Amended Access Arrangement Information

for Envestra's Queensland Network

5 June 2006

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1. INTRODUCTION

1.1. Purpose of this Document

This document is an amended version of the Access Arrangement Information document that was submitted to the Queensland Competition Authority (the 'Authority') on 29 September 2005.

On 22 May 2006, the Authority published its Final Decision in relation to Envestra's proposed revisions to its Access Arrangement. This document complements the Final Decision in order to assist Users and Prospective Users understand the derivation of the elements of the Access Arrangement and to form an opinion as to the compliance of the revised Access Arrangement with the provisions of the Code. Where there is any discrepancy between the information in this document and the Final Decision, the Final Decision shall take prevail.

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 document.

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 document have the same meaning as they have in the Access Arrangement (see clause 2 of the Access Arrangement).

In this document, 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

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2. SUMMARY AND OVERVIEW

2.1. Introduction

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.

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. 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.

2.2. Outcome of First Access Arrangement Period

The Authority's forecast 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 Forecast 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)%
Variance from target revenue $m (31 Dec 2004)	n/a	(0.7)	(0.8)	(0.9)	(0.8)	(3.2)

Table 1 Actual versus Authority 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 Authority 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 Authority. Thus Envestra will under-recover the cost reflective revenue proposed by the Authority 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 Authority[1] did not materialise. Envestra had submitted that this was likely to be the case at the time, but the Authority 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
Authority 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 Authority 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 Authority. The table below compares the number of customers actually connected to the Network with the forecasts accepted 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
Authority 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 Authority 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.

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

Notwithstanding the revenue shortfall, Envestra's actual expenditure on Non-Capital Costs is expected to exceed the Authority 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
Authority 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 Authority 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 Authority.

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
Authority 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 Authority forecast). Also, a significant portion of Envestra's New Facilities Investment approved by the Authority 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.

2.3. 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 submitted 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.

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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.

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.

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:

$$TR = (AV*WACC) + D + NC – INF - OI$$

where

AV = average Capital Base value
WACC = nominal weighted average cost of capital
D = depreciation
NC = Non-Capital costs (including tax and UAG)
INF= inflationary gain
OI = other income (e.g., ancillary services income)

The Total Revenue Requirement is calculated using:

- a Capital Base of $228.4m 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 basis[2] (section 6)
  - inflation (Section 5.6)
- a nominal post-tax rate of return of 8.80% (section 8.1)

[2] see section 6.2 for discussion on the treatment of deferred depreciation.

- Non-Capital Costs (section 9)

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

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:

$AB_t = AB_{t-1}$ + Inflation on opening asset base + Net capital expenditure - Depreciation – Redundancies – Disposals

Where:

All values are expressed in nominal terms

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 Authority 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 as submitted by Envestra is set out in the table below. Actual expenditure is provided for 2001/02 to 2004/05. New Facilities Investment for 2005/06 was set at the latest forecast prepared by Envestra. Also shown is the value of customer contributions, with the forecast for 2005/06 being based on Envestra's latest information.

The net New Facilities Investment was 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

The Authority undertook a review of New Facilities Investment over the First Access Arrangement Period, and subsequently approved the New Facilities Investment as set out below and in Table 11.4 (p69) of the Final Decision.

	2001-02	2002-03	2003-04	2004-05	2005-06

Total Stay-in-Business	3.81	4.20	5.33	6.20	7.28
Total Growth	4.65	3.68	3.85	3.42	7.01
Total	8.46	7.88	9.17	9.62	14.29

Table 7. Summary of Accepted New Facilities Investment over First Access Arrangement Period.

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, subject to the relevant provision of the Code.

Envestra submitted that all of the New Facilities Investment undertaken or proposed to be undertaken during the First Access Arrangement Period met 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, subject to relevant provisions of the Code.

Where New Facilities Investment was yet to be undertaken (i.e. in 2005/06), Envestra used best estimates arrived at on a reasonable basis.

A breakdown of the New Facilities Investment in the First Access Arrangement Period approved by the Authority is set out below and in Table 11.3 (p68) of the Final Decision.

	2001-02	*2002-03*	*2003-04*	*2004-05*	*2005-06*
Stay In Business					
Telemetry and regulators	0.03	0.05	0.00	0.08	0.61
Periodic meter changes	0.41	0.71	0.61	0.39	0.62
Mains Renewal	3.37	3.12	4.53	5.59	5.51
IT Systems	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.31	0.19	0.14	0.53
Total Stay-in-Business	**3.81**	**4.20**	**5.33**	**6.20**	**7.28**
Growth					
Large Consumers	0.00	0.00	0.00	0.01	0.10
Improve Supply	0.00	0.00	0.00	0.00	0.17
General Mains	2.06	1.00	1.08	0.89	1.45
Regulators	0.02	0.02	0.03	0.00	0.05
Meters	0.96	0.82	0.93	0.77	0.87
Services	1.58	1.73	1.81	1.74	1.90
Major Projects	0.00	0.00	0.00	0.00	2.56
Other	0.04	0.11	0.00	0.00	0.00
Total Growth	**4.65**	**3.68**	**3.85**	**3.42**	**7.01**
Total	**8.46**	**7.88**	**9.17**	**9.62**	**14.29**

Table 8. Detail of Accepted New Facilities Investment over the First Access Arrangement Period.

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 the Authority in 2001, but adjusted for actual inflation, and is as shown in Table 9 in section 5.7.

5.4. Redundant Capital

As discussed in section 11.2 (p65) of the Final Decision, Envestra has estimated the amount of assets that cease to contribute to the delivery of reference services, this being approximately $5,000 per year. Based on this estimate, the Authority has determined (p72 of the Final Decision) that these assets will be removed from the capital base and an equivalent amount included in the revenue requirement calculation over the next regulatory period, as compensation for the loss of depreciation.

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 3.3.3.3 of the Access Arrangement approved by the Authority in 2001. 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".

5.7. Opening Asset Values as at 1 July 2006

The Initial Capital Base has been rolled forward to I July 2006 as shown below and in Table 11.6 (p73) of the Final Decision, resulting in a closing asset base at 30 June 2006 of $228.4m.

	2001-02	***2002-03***	***2003-04***	***2004-05***	***2005-06***
Opening assets	180.2	189.1	197.0	205.5	214.4
Less depreciation	4.8	5.2	5.6	6.0	6.4
Plus inflation	5.2	5.2	5.0	5.2	6.1
Plus capital expenditure	8.5	7.9	9.2	9.6	14.3
Closing assets	**189.1**	**197.0**	**205.5**	**214.4**	**228.4**

Table 9. Roll-forward of Asset Base – First Access Arrangement Period

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 are as approved by the Authority 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

Forecast depreciation over the Second Access Arrangement Period as set out below and in Table 11.12 (p90) of the Final Decision.

	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***
Forecast Depreciation	4.9	5.5	6.3	7.1	7.6

Table 11. Forecast Depreciation – Second Access Arrangement Period

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 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.

The New Facilities Investment forecast for the Second Access Arrangement Period has been determined by the Authority as set out below and in Table 11.10 (p85) of the Final Decision. Further detail on the categories is provided in sections 7.2 and 7.3.

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Stay in Business					
Mains/inlets	**5.09**	**5.23**	**5.37**	**5.52**	**5.67**
Periodic meter changes	**0.73**	**0.76**	**0.79**	**0.83**	**0.85**
IT Systems	**0.00**	**0.00**	**5.70**	**0.00**	**0.11**
Telemetry and regulators	**0.42**	**0.44**	**0.46**	**0.47**	**0.50**
Other	**0.49**	**0.52**	**0.39**	**0.46**	**0.42**
Total Stay in Business	6.73	6.95	12.71	7.28	7.55
Growth					
Mains/inlets/meters	**4.93**	**4.93**	**4.49**	**5.03**	**5.26**
Network Development	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
IT Projects	**0.53**	**0.10**	**0.00**	**0.00**	**0.00**
Major Projects	**1.28**	**1.32**	**1.36**	**1.39**	**1.43**
Total Growth	6.74	6.35	5.85	6.42	6.69
Total	13.47	13.30	18.56	13.70	14.24
ECG Total	13.47	13.30	18.56	13.70	14.24
Envestra Total	18.05	17.89	25.39	19.38	21.74

Table 12. Forecast New Facilities Investment – Second Access Arrangement Period

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 the Queensland government has mandated a requirement for the extension of retail contestability to all customers. 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. The Access Arrangement therefore contains no costs related to the extension of retail contestability in Queensland[3]. Such costs will be recouped either through an application of an impost pass-through, once the specific requirements for contestability become known.

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.

Envestra proposed to replace 70km of mains per year through block replacement. The prudency of the proposed level of replacement was 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;

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[3] While the billing and asset management systems will take into account likely requirements for FRC, no specific costs have been forecast for the implementation of FRC.

(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.

The Authority has approved capital expenditure equating to a mains replacement programme of 50km per year.

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.

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;

SCADA

This category comprises telemetry systems (Supervisory Control and Data Acquisition) that provide data on pressures and flows throughout the network. The data is a critical input to design calculations so that the ability of the network to supply adequate gas is maintained long term.

Information Technology Systems

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)" Authority. 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 and billing system. This works management 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.

Other

These costs allow for the operation of odorising systems, e.g. replacement of valves and pumps at odorising stations, cathodic protection systems, and for the purchase of routine and specialised equipment (gas detectors, stopple equipment, etc).

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.

Information Technology

The IT forecasts in this section allow for two projects:

- asset management optimisation – required to optimise the utilisation of assets; and
- data mart – required to provide a single repository from which information can be extracted.

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.

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. WorleyParsons conducted a benchmarking study that examined the expenditure of the business relative to other natural gas distribution businesses. 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.

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 has based its calculated WACC on the Authority's preferred nominal post-tax basis using the following formula:

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

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 can be found in Attachment 4 to Envestra's Access Arrangement submission of 29 September 2005.

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 13 WACC Parameters

The analysis indicates a range for nominal post-tax WACC for the Network of between 8.75% and 10.31%. Envestra proposed 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.

As set out in section 12 of its Final Decision, the Authority has approved a rate of return of 8.80% (nominal post-tax), although different parameters were used.

9. NON-CAPITAL COSTS

9.1. Summary of Non-Capital Costs

The non-capital costs approved by the Authority for the Second Access Arrangement Period (excluding UAFG and tax) are shown below and in Table 13.3 (p125) of the Final Decision.

	2005-06	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Operating and Maintenance		10.14	10.21	10.02	10.37	10.44
Administration and General		2.04	2.15	2.57	2.65	2.72
Network Development		0.93	0.94	0.96	0.98	0.99
Material changes		2.81	2.73	2.99	2.92	3.11
Total	**12.22**	**15.92**	**16.03**	**16.54**	**16.92**	**17.26**
ECG Total		**15.63**	**15.73**	**16.33**	**16.68**	**17.11**
Envestra Total		**17.74**	**18.06**	**18.86**	**19.38**	**19.88**

Table 14. Forecast Non-Capital Expenditure

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;
- Leak repairs
- Meter reading and billing;
- Network planning;
- 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
- Self-Insurance

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 relate 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.

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 prepared a Market Development plan to increase gas load and penetration. In summary, the plan 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.

It is noted that 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. Material Changes

Envestra identified a number of areas where costs identified for the Second Access Arrangement Period would be materially higher than incurred in those areas during the First Access Arrangement Period. These costs related to the following areas:

(1) Information Technology New Projects – 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.

(2) New regulatory and operating requirements, and increased service expectations and requirements – 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.

(3) Environmental Management - 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 – increased costs were forecast in relation to terrorist management systems, mapping locations of services and in a number of other areas.

(5) Miscellaneous costs – 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 were forecast to be incurred in several areas of the business:

- in contractor charge rates (after many years of below CPI charge rate increases); and
- in the Superannuation Guarantee Levy.

(6) Ageing Workforce – increased cost pressures were forecast due to the need to counter the effects of an aging workforce and recruit staff in a manner that did not expose the business to a crucial loss of skills.

Following advice from its consultants, the Authority considered the forecast cost increases due to material changes (see pages 122-124 of the Final Decision) and incorporated amounts of Non-Capital Costs for those areas it considered met the requirements of the Code.

9.6. Unaccounted For Gas Costs

The level of UAFG in the Network is impacted by leakage arising from aging cast iron and unprotected steel mains. 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 will decrease. 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 approved mains replacement of 50 km/yr, UAFG levels and cost will decrease. The resultant cost as approved by the Authority is set out below and in Table 13.5 (p128) of the Final Decision.

	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***
UAG	1.34	1.29	1.24	1.19	1.13

Table 15. Forecast 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.

9.7. Cost of Tax

Envestra 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 Post Tax Revenue Requirement excluding the Cost of Tax is determined in nominal terms as the sum of Return on Assets, Depreciation 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 credits[4] 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 Authority has set the value of gamma to 0.5.

The cost of tax as approved by the Authority is set out below and in Table 13.7 (p131) of the Final Decision.

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Forecast Tax	1.9	2.2	2.4	2.6	2.9
Forecast Regulatory Tax	0.9	1.1	1.2	1.3	1.4

Table 16. Forecast Tax

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, an estimate of $11/customer has been used.

[4] The adjustment to Tax Expense is: Tax Expense ÷ (1-Tax Rate*(1-Gamma))

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 below and in Table 11.13 (p91) of the Final Decision (which uses an assumed inflation rate of 2.77%).

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Opening assets	228.4	243.4	258.2	277.9	292.4
Less depreciation	4.9	5.5	6.3	7.1	7.6
Plus inflation	6.5	6.9	7.4	7.9	8.3
Plus capital expenditure	13.5	13.3	18.6	13.7	14.2
Closing assets	**243.4**	**258.2**	**277.9**	**292.4**	**307.3**

Table 17. Roll Forward of the Asset Base – Second Access Arrangement Period.

The resultant revenue requirement for each year of the Second Access Arrangement Period is shown below and in Table 15.2 (p144) of the Final Decision.

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Return on capital	20.7	22.0	23.5	25.1	26.4
Return of capital (depreciation)	4.9	5.5	6.3	7.1	7.6
Non-capital costs	16.1	16.2	16.8	17.2	17.5
Unaccounted for gas	1.3	1.3	1.2	1.2	1.1
Tax (net of franking credits)	0.9	1.1	1.2	1.3	1.4
Disposals (2001-2006)	0.01	0.01	0.01	0.01	0.01
Less inflationary gain	6.5	6.9	7.4	7.9	8.3
Less other income	0.2	0.2	0.2	0.2	0.2
Total	**37.3**	**39.0**	**41.3**	**43.6**	**45.5**

Table 18. Total Revenue Targets

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 19 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 "other income" (see Table 18).

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;
- odorisation 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 (Annexure G 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'.

12. REFERENCE TARIFFS

12.1. Derivation of Haulage Reference Tariffs

A key concern of the Authority 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 Authority 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 Authority 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 Authority.

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 20 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.

The table 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 will 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.

Tariff Structure

Envestra has elected to maintain the same structure of Haulage Reference Service Tariffs as in the First Access Arrangement Period. However, a new tariff zone has been created for Dinmore, which is within the Brisbane Region) arising from the fact that Dinmore is a physically discrete network with different attributes. Therefore the Brisbane Region will contain two tariff Zones – the Brisbane Zone and the Dinmore Zone.

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 essentially 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.

12.2. Haulage Reference Tariffs

The X factor in the (1+CPI)*(1-X) price path that results from implementing the above approach is:

- "-0.011" for Volume customers; and
- "-0.016" for Demand customers

for each year of the Access Arrangement Period.

13. REFERENCE TARIFF POLICY

13.1. Code Requirements

Section 3.5 of the Code states that an Access Arrangement must include a Reference Tariff Policy.

This Policy is designed to address all of the principles that govern any movement in Reference Tariffs during an Access Arrangement Period. These principles may also influence Reference Tariffs for subsequent Access Arrangement Periods.

Section 3.5 of the Code states that the Reference Tariff Policy must, in the Regulator's opinion, comply with the Reference Tariff Principles set out in section 8 of the Code.

Section 8 of the Code identifies some possible elements of a Reference Tariff Policy. They include:

- a mechanism for treating redundant capital (sections 8.27 – 8.29 of the Code);
- Fixed Principles (sections 8.47 and 8.48 of the Code); and
- Incentive Mechanisms.

However, the Authority has determined that there should be no Fixed Principles or Incentive Mechanism.

13.2. Compliance

Sections 4 and 5 of the Access Arrangement set out the Reference Tariff Policy.

Section 4 deals with the process for the variation of Reference Tariffs. Specifically, section 4.3 deals with how Reference Tariffs are varied on an annual basis in accordance with formulae approved by the Authority. Section 4.4 deals with the process for adjustment of Reference Tariffs due to a Trigger Event. The process is governed to a large extent by the procedures set out in sections 8.3B to 8.3H of the Code.

Section 5 of the Reference Tariff Policy sets out how Redundant Capital will be treated under the Access Arrangement.

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 process would not be efficient or in the interests of Users. 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 section 6 of the Access Arrangement and in Annexure G.

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.

It is noted that in contrast to the payment term originally proposed by Envestra, which involved a certain amount of prepayment of services (as occurred in the First Access Arrangement Period),

in the Second Access Arrangement Period payment for services will occur in arrears, on an accrual basis. Therefore the invoice issued in one month will be for all services rendered in the previous month (regardless of whether meters have been read or not in relation to haulage services). Because all relevant data will not be available to determine the exact quantity of services (or gas) delivered in the previous month, Envestra will need to make estimations where appropriate. Reconciliations of estimates and actuals will take place in subsequent invoices.

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 21 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 22 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

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. 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.

Following a consideration of the above factors and other reports prepared by its consultants, the Authority approved demand forecasts for Volume and Demand customers as set out below and in Tables 14.4 and 14.3 (p138 and 136) of the Final Decision respectively.

TJ	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Brisbane – Residential	673	676	682	688	695	703
Northern – Residential	23	23	23	23	23	23
Brisbane - Commercial	1,058	1,088	1,125	1,165	1,202	1,229
Northern - Commercial	160	165	169	175	180	183
Total	1,914	1,952	1,999	2,051	2,100	2,138
Growth (%)		2.0	2.4	2.6	2.4	1.8

Table 23. Demand Forecast for Tariff V

MDQ (GJ)	2006-07	2007-08	2008-09	2009-10	2010-11
Brisbane	16,720	17,020	17,330	17,640	17,960
Northern	400	410	420	430	440
Total	17,120	17,430	17,750	18,070	18,400
Growth (%)		1.8	1.8	1.8	1.8

Table 24. Demand Forecast for Tariff D

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