital expenditure over first Access Arrangement Period and applicable tax depreciation
<i>less</i>	Interest Expense 60% of average RAB _t x Cost of Debt (Risk Free Rate + Debt Margin)
<i>equals</i>	Post-Tax Post-Deductions Revenue Requirement <i>excluding</i> Cost of Tax
<i>multiplied by</i>	Statutory Tax Rate of 30%
<i>equals</i>	Tax Expense
<i>divided by</i>	$(1 - 0.30 \times (1 - 0.18))$
<i>equals</i>	Tax Payable
<i>less</i>	Franking Benefit (Tax Payable x 0.18)
<i>Equals</i>	Cost of Tax

The method we have applied in calculating the benchmark Cost of Tax is analogous to that used by the Victorian Essential Services Commission in the electricity and gas distribution regulatory decisions¹⁶¹⁷. This is a two-step process whereby a Cost of Tax is calculated for:

- (i) The 'raw' or unsmoothed revenue requirement; and
- (ii) Then as part of the smoothing process and the setting of the CPI minus X-factor price path, the forecast tariff revenue stream is used as an input to the Cost of Tax, which is re-calculated concurrently so that the unsmoothed revenue requirement is equivalent to post-tax forecast tariff revenue stream in net present value terms.

This process is necessary because the tax payable in any year is a function of tariff revenue (amongst other things) and any differences between the unsmoothed revenue requirement and post-tax forecast tariff revenue will cause differences in tax payable that need to be accommodated in the forecast of the Cost of Tax. The forecast tariff revenue stream is substituted for the Post Tax Revenue Requirement *excluding* Cost of Tax to recalculate the Cost of Tax for inclusion in revenue stream to be recovered from Reference Tariffs.

The resultant Cost of Tax, which is incorporated into the Operating and Maintenance Costs, is shown in the following table.

Cost of Tax \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Revenue requirement including Economic Depreciation	37.7	40.1	42.9	46.1	49.6
Capital Contributions	1.4	1.4	1.4	1.4	1.4
Non-Capital Costs	(19.2)	(19.0)	(19.3)	(19.3)	(19.3)
Tax depreciation	(4.8)	(5.1)	(5.7)	(6.3)	(6.7)
Interest Expense	(10.3)	(10.3)	(10.3)	(10.3)	(10.3)
Net income excluding Cost of tax	4.7	7.0	9.0	11.5	14.7
Tax payable	1.4	2.1	2.7	3.5	4.4
Franking credit	(0.3)	(0.4)	(0.5)	(0.6)	(0.8)
Cost of Tax	1.2	1.7	2.2	2.8	3.6
Cost of Tax \$m (31 Dec 2004)	1.1	1.6	2.0	2.5	3.1

Table 17 Cost of Tax

¹⁶ Essential Services Commission, *Electricity Distribution Price Review 2006-10, Draft Decision*, June 2005,

¹⁷ Essential Services Commission, *Gas Distribution Price Review 2003-08, Final Decision*, October 2002

9.7. Cost Increases

As described in section 9.1, there are a number of areas where costs identified for the Second Access Arrangement Period are materially higher than incurred in those areas during the First Access Arrangement Period. A description of each item and the average annual cost is as follows:

- (1) Information Technology New Projects (\$150k/yr) – as discussed in section 7.2, Envestra engaged IBM to develop and cost a strategy that would enable Envestra to keep pace with good industry practice for the duration of the Second Access Arrangement Period (see Attachment 3 - provided to the QCA in confidence). The operating cost associated with the implementation of the projects identified in the plan represent a material new cost relative to 2004/05 Non-Capital Costs.
- (2) New regulatory and operating requirements, and increased service expectations and requirements (\$2256k/yr) – a number of new requirements have been introduced that will have a material impact on operating costs. The largest cost impact is due to new stringent Brisbane City Council requirements on excavation activities that will increase the duration and overall cost of mainlaying and leak repairs. In addition, consumer and community expectations of service and response times are increasing substantially. Additional resources are required to co-ordinate gas connections to new homes and to co-ordinate the additional parties and regulatory compliance requirements involved in new connections.
- (3) Environmental Management (\$136k/yr) - Environmental monitoring, investigation and remediation of former gas manufacturing sites contaminated by past practices (prior to the introduction of natural gas) is required to deal with the health and environmental risks at these sites. In addition, disused gas holders will require removal.
- (4) Risk Management Activity Costs (\$582k/yr) - Ensuring the safety of the community and the continuity of gas supply are two paramount objectives of the gas distribution business. The most frequent cause of interruption to consumers' gas supply arises from damage to gas mains from other service suppliers and excavation activity. To reduce the incidence of gas supply interruptions additional resources in the form of promotion and field staff support will be required to the Dial Before You Dig service. In the current global political environment, gas distribution networks are more vulnerable to malicious attack. Terrorist management systems will be further strengthened with periodic security reviews, in addition to existing annual emergency exercises. Another source of risk to consumers' gas supply is the current uncertainty regarding the location of gas supply pipes in many industrial and commercial consumers' premises. Where location is uncertain, maintenance and access may be unsatisfactory, increasing the risk of gas supply interruption. Resolution of these uncertainties and enhanced risk management practices are required.
- (5) Miscellaneous costs (\$116k/yr) – In recent years significant downward pressure on costs in all areas of operations has been applied and substantial productivity gains have been achieved. In addition, there has been some deferral of expenditure. Over the next few years, additional costs will be incurred in several areas of the business:
 - there is evidence of upward movement in (real terms) in contractor charge rates after many years of below CPI charge rate increases; and
 - a likely increase in the Superannuation Guarantee Levy.
- (6) Ageing Workforce (\$247/yr) - The Queensland gas industry has undergone fundamental changes over the last ten years in terms of both the service delivery method and the skill sets required from

employees. A decade ago, over 130 field and supervisory workers were involved in operating the distribution network, with steady intakes of new employees being used to offset the impacts of retirement and natural attrition. There are now only approximately 40 employees in field operations. With the retention of the more experienced staff and the low rate of employment of new staff, the average age of operational staff has increased materially.

As noted in the recent Somerville Report (page 24):

There is a shortage in Queensland and nationally of qualified field workers. While it may seem an attractive short term financial option to reduce amounts spent on recruiting and training the distributors' workforces, the longer term repercussions are very serious. The Panel believes that the position has been reached where a major risk is faced if steps are not taken immediately to invest more in recruiting and training the workforce of the future.

Consequently, a strategy needs to be implemented that will provide an age profile that is sustainable in the medium to long term. Costs associated with the implementation of this strategy include:

- recruitment and training of new/younger field staff;
- implementation of a graduate training programme; and
- productivity losses and OHS costs due to age-related factors.

- (7) Recruitment, office and related equipment costs (\$108/yr) - Significant recruitment of personnel will be required to support many of the above new activities. This item allows for the recruitment costs and the associated incremental personnel costs (office space, furniture, etc).

9.8. Fixed versus Variable Costs

Envestra has examined the cost drivers of the business at a departmental activity level. The results indicate that in the short-term the majority of Non-Capital Costs are largely fixed and do not vary significantly with incremental usage or throughput. However, some costs (meter reading, maintenance, etc) vary with incremental network expansion and increasing number of customers.

In order to adjust its cost base to account for forecast growth, Envestra has used an estimate of \$11/customer. Based on experience, this may be a conservative estimate.

9.9. Expert Review of Non-Capital Costs

Envestra engaged WorleyParsons to review current and forecast Non-Capital Costs (see Attachment 2). WorleyParsons also conducted a benchmarking study that examined the performance of the business relative to other natural gas distribution businesses. The work undertaken by WorleyParsons showed that Envestra's Non-Capital Cost is currently within a range that would be considered to be prudent and efficient for a distributor operating in the Queensland environment. WorleyParsons identified the following factors as contributing to a challenging environment for operating the Network:

- the customer density is much lower than in other states (e.g. in new estates the customer penetration is 50% while in South Australia it is 95%);
- the average consumption is much lower than in other states (e.g. the average annual domestic consumption is 10 GJ compared to 55 GJ in Victoria and 23 GJ in South Australia);
- the size/length of the Network is smaller, and the volume throughput is lower, meaning that fixed costs are

spread over a smaller asset base and lower loads;

- A significant proportion of mains are located in roadways (as opposed to verges), resulting in more costly repairs and maintenance; and
- The Network has one of the highest proportions of old cast iron mains, which require either high maintenance costs or high capital costs to replace.

The above factors give rise to lower KPIs such as cost/km, cost/customer and cost/GJ. Consequently WorleyParsons cautioned about placing too much emphasis on benchmarking analysis in terms of making conclusions on efficiency.

WorleyParsons examined the trends and changes pertaining to Envestra's Non-Capital Cost forecast for the Second Access Arrangement Period. This included analysis of the various categories of expenditure and underlying assumptions and parameters. WorleyParsons consequently concluded that Envestra's Non-Capital Cost forecast is within a range of values that WorleyParsons considers to be efficient for Envestra's Queensland network.

As a result of that analysis, WorleyParsons endorses the Non-Capital Cost forecast for the purposes of the Code, i.e. the forecasts provided in this submission are those that would be incurred by a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice, to achieve the lowest sustainable cost of delivering Reference Services.

9.10. Code Compliance

Envestra notes that, under the Access Code, provided that a Non Capital Cost meets the criteria in clause 8.37, Envestra is entitled to recover that cost. Clause 8.37 of the Code provides:

"A Reference Tariff may provide for the recovery of all Non Capital Costs (or forecast Non Capital Costs, as relevant) except for any such costs that would not be incurred by a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice, and to achieve the lowest sustainable cost of delivering the Reference Service."

As permitted by clause 8.37, Envestra has designed its Reference Tariff to recover all Non Capital Costs. As noted in the WorleyParsons report and for the reasons set out in this section 9, Envestra's Non-Capital Costs comply with the requirements that such costs be consistent with those which would be incurred by a prudent Service Provider acting efficiently and in accordance with accepted good industry practice.

10. TOTAL REVENUE REQUIREMENT

10.1. Derivation of Total Revenue Requirement

The derivation of the RAB element required for the Total Revenue calculation is shown in the following table.

Capital Base incorporating Economic Depreciation \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Opening Asset Value	236.0	257.5	279.2	308.7	332.5
<i>plus</i> 50% Net Capital Expenditure	9.0	8.9	12.7	9.7	10.9
<i>less</i> 50% Economic Depreciation	(1.3)	(1.4)	(1.6)	(1.8)	(1.9)
<i>plus</i> Inflation of opening asset base	6.1	6.6	7.3	7.9	8.5
<i>plus</i> 50% Net Capital Expenditure	9.0	8.9	12.7	9.7	10.9
<i>less</i> 50% Economic Depreciation	(1.3)	(1.4)	(1.6)	(1.8)	(1.9)
Closing Asset Value	257.5	279.2	308.7	332.5	359.0
Average Asset Value (\$m nominal)	246.8	268.4	294.0	320.6	345.8
Average Asset Value (\$m 31 Dec 2004)	235.2	249.6	266.7	283.8	298.6

Table 18 RAB Roll Forward

The return on assets calculation is shown in the following table.

Return on Assets \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Opening Asset Value x WACC	20.8	22.7	24.6	27.2	29.3
<i>less</i> Opening Asset Value x inflation	(5.9)	(6.4)	(7.0)	(7.7)	(8.3)
<i>less</i> 50% Economic Dep. x WACC	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
<i>plus</i> 50% Economic Dep. x inflation	0.0	0.0	0.0	0.0	0.0
<i>plus</i> 50% Capex x WACC	0.8	0.8	1.1	0.9	1.0
<i>less</i> 50% Capex x inflation	(0.2)	(0.2)	(0.3)	(0.2)	(0.3)
<i>plus</i> 50% Escalation x WACC	0.3	0.3	0.3	0.3	0.4
<i>less</i> 50% Escalation x inflation	0.0	0.0	0.0	0.0	0.0
Return on Assets (\$m)	15.6	17.0	18.6	20.3	21.9

Table 19 Return on Assets

The resultant revenue requirement for each year of the Second Access Arrangement Period is shown in the following table.

Cost Reflective Revenue Derivation \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Return on Assets	15.6	17.0	18.6	20.3	21.9	93.4
Economic Depreciation	2.6	2.8	3.2	3.5	3.7	15.9
Non-Capital Costs	20.4	20.7	21.5	22.2	23.0	107.8
Cost Reflective Revenue (\$m)	38.6	40.6	43.3	46.0	48.6	217.0
Revenue \$m (31 Dec 2004)	36.8	37.7	39.3	40.7	42.0	196.4

NB: rounded to nearest \$0.1m

Table 20 Derivation of Total Revenue Requirement

10.2. Components of Total Revenue Requirement

The Total Revenue Requirement will be sourced from:

- Haulage Reference Services; and
- Ancillary Reference Services.

As the revenue from Ancillary Reference Services is easily forecast, the forecast revenue for those Services is first established in order to determine the revenue to be sourced from the provision of Haulage Reference Services.

Ancillary Reference Service Revenue

The forecast revenue from the provision of Ancillary Reference Services is determined from the forecast demand for that Service and the cost for the provision of that Service.

Forecast Revenue from Ancillary Reference Service \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Special Meter Reads					
Number forecast	13,500	13,500	13,500	13,500	13,500
Unit rate	\$8.00	\$8.19	\$8.40	\$8.61	\$8.82
\$m per annum	\$0.11	\$0.11	\$0.11	\$0.12	\$0.12
Revenue \$m (31 Dec 2004)	\$0.10	\$0.10	\$0.10	\$0.10	\$0.10

Table 21 Forecast Ancillary Reference Service Revenue

Haulage Reference Services Revenue

The revenue to be obtained from the provision of Haulage Reference Services is derived by subtracting from the Total Revenue Requirement, the revenue forecast for the provision of Ancillary Reference Services and the revenue from Excluded Assets, as set out in the following table. Revenue for Excluded Customers on Envestra's Network was determined by the Authority in the 2001 Final Decision. This amount was based on the share of the assets that were used by the Excluded Customers.

Derivation of Haulage Reference Services Revenue \$m (nominal)	2006/07	2007/08	2008/09	2009/10	2010/11
Total Revenue Requirement	38.6	40.6	43.3	46.0	48.6
Less Ancillary Reference Services Revenue	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)
Less Excluded Assets revenue	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)
= Haulage Reference Services Revenue	38.4	40.4	43.1	45.7	48.4
Haulage Revenue \$m (31 Dec 2004)	36.6	37.5	39.1	40.5	41.8

Table 22 Derivation of Haulage Reference Services Revenue Requirement

11. SERVICES

11.1. Haulage Reference Services

Envestra is proposing to continue to provide three Haulage Reference Services:

- Demand Haulage Reference Service – this service provides for the firm haulage of Gas to Delivery Points (DPs) with an annual consumption that exceeds 10TJ per year; and
- Volume Haulage Reference Service – this service applies to all DPs that are not Demand DPs.

The Haulage Reference Services will continue to include:

- receiving Gas injected at a Receipt Point;
- odourisation of Gas;
- haulage of Gas from a Receipt Point to a DP;
- allowing the withdrawal of Gas at a DP;
- provision and maintenance of Metering Equipment; and
- meter reading on a quarterly basis for Volume DPs, and on a monthly basis for Demand DPs.

Envestra believes that the proposed Haulage Reference Services are the haulage Services that are likely to be sought by a significant part of the market during the Second Access Arrangement Period. These Services are essentially identical to those currently being provided to Users. Envestra is unaware of any changes in circumstances or future developments that are likely to materially affect this situation during the Second Access Arrangement Period.

11.2. Ancillary Reference Services

In addition to the Haulage Reference Services, Envestra recognises that additional services may be requested by a significant part of the market. There are also a small number of services which a User may request at some point in time. However, some of these services, e.g. disconnection in the street (at the junction of the gas main and gas service) are infrequently requested and therefore do not qualify as Reference Services.

As per the First Access Arrangement Period, Envestra is proposing to continue with the Special Meter Read Service as an Ancillary Reference Service as it is commonly requested by Users.

11.3. Non-Reference Services

Users may require services that are different from the Reference Services and Envestra will negotiate such services on a case-by-case basis.

The tariff for a Reference Service takes into account the corresponding service levels and business risks associated with providing the service in accordance with the agreed terms and conditions. Users are able to negotiate different service levels or different terms and conditions, and the delivery of such a service will be priced accordingly (as a Negotiated Service).

Where a User or Prospective User cannot agree a price with Envestra for a Negotiated Service, the User can file an access dispute with the Regulator in accordance with section 6 of the Access Code.

11.4. Service Standards and Quality

In addition to the terms and conditions applicable to the provision of a Service (Part D of the Access Arrangement), Envestra will provide Services in accordance with certain service standards and quality levels.

Envestra supplies the Regulator with a number of performance indicators and data relating to:

- Planned customer interruptions;
- Unplanned interruptions to consumers' supply;
- Number of customer calls;
- Response time to leak calls;
- New connection response times; and
- Number and type of complaints and compliments made to Envestra.

In addition, the safety issues associated with the distribution of a gaseous and flammable hydrocarbon mean that maintenance practices and response times to maintenance issues must be of a high standard.

Envestra has obligations under various codes to:

- odorise gas to prescribed levels;
- maintain gas pressure within the Network above a set level;
- survey the Network regularly for gas leakage; and
- respond to reports of gas leakage within certain timeframes, and repair gas leaks within certain timeframes.

All of the above standards contribute to a safe and uninterrupted gas transportation service to consumers. As reported in section 2.3 of this Access Arrangement Information, the number of gas outages is low, as is the number of complaints from consumers.

As outlined above, the applicable service standards result in an inherent high level of reliability and high level of service. Envestra is aware that in some jurisdictions, notably in relation to electricity distribution, that sophisticated reporting systems have been implemented to record and report on detailed aspects of service delivery. Envestra is of the view that, given the current high levels of service, the introduction of more onerous reporting systems is not warranted.

Should Envestra be required, for example through licence requirements or other Regulatory Instruments, to implement systems to collect and monitor information for a more rigorous set of reliability indicators or to provide a higher level of service, it is expected that such costs will be 'passed through' in accordance with section 8 of Part B of the Access Arrangement.

11.5. Code Compliance

Clauses 3.1 and 3.2 of the Access Code set out the requirements that must be met by a Services Policy.

Those clauses provide:

- "3.1 *An Access Arrangement must include a policy on the Service or Services to be offered (a Services Policy).*
- 3.2 *The Services Policy must comply with the following principles:*
 - (a) *The Access Arrangement must include a description of one or more Services that the Service Provider will make available to Users or Prospective Users, including:*
 - (i) *one or more Services that are likely to be sought by a significant part of the market; and*
 - (ii) *any Service or Services which in the Relevant Regulator's opinion should be included in the Services Policy."*

For the reasons set out above in this section 12, the Services set out in Envestra's Services Policy meet the requirements of clause 3.2.

As determined in the *GasNet Australia (Operations) Pty Ltd* decision, the terms and conditions of an Access Arrangement are those developed by the Service Provider. The role for the Relevant Regulator is to determine whether those terms are reasonable. If the terms are reasonable they must be approved, irrespective of whether the Regulator may have preferred the terms to be designed in an alternative manner.

12. REFERENCE TARIFFS

12.1. Derivation of Haulage Reference Tariffs

A key concern of the QCA in the 2001 Final Decision was the need to put in place a set of tariff controls to ensure that cost reflective tariffs were achieved for the two tariff classes within the five-year regulatory period. For the First Access Arrangement Period, the QCA approved the following price paths:

Volume consumers: CPI + 0.45%

Demand consumers: CPI – 6.9%

To allow adjustments to relative prices within the Volume customer class, the QCA approved a side constraint for Volume consumers of CPI + 1.4% per annum or \$7 per annum, whichever was the greater. That is, individual Volume consumers could have tariffs varied by the maximum amount specified in the side constraint, but the average price increase to all consumers in the class must also comply with the price path for Volume consumers.

The price path and side constraints were followed in each annual tariff submission made to and approved by the QCA.

Tariffs charged for the first and last years of the First Access Arrangement Period, for various consumption levels for Volume consumers in Brisbane (and the increase over the period) are summarised in the table below.

	2001 / 02	2005 / 06	Increase		
			\$	\$/GJ	%
Minimum charge	53.92	64.70	\$10.78	N/A	20.0
5 GJ pa	105.08	123.80	\$18.72	\$3.74	17.8
11 GJ pa	166.47	194.70	\$28.23	\$2.57	17.0
15 GJ pa	207.40	241.98	\$34.58	\$2.30	16.7
100 GJ pa	1,077.10	1,240.63	163.53	\$1.63	15.2
1000 GJ pa	9,669.64	10,815.31	1,145.67	\$1.15	11.8
10000 GJ pa	80,093.27	86,036.68	5,943.41	\$0.59	7.4

Table 23 Volume Tariff Change over First Period

During this period, the CPI increased 11.2%, and the average increase allowed under the price path was 13.2%.

The side constraints for small Volume consumers implied a maximum increase of 17.4% or \$28 over the period, whichever is the greater. It can be seen from the table above that the limit applied at the 11 GJ pa consumption level, which increased by \$28.25 and 17.0% over the full period.

Table 23 above also shows that tariffs for consumers using less than 11 GJ p.a. increased by less than the maximum allowed increase of \$28, but at percentages greater than 17%. Indeed it is likely that tariffs for these very small customers may not be fully cost reflective.

However, Envestra contends that, on average, both volume and demand consumers are currently being charged

cost reflective tariffs. Envestra intends to continue to apply cost reflective tariffs to both these consumer classes during the next Access Arrangement Period. Envestra believes that these tariffs are set at economically efficient levels. That is, these tariffs are set so that they are between incremental and stand-alone costs for providing these services.

In preparing this revision, Envestra has been conscious of the need to continue to work towards achieving cost reflective pricing as required by the Authority at the last review. However, gas networks in Queensland pose significant challenges to distributors, mainly due to the absence of heating loads, which in southern states is a significant contributor to gas consumption. Envestra considers that, under the current conditions (essentially representing a continuation of those outlined above), it is not possible to transition customers using less than 11 GJ p.a. to higher tariffs.

It was clearly not possible in the current Access Arrangement Period. If the full \$7 per annum increase had been applied to the minimum charge, and the existing structure was not changed, consumers at other consumption levels would have received increases outside the permitted side constraint.

The capping of Queensland gas retail tariffs together with the competitive availability of alternative fuels and relatively low gas penetration in Queensland also limited Envestra's ability to transition these consumers to cost reflective tariffs. Envestra was also aware that there was very little margin (and at some low consumption levels negative margins) between the network tariff and the government approved retail tariff. This was reflected in the reluctance of the retailer to connect new consumers and Envestra did not wish to take action that would worsen this position. In addition, the ability of Envestra to spread cost increases between both tariffs and customers was limited by the small number of tariff classes and Envestra's low sales volumes in the Queensland market. Envestra discussed these issues at length with the QCA during the current regulatory period.

Rather than increasing tariffs for customers using less than 11 GJ p.a. to higher levels, Envestra proposes that small customers should be transitioned to an annual consumption level of 11 GJ or above. Envestra believes that the most effective means of achieving this outcome is through the promotion of a bundled service offering (such that the service offering represents annual consumption above 11 GJ). Envestra has developed a Network Development strategy to help achieve this outcome.

To the extent that Envestra is obliged to provide services to the less than 11 GJ annual consumption customers, Envestra will continue to do so, but acknowledges that these services are likely to be provided below their cost reflective level.

Tariff Structure

Envestra has elected to essentially maintain the same structure of Haulage Reference Service Tariffs as in the First Access Arrangement Period.

Therefore, the Volume Tariff for the Brisbane and Northern Regions will continue to be charged on the basis of a daily fixed charge and six volumetric bands with declining block tariffs.

The Demand Tariffs will continue to be based on the same regional structure and on a Maximum Daily Quantity (MDQ) basis, and will consist of a minimum charge plus five declining block tariffs. Envestra believes there is support from Users for continuation of the existing tariff structure.

The Reference Tariffs for Demand Haulage Services are established on a '\$/GJ of MDQ' declining block basis. This approach supports the concept of efficient pricing signals by providing the incentive for Network Users to

flatten load profiles, thereby promoting more cost-effective utilisation of the Network. Reference Tariffs for the Demand Haulage Service have also been designed to achieve simplicity in the Tariff design, using the minimum number of rate blocks, while maintaining sufficient resolution to manage bypass risk.

In order to promote an efficient use of the Network, where the MDQ is exceeded on more than four days in a month or eight times in a year, the MDQ will be adjusted upwards to the highest MDQ on any of those days. An hourly overrun applies when the Quantity of Gas delivered to a Demand Delivery Point in one hour exceeds more than one-twelfth of the MDQ. Again, where this Quantity of Gas is exceeded four times in a month or eight times in a year the MDQ will automatically be adjusted upwards.

The current Access Arrangement has provisions for misclassification charges. As there has been no need to levy such charges to-date, Envestra has decided to abolish this charge for the Second Access Arrangement Period.

Tariff Basket Approach

Envestra proposes to adopt a Tariff Basket approach for setting tariffs in the Second Access Arrangement Period.

With a tariff basket, the revenue is derived from the approved tariffs (and components of tariffs) escalated by the CPI-X mechanism, multiplied by the actual volume for that year (by tariff component). The tariff basket approach differs from the price path approach in that the limit on allowed price increases is expressed in terms of a weighted average of the prices of a basket of services, rather than prices. The regulated company faces a cap on this weighted average price.

Under a tariff basket, the limit on allowed price increases is expressed in terms of a ratio of 'notional revenues', taking into account all of the components of a service providers tariffs:

- The first notional revenue is the revenue implied by the quantities of each tariff component sold in the previous year and the service provider's current tariffs. This becomes the denominator in the price control formula;
- The second notional revenue is the revenue that would result if the same Quantity was sold at the Service Provider's proposed (new) prices. This becomes the numerator in the price control formula.

The cap is $(1+CPI) \times (1-X)$

Where:

- CPI is as defined in the Access Arrangement; and
- X is the 'X' factor.

With this approach, the Service Provider is free to rebalance tariffs or components of tariffs within the basket, provided that the ceiling on the overall weighted average price is not breached. Envestra also proposes that a side constraint of CPI + 5% be applied to ensure that any restructuring of tariffs does not result in excessive increases in tariffs to individual customers classes.

The method of calculating the starting tariffs is the same as for the price path approach, in that Envestra:

- establishes the total required revenue over the five year upcoming Access Arrangement period by a cost of service approach;
- agrees demand forecasts with the Regulator; and

- determines a stream of revenue by taking into account forecast starting tariffs, an applicable X factor and volume forecasts, which is equal to the present value of the total required revenue.

However, unlike the price path approach, each year of the Access Arrangement period, tariffs (or components of tariffs) can be escalated or 'rebalanced' by more or less than CPI-X, on the basis of variations in demand or customer numbers provided that the average tariff increase is not more than CPI-X. The advantage of a tariff basket is that Envestra is able to take a more active role in managing its tariffs than it can with a price path/price cap. This will assist to maintain tariffs for different classes of customers at cost reflective levels. The tariff basket model also provides for the introduction of new tariffs, or changes in tariff structure, within an Access Arrangement period if required. This will assist in addressing some of the inflexibilities encountered in the First Access Arrangement Period (see above).

In summary, Envestra has adopted a CPI-X approach to determining Haulage Reference Tariffs, adopting a tariff basket price-cap approach to Reference Tariff variation on the grounds of economic efficiency and compliance with the Code.

Section 8 of the Code sets out the principles to be followed in Tariff variation and section 8.3 provides that as long as a variation policy is consistent with the objectives contained in section 8.1, then this falls within 'the discretion of the service provider'. Envestra believes that a tariff basket approach is consistent with section 8.1 and notes that such an approach has been accepted by Regulators and applied in other jurisdictions including Victoria and Western Australia.

12.2. Haulage Reference Tariffs

The X factor in the $(1+CPI)^*(1-X)$ price path that results from implementing the above approach is "-0.02" for each year of the Access Arrangement Period.

13. REFERENCE TARIFF POLICY

13.1. General

Part B of the Access Arrangement contains the Reference Tariff Policy and includes details of how Reference Tariffs are amended from year to year and procedures for withdrawing or introducing new Tariffs. The Reference Tariff Policy generally reflects provisions from the First Access Arrangement Period.

The structure of tariffs for the Haulage Reference services is the same as that applying in the First Access Arrangement Period, i.e. fixed and variable charges, with decreasing tariff bands. The relative prices of the bands are unchanged, thus reflecting the basis on which costs were originally allocated. A tariff basket approach to price control has been adopted.

The above provides for continuity of existing practice, with which Users are familiar, and therefore a smooth transition to the Second Access Arrangement Period.

13.2. Proposed Fixed Principles

Envestra has proposed a number of fixed principles which will apply in the Second and subsequent Access Arrangement Periods. These are:

- Incentive based regulation – use of a CPI-X methodology. It is important that this be a fixed principle because:
 - The National Gas Code will be amended in line with the outcomes of the formation of the national regulatory regime;
 - There is a possibility that a commitment to incentive based regulation will not be a feature of this new regime, even though Regulators currently (generally) support the concept of incentive based regulation; and
 - Envestra believes that a fixed principle would provide the necessary certainty for itself and network users in relation to the commitment to incentive based regulation in the face of uncertainty.

- Form of regulation, being a weighted average price cap approach. It is important that this be a fixed principle because:
 - Envestra understands that a Rule in relation to the form of regulation will be made by the Australian Energy Market Commission;
 - There is currently no certainty in relation to what that Rule will contain, and it is likely to be the outcome of a debate over the appropriate form of regulation for both electricity and gas across Australia; and
 - Envestra believes that a fixed principle would provide the necessary certainty for itself and network users in relation to retaining the proposed form of regulation for the third access arrangement period in the face of such uncertainty.

- Roll forward of the capital base. It is important that this be a fixed principle because:
 - Methods of rolling forward the asset base differ across Regulators, jurisdictions and industries;
 - There is no certainty in relation to how the AEMC will set rules for the roll-forward of asset values in 2006; and

- o Envestra believes that a fixed principle would provide the necessary certainty for itself and network users in relation to retaining the roll-forward of the asset base for the third access arrangement period.

13.3. Efficiency Sharing Mechanism – Second Access Arrangement Period

Envestra's incentive mechanism must comply with section 8.44 of the Code, which states:

The Reference Tariff Policy should, where the Relevant Regulator considers appropriate, contain a mechanism that permits the Service Provider to retain all, or any share of, any returns to the Service Provider from the sale of the Reference Service:

- (a) *during an Access Arrangement Period, that exceed the level of returns expected for that Access Arrangement Period; or*
- (b) *during a period (commencing at the start of an Access Arrangement and including two or more Access Arrangement Periods) approved by the Relevant Regulator, that exceed the level of returns expected for that period,*

particularly where the Relevant Regulator is of the view that the additional returns are attributable (at least in part), to the efforts of the Service Provider. Such additional returns may result, amongst other things, from lower Non Capital Costs or greater sales of Services than forecast.

The Code also provides (section 8.46) a number of objectives which the Incentive Mechanism should achieve. It is noted, however, that the Code is not prescriptive in how the objectives should be achieved. It is also noted that, once the Relevant Regulator has considered it appropriate for the Access Arrangement to contain an Incentive Mechanism, it is not up to the Regulator to determine a mechanism that it deems compliant with the Code, but to assess whether the Service Provider's mechanism meets the objectives set out in the Code.

Envestra is cognisant of incentive mechanisms adopted by regulators in Victorian and Western Australia, and by the Commission in South Australia in relation to electricity, whereby service providers are provided with incentives to outperform benchmarks, no matter in which year of the regulatory period the incentive is achieved. This "rolling carryover" aspect is supported by Envestra, as it is important that the incentive for efficiency gains is not diminished towards the end of a regulatory period. However, those mechanisms also restrict the sharing of efficiency gains such that the Service Provider only receives an estimated 30% of the benefits of any gains, while consumers receive 70% of the benefits (on a net present value basis). This is as a result of restricting the term over which benefits are retained by the Service Provider, to only 5 years.

Envestra believes that such an incentive is insufficient in that it does not comply with section 8.46 of the Code, which requires that an Incentive Mechanism should be designed with a view to providing an incentive to the Service Provider to increase sales and minimise costs. Envestra believes that a mechanism that provides a 50:50 sharing of gains achieves the objectives of the Code. This is achieved by the Service Provider's retention of efficiency gains for a period of 10 years (consistent with section 8.44(b) of the Code) rather than 5 years.

In addition to the aspects described above, Envestra proposes an Incentive Mechanism that is based on following properties:

- (a) No retrospective claw back - Total Revenue requirement for any future Access Arrangement Period will not be adjusted to recover the amount of any gains or provide compensation for any losses achieved by Envestra as a result of any differences between actual and forecast amounts for New Facilities Investment, Non-Capital Cost of Gas Delivery in the Access Arrangement Period.

- (b) efficiency gains to be accrued where:
 - i. reduction in Non-Capital Cost is achieved;
 - ii. capex savings are made relative to regulator approved benchmarks - to be measured based on annual changes in expenditure relevant to the benchmark multiplied by the real pre-tax WACC;
- (c) No carryover of negative gains from one Access Arrangement period to the next. (The Code does not allow for carryover of negative gains (section 8.44)).
- (d) Recognition of one-off efficiency gains - Code incentive mechanism relates to efficiency gains only (not losses). This implies that the evaluation of gains/losses should be asymmetrical. It has been previously pointed out that if gains/losses are not treated symmetrically, there is an incentive for the business to defer expenditure from one year to the next in a 2-year pattern. Envestra acknowledges this but notes that if one-off efficiency gains are realised, the service provided should benefit. Envestra proposes that where there is a negative efficiency gain within an Access Arrangement Period, Envestra is able to put a case to the OCA at the next price review that demonstrates why the overspend was justified and why it should be excluded from the efficiency calculations.
- (e) Envestra will have an opportunity at the next review to propose a case to the regulator demonstrating why it might be necessary for the Regulator to adjust actual costs/sales to account for changes in external drivers when calculating efficiency gains, e.g. changes in demand forecasts (connections), changes in business scope, etc.
- (f) Non-Capital Costs and New Facilities Investment in the last year of the access arrangement will be assumed to be equal to Non-Capital Costs and New Facilities Investment in the penultimate year of the access arrangement.

Envestra believes that:

- (a) the proposed incentive mechanism is consistent with the Code and provides the required incentive for the Service Provider to maximise efficiency to the highest extent possible, thereby providing maximum benefits to Users in the long term; and
- (b) it is incumbent upon the Regulator to ensure that, in addition to meeting the requirements of the Code generally, that the incentive mechanism facilitates a result that is in the long term interest of Users and consumers.

14. QUEUING POLICY

Envestra has not included a Queuing Policy in its Access Arrangement revisions. This is because such a policy is of no value in the context of a distribution network. The Code established a need for a Queuing Policy because the Code was originally drafted in the context of transmission pipelines, where queuing for pipeline capacity can occur.

In a distribution network, however, capacity is a nebulous concept because, unlike in a transmission pipeline, capacity varies considerably depending on the precise location of the Delivery Point and the time of day. Queuing is also only of relevance where expansion or extension of the pipeline represents such a material outlay and change to the asset, that Users must form a queue to either wait for existing capacity to become available, or wait for sufficient capacity to be developed to service those Users at the top of a queue. Such concepts bear little relationship to a distribution network, where extensions of a gas main to service new customers is a trivial matter relative to the asset base. Such extensions occur on a daily basis, meaning that Users/customers receive the service they require without the need to form a queue.

In essence, for a queue to be formed as envisaged under the Code, Envestra would need to be prepared to establish a queue for virtually every node in its Network. In theory, thousands of queues would be able to be established throughout the Network, each with one User on the queue every time a request for connection was made. Such a non-sensical outcome would serve no useful purpose. This was recognized in the early days of Code implementation, and consequently the Code was amended in February 2003 to remove the requirement for a Queuing Policy in relation to networks.

It is noted that the Queuing Policy has not been used in any of Envestra's Access Arrangements.

For the reasons mentioned above, and consistent with the removal of this Policy from Envestra's South Australian Access Arrangement, Envestra has also deleted it from its Queensland Access Arrangement.

15. TERMS AND CONDITIONS

15.1. Overview of Terms and Conditions

The terms and conditions (T&C) applicable to the provision of Reference Services are dealt with in Parts C and D of the Access Arrangement.

Envestra has taken into consideration a number of requests from Users in recent times and amended the terms and conditions accordingly. Those refinements to the terms and conditions are reflected in the T&C that are proposed for the Second Access Arrangement Period.

As expected, the terms and conditions applying to the First Access Arrangement Period have been updated to account for changes that have occurred since those terms and conditions were first developed.

The terms and conditions applicable to the provision of Reference Services are dealt with in section 6 and Annexure G of the Access Arrangement. In summary:

- pursuant to section 6 of the Access Arrangement, it is a condition that a Prospective Network User enter into an Agreement with Envestra for the provision of any Network Service. The term 'Agreement' is defined in the Access Arrangement and means the entering into of a binding contractual arrangement between Envestra and a Network User. Prior to entering into an Agreement, a Prospective Network User must satisfy Envestra that it:
 - has the necessary financial capacity to meet its obligations to Envestra; and
 - has adequate arrangements in place to ensure it can keep Gas deliveries into and out of the Network in balance.
- Annexure F allows for the details pertaining to the specific circumstances of the parties entering into the agreement;
- Annexure G sets out the terms and conditions that are to apply, as a minimum, to the provision of each Reference Service. Part C describes terms and conditions which are applicable to both Haulage and Ancillary Reference Services (Part IV of the terms and conditions), as well as those terms and conditions which apply specifically to each type of Reference Service (Part II – Haulage Reference Services; and Part III – Ancillary Reference Services).

The terms and conditions are structured so that:

- [clauses 2 to 16 (Part II) apply only to the Haulage Reference Services. These clauses address matters including:]
 - procedures for classifying Delivery Points;
 - meter accuracy and reading;
 - minimum Gas quality and delivery pressures;
 - possession of Gas and responsibility;
 - warranties and title to Gas; and
 - supply curtailment;
- clauses 17 and 18 (Part III) apply only to the Ancillary Reference Services. These clauses describe the extent of the Services to be provided and the procedures to be followed when requesting a Service;

- clauses 19 to 39 (Part IV) apply both to Haulage Reference Services and Ancillary Reference Services. These clauses address matters including:
 - invoices and payment arrangements;
 - procedures for determining delivered quantities;
 - termination;
 - liability and indemnities;
 - relationship to the *Trade Practices Act 1974*;
 - Force Majeure;
 - assistance;
 - access to premises;
 - confidentiality;
 - notices;
 - assignment by the Network User;
 - amendment of the Agreement; and
 - other miscellaneous provisions.

The obligations, duties and responsibilities of Envestra and any Network User described in the T&C are in addition to those established in law or by any relevant regulatory documents.

Where the terms and conditions described in Annexure G are amended, the default position is that the terms and conditions applying to an existing Agreement will also change accordingly.

However, a Network User and Envestra may agree that all or some of the terms and conditions applicable to their Agreement will not change during the Term of an Agreement, regardless of any amendments to Annexure G. Both parties are therefore free to agree to arrangements that reflect their preferred risk profile at a point in time.

The terms and conditions applying to provision of the Haulage Reference Services and the Ancillary Reference Services are consistent with good industry practice and are 'reasonable' in that they:

- are sufficiently well defined, so that the likelihood of a dispute over the terms and conditions of access is minimised; and
- are designed to protect the legitimate business interests of Envestra, as well as Network Users and Prospective Network Users.

15.2. Code Compliance

Clause 3.6 of the Code provides:

"An Access Arrangement must include the terms and conditions on which the Service Provider will supply each Reference Service. The terms and conditions included must, in the Relevant Regulator's opinion, be reasonable."

As determined in the *GasNet Australia (Operations) Pty Ltd* decision, the terms and conditions of an Access Arrangement are those developed by the Service Provider. The role for the Relevant Regulator is to determine whether those terms are reasonable. If the terms are reasonable they must be approved, irrespective of whether the Regulator may have preferred the terms to be designed in an alternative manner.

The T&C applying to provision of the Haulage Reference Services and the Ancillary Reference Services are consistent with good industry practice and are 'reasonable' in that they:

- are essentially the same as those currently applying to Users (which terms have previously been approved as reasonable);
- are sufficiently well defined, so that the likelihood of a dispute over the terms and conditions of access is minimised; and
- are designed to protect and balance the legitimate business interests of Envestra, as well as Users and Prospective Users.

Envestra believes that the proposed T&C meet the criteria of reasonableness and that they therefore should be approved.

16. SYSTEM DESCRIPTION & CAPACITY

The Network has been constructed over a period of more than 100 years and consequently consists of a variety of pipe materials. Up until the 1970s, cast iron was predominantly used for gas mains, with unprotected steel also being used for a period of time. Subsequent to this, polyethylene has been used as the predominant pipe material, with polyethylene pipes up to 100mm diameter being commonly used. With recent advances in polyethylene, it is now also being used in sizes above 100mm diameter and in higher pressure applications.

The type of pipe material dictates the maximum operating pressure of the constituent parts of the Network. Since cast iron can only be operated at relatively low pressures compared to polyethylene, the continual replacement of cast iron pipe with polyethylene pipe means that the capacity of the Network is improving with time in many areas. However, the increase in capacity in those areas which are upgraded is also dependent upon the capacity of pipework upstream (in the main trunk system).

System capacity and operating conditions are monitored via a telemetry system, which records pressures at various locations in the Network and relays information back to a control centre. This information is used in reviewing the capacity of the trunk system to ensure that the system is able to meet forecast requirements.

The table below describes the composition of the Network by Region with respect to length of mains. As indicated below, the assets used to service the Brisbane Region constitutes the major part of the Network.

Region	Kilometres	%
Brisbane Region	1909	89
Northern Region	263	12
Total	2,172	100

Table 24 Summary of Network Composition by Region as at 30 June 2005

The following table sets out the Network length by pressure tier.

	Length (km)				
	Low Pressure	Medium Pressure	High Pressure	Transmission Pressure	Total
Total	532	1473	165	3	2,172

Table 25 Summary of Network Composition by Pressure Tier (km) at 30 June 2005

The capacity of the Network is analysed on an annual basis through computerised network analysis programmes. Pressures and flows are simulated in order to ensure that all sections of the Network are able to provide adequate pressures and flows for consumer needs. Where modelling or field data (e.g. telemetry or pressure recorders) indicate that potential capacity or pressure problems exist, mains reinforcement projects or other required actions are instigated to address the issue.

The capacity of the Network is continually being increased through the replacement of low pressure cast iron mains with high pressure polyethylene mains. In addition, the ability of the Network to maintain supply in instances of failure is being enhanced through security of supply projects (see section 7.2).

17. FORECASTS OF DEMAND

17.1. Envestra Approach

The forecasting of gas demand from a network perspective is a specialised field, with a number of drivers coming into play. As experts in the field of forecasting, Envestra requested NIEIR (National Institute of Economic and Industry Research) to provide details concerning demand drivers that would underpin the gas demand forecasts.

Consequently, NIEIR provided information relating to:

- (a) the medium term outlook for the Australian economy, which included an examination of consumption, personal income, interest rates, consumer debt, Gross Domestic Product, dwelling investment, etc;
- (b) the outlook for the Queensland economy, which included an examination of Gross State Product, population, employment, dwelling investment, etc; and
- (c) the economic outlook for the regions served by the Network, which examined population growth, dwelling stock growth and gross product growth by region.

In addition to the NIEIR work, Envestra undertook some work in analysing trends in gas consumption in the domestic sector (see "Average Residential Gas Consumption in Qld", contained as part of Attachment 5). Due to the extensive work Envestra undertakes in the marketing and penetration of gas, Envestra (and the gas industry generally) has been aware of a trend in declining average domestic gas consumption. This trend is due to a number of factors, but predominantly due to the increasing penetration of reverse cycle air conditioning, higher efficiency gas appliances and the climatic warming trend. This trend is also now being exacerbated by the increasing penetration of solar hot water appliances.

Using all of the above information, Envestra compiled a gas demand forecast by Region and market segment for the period 2005/6 to 2010/11. The final forecasts are set out in the following tables, except in relation to the forecasts for 2005/06, these being reflected in the tables in section 2.2 (Outcome of the First Access Arrangement Period) of this document.

It should be noted that tariffs for Demand DPs are based on MDQ. Hence the gas demand/throughput for this sector is of little relevance from a billing perspective. Due to the relatively small number of Demand DPs, the MDQ forecast for this sector has been developed at an individual DP level.

The forecasts assume that Network Development activities will take place in accordance with the Non-Capital Cost forecasts outlined in section 10 of this document. Accordingly, the gas demand forecasts allow for assumed outcomes (increased customer numbers and gas throughput) resulting from the proposed Network Development activities.

The following tables summarise the gas demand forecast derived as explained above¹⁸.

¹⁸ the term 'Users' in the tables refers to customers.

Forecasts of Demand - Total Tariff V	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
<i>Consumption by Region (TJ)</i>						
Brisbane	1,762	1,828	1,878	1,957	2,046	2,144
Northern	191	195	198	201	205	209
TOTAL - TJ	1,953	2,023	2,076	2,158	2,251	2,353
<i>Number of Users by Region</i>						
Brisbane	72,262	74,214	76,489	78,903	81,557	84,478
Northern	3,315	3,349	3,380	3,410	3,441	3,476
TOTAL - USERS	75,577	77,562	79,869	82,313	84,998	87,954

Table 26 Gas Demand Forecast for Volume Market

TARIFF D DEMAND FORECASTS	30 June 2005	2006/07	2007/08	2008/09	2009/10	2010/11
<i>Maximum Daily Quantity (TJ)</i>						
Brisbane	16	17	17	17	17	17
Northern	0.2	0.2	0.2	0.2	0.2	0.2
TOTAL MDQ - TJ	17	18	18	18	18	18
<i>Number of Users by Region</i>						
Brisbane	57	58	58	58	58	58
Northern	4	4	4	4	4	4
TOTAL - USERS	61	62	62	62	62	62

Table 27 Gas Demand Forecast for Demand Market

17.2. Code Compliance

Forecasts have been prepared in accordance with the Code, which requires that they represent "best estimates arrived at on a reasonable basis". The methodology used to generate the demand forecast:

- has been applied in an unbiased manner (i.e. due weight was given to all the relevant factors);
- is appropriate to the situation and the nature of the gas market;
- recognises and reflects key drivers of demand;
- is based on reasonable assumptions using the best available information;
- has been assessed against existing forecasts and methodologies;
- has used the most recent data available and historic data that can identify trends in growth; and
- has taken account of current demand and economic conditions and reasonable prospects for future market development.

The forecasts represent "best estimates arrived at on a reasonable basis".

Clause 8.2(e) of the Access Code provides:

"The factors about which the Relevant Regulator must be satisfied in determining to approve a Reference Tariff and Reference Tariff Policy are that... (e) any forecasts required in setting the Reference Tariff represent best estimates arrived at on a reasonable basis."

Consistent with the *GasNet Australia (Operations) Pty Ltd* decision, the determination which the Regulator must make is whether the forecasts made by Envestra are arrived at on a reasonable basis and are best estimates. If the forecasts meet this requirement, the Regulator must accept them and may not substitute its own forecasts. For the reasons set out above, Envestra's forecasts meet the requirements of clause 8.2(e).

ASSET MANAGEMENT PLAN

ATTACHMENT 1

[supplied as a separate confidential document]

WORLEYPARSONS REPORT

ATTACHMENT 2

[supplied as a separate document]

IBM REPORT

[supplied as a separate confidential document]

WACC REPORT

ATTACHMENT 4

[supplied as a separate document]

NETWORK DEVELOPMENT REPORT

ATTACHMENT 5

[supplied as a separate confidential document]

DEMAND FORECAST REPORT

ATTACHMENT 6

[supplied as a separate document]

REPORT on VALUE OF GAMMA

ATTACHMENT 7

[supplied as a separate document]