

**ACCESS ARRANGEMENT
FOR THE
SOUTH AUSTRALIAN GAS DISTRIBUTION NETWORK:

EXPLANATORY INFORMATION**

September 2007

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1. INTRODUCTION

1.1 Purpose of this Document

This document is entitled the Access Arrangement Explanatory Information in relation to the approved revised Access Arrangement for the Envestra Limited (Envestra) South Australian Network (the Network).

This document has been prepared to set out such information as is necessary to enable Users and Prospective Users to understand the derivation of the elements of the Access Arrangement¹. Where relevant, information has been drawn from the Access Arrangement Information submitted by Envestra to the Essential Services Commission of South Australia (Commission). However, Users and Prospective Users should note that no warranty is given in respect of any technical content drawn from the Envestra document.

1.2 Background

The Access Arrangement was initially approved by the South Australian Independent Pricing and Access Regulator (SAIPAR) in April 2003. By *Statutes Amendment (Gas and Electricity) Act 2003*, the Commission became the Relevant Regulator for South Australia under the Code on 1 July 2003.

On 30 September 2005, Envestra submitted revision to its approved Access Arrangement to the Commission.

On the 28 March 2006, the Commission released a Draft Decision that rejected elements of Envestra's revisions to the Access Arrangement. Following submissions by Envestra and other parties, the Commission released a Final Decision on 30 June 2006, which again rejected elements of Envestra's revisions to the Access Arrangement. Consequently, Envestra was required to amend the proposed Access Arrangement and submit that amended Access Arrangement to the Commission. The Commission released its Further Final Decision on 27 October 2006, not approving the amended revisions. The Commission therefore drafted and approved its own amended Access Arrangement. The Commission also drafted and released this document.

On 10 November 2006, pursuant to section 39 of Schedule 1 to the *Gas Pipelines Access (South Australia) Act 1997*, Envestra applied to the relevant appeals body (the Administrative and Disciplinary Division of the District Court of South Australia) for a review of certain elements of the Commission's decision to not approve Envestra's amended revisions.

The Access Arrangement and this Access Arrangement Explanatory Information document reflect the decisions and orders of the District Court of South Australia in respect of the review application.

1.3 The Network

The main centres served by the Network are Adelaide, Mt Gambier, Whyalla, Port Pirie, Barossa Valley, Murray Bridge and Berri. Maps outlining the areas covered by the Network are available from Envestra's website "www.envestra.com.au". Statistics and further information relating to the Network are included in sections 16 and 17 of this Access Arrangement Explanatory Information.

1.4 Interpretation

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

¹ It should be noted that a detailed excel spreadsheet model has been developed to determine the various elements of the Commission's decision. A copy of the model has been provided to Envestra. Due to the complex nature of some issues, they may have been simplified for the purpose of this document. In case of any inconsistency between this Access Arrangement Explanatory Information and the spreadsheet model, the latter prevails.

In this document, unless the context otherwise requires, where a word or meaning is capitalised it has:

- (a) the meaning given to that word or phrase in the Code; or
- (b) the meaning given to that word or phrase in the Access Arrangement.

In this document, all monetary values are expressed in real terms using prices as at 31 December 2005, unless otherwise stated.

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

1.5 Contact Details

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

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2. SUMMARY AND OVERVIEW

2.1 Summary

This document is based on the Access Arrangement Information submitted by Envestra on 24 July 2006, modified to reflect the Access Arrangement drafted and approved by the relevant appeals body under the *Gas Pipelines Access (South Australia) Act 1997*.

2.2 Outcome of First Access Arrangement Period

The Access Arrangement approved by SAIPAR in April 2003 set out the tariffs, policies and terms and conditions to apply to third party access to the Network for the period 2001/2002 to 2005/2006. However, the proposed Access Arrangement originally submitted by Envestra in February 1999 was only intended to cover the five-year period from 1999/2000 to 2003/2004. Due to the Access Arrangement approval process being much longer than originally anticipated, it became necessary to extrapolate the forecasts (during the approval process) to cover the period up to 2005/2006.

2.3 Tariffs for Second Access Arrangement Period

Envestra has:

- (a) retained the number and structure of its Reference Tariffs at the commencement of the Second Access Arrangement period;
- (b) reduced the number of tariff Zones in the Adelaide Region from four to three, as one of the Zones has only one customer;
- (c) gained annual real increases in Reference Tariffs for each year of the Second Access Arrangement Period after 2006/2007. The X factor (to be used in the CPI-X formula) is -0.2 per cent for 2007/08 and -0.93 per cent for 2008/09 – 2010/11.

The increases in network tariffs are required to recover the prudent costs of operating the Network.

2.4 Maintaining Past Service Levels

Envestra 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, the results of which are provided to the Office of the Technical Regulator. In addition, the Office of the Technical Regulator also conducts a technical audit of Envestra's operations annually.

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 order to provide Users and Prospective Users with an understanding of the Access Arrangement revisions process under the Code.

3.2 Revisions Process under the Gas Code

The revisions to Envestra's Access Arrangement were 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."*

4. TOTAL REVENUE FORMULA

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

Reference Services revenue consists of:

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

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

The Total Revenue is calculated using:

- (a) a Capital Base of \$814.36m as at 1 July 2006, adjusted each year for:
 - forecast New Facilities Investment (see section 7 of this Access Arrangement Explanatory Information);
 - depreciation calculated on a straight-line basis (section 6); and
 - forecast disposals (section 5.5).
- (b) a real pre-tax rate of return ranging between 5.64 per cent and 6.65 per cent for the period 13 November 2006 – 27 August 2007, and between 5.8 per cent and 6.65 per cent for the remainder of the Second Access Arrangement Period (section 8.1);
- (c) Non-Capital Costs (section 9); and
- (d) efficiency carryover (section 10).

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

5. CAPITAL BASE

The approach for rolling forward the Capital Base is based on the following formula:

$$\begin{aligned} & \text{Opening Asset Value}_i \\ & + \text{New Facilities Investment}_i \\ & - \text{Customer Contributions}_i \\ & - \text{Asset Disposals}_i \\ & - \text{Depreciation}_i \\ & = \text{Closing Asset Value}_i \end{aligned}$$

where:

All values are expressed in real terms (expressed in December 2005 dollars); and

Depreciation is expressed in current cost terms and calculated on a straight-line basis over the economic useful life of the asset.

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

5.1 Capital Base at commencement of first Access Arrangement Period

SAIPAR determined that the Capital Base as at 30 June 1998 was \$617.0m in nominal dollars, which is \$739.91m in December 2005 dollars². The roll-forward of the Capital Base to the commencement of the first Access Arrangement period (1 July 2003) is \$796.35m, as shown in the following table.

Table 1 Capital Base at commencement of first Access Arrangement Period

Capital Base \$m (December 2005 dollars)	1998/99	1999/00	2000/01	2001/02	2002/03
Opening Asset Value	739.9	752.8	766.8	777.5	791.0
add Net Capital Expenditure	27.4	28.7	25.9	29.1	21.4
less Depreciation	14.5	14.8	15.2	15.6	16.1
Closing Asset Value	752.8	766.8	777.5	791.0	796.3
Average Asset Value	746.4	759.8	772.1	784.2	793.7

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 2003/2004 to 2004/2005. New Facilities Investment for 2005/2006 is set at a forecast prepared by the Commission based on Envestra's actual expenditure up until April 2006. Also shown is the value of customer contributions, with the forecast for 2005/2006 being based on Envestra's latest information.

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

² p12, SAIPAR Final Approval of Access Arrangement for Envestra Limited's SA Natural Gas Distribution System, April 2003

Table 2 Net New Facilities Investment 2003/04- 2005/06

Net New Facilities Investment \$m (December 2005 dollars)	2003/04	2004/05	2005/06f
Gross New Facilities Investment	21.8	21.4	26.4
<i>Less:</i> Customer Contributions	(0.5)	(0.3)	(0.4)
Net New Facilities Investment	21.3	21.1	26.0

Any difference between actual expenditure and forecast expenditure in 2005/2006 will be taken into consideration in setting the Capital Base at the commencement of the Third Access Arrangement Period.

For example, if actual expenditure in 2005/2006 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.

Table 3 Net New Facilities Investment 2003/2004- 2005/2006

New Facilities Investment \$m (December 2005 dollars) (excluding FRC)	2003/04	2004/05	2005/06f
Mains	6.5	8.3	11.8
Inlets	6.3	6.9	6.7
Meters	4.5	4.1	7.2
SCADA	0.0	0.2	0.0
IT Systems	0.1	0.7	0.0
Other Distribution System Equipment	0.1	0.1	0.0
Other	3.7	0.7	0.3
New Facilities Investment	21.3	21.1	26.0

In the latter half of the First Access Arrangement Period, Envestra spent considerable New Facilities Investment (and Non-Capital Costs) implementing FRC. Envestra subsequently received compensation for this cost from the South Australian government in the form of a lump sum payment in lieu of the revenue that Envestra would otherwise have had to recover from Users. Because Envestra was not required to adjust its revenue base in the First Access Arrangement Period for FRC, the New Facilities Investment associated with the government contribution has been excluded from the Regulatory Asset Base. The depreciated FRC New Facilities Investment not associated with the government contribution (i.e. FRC telemetry) has been added to the Regulatory Asset Base as at the start of the Second 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 SAIPAR (adjusted for actual inflation) and is as shown in the following table.

Table 4 Regulatory Depreciation 2003/2004- 2005/2006

Depreciation \$m (December 2005 dollars)	2003/04	2004/05	2005/06	TOTAL
SAIPAR Depreciation	16.5	16.8	17.1	50.3

5.4 Redundant Capital

As for the First Access Arrangement Period, Envestra is not forecasting any Redundant Capital for the Second Access Arrangement Period.

In accordance with the Final Decision, no adjustments have been made for any Redundant Capital.

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 during the first Access Arrangement Period, "actual percentage change in the CPI" has been used, as required under section 3.3.3.2 of the approved Access Arrangement that applied during the first Access Arrangement Period. The Consumer Price Index is defined in that 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

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

Table 5 Roll forward of the Capital Base 2003/2004- 2005/2006

Capital Base \$m (December 2005 dollars)	2003/04	2004/05	2005/06
Opening Asset Value	796.3	801.2	805.5
add Net Capital Expenditure	21.3	21.1	26.0
less Depreciation	16.5	16.8	17.1
Closing Asset Value	801.2	805.5	814.4
Average Asset Value (\$m Dec 05)	798.8	803.3	809.9
Average Asset Value (\$m nominal)	760.2	782.9	810.5

6. FORECAST DEPRECIATION

Forecast depreciation has been calculated using a straight-line approach based on the asset lives adopted in deriving the Initial Capital Base. This is consistent with the requirements of the Code.

In particular, the straight-line approach ensures that:

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

The economic useful life (EUL) of each asset type, that is used to calculate depreciation for new assets, is shown in the following table. For purposes of consistency, the asset lives as approved by SAIPAR for the First Access Arrangement Period have been adopted.

Table 6 Asset Lives (years) for Network Assets

Asset Categories	EUL (years)
Mains and Inlets	83
Meters	29
SCADA	50
Other Distribution Equipment	50
IT Systems	5
Other	10
FRC Telemetry	5
Equipment, Vehicle & Other	10

6.1 Forecast Depreciation by Category

The following table shows the calculated depreciation over the Second Access Arrangement Period for each category of asset.

Table 7 Forecast Depreciation

Total Depreciation \$m (December 2005 dollars)	2006/07	2007/08	2008/09	2009/10	2010/11
Mains and Inlets	8.0	8.3	8.6	8.9	9.2
Meters	3.1	3.4	3.7	4.0	4.2
Telemetry	0.0	0.1	0.1	0.1	0.1
IT Systems	0.5	1.3	2.4	3.0	2.9
Other Distribution Equipment	6.2	6.2	6.2	6.2	6.3
Other Assets	0.8	0.9	1.0	1.0	1.1
FRC Depreciation	0.4	0.4	0.4	0.1	0.1
Total Depreciation	19.1	20.6	22.3	23.3	23.9

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. The Asset Management Plan has been submitted to the Office of the Technical Regulator.

New Facilities Investment for the Second Access Arrangement Period has been forecast as set out in the table below (and as set out in the Final Decision).

Table 8 Forecast New Facilities Investment

Total New Facilities Investment \$m (December 2005 dollars)	2006/07	2007/08	2008/09	2009/10	2010/11
Mains	19.8	20.8	13.7	17.3	15.0
Inlets	7.4	7.8	7.3	8.0	8.3
Meters	8.0	7.8	7.9	8.0	7.6
Telemetry	1.3	1.3	0.6	1.1	0.7
IT Systems	3.6	4.2	6.7	0.0	3.1
Other Distribution System Equipment	1.3	1.4	0.7	0.7	0.7
Other	0.5	0.9	0.5	0.5	0.5
Net Capex	42.0	44.0	37.4	35.5	35.9

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

- (a) increased replacement of aging cast iron and unprotected steel mains;
- (b) security of supply projects that will provide consumers with a much higher degree of reliability of gas supply;
- (c) increased meter replacements, which will peak at about 36,000 per year in the next period, compared with about 24,000 in 2004/2005; and
- (d) increased IT expenditure that will provide Envestra with a robust, long-term IT capability for the business.

7.2 Stay in Business Capital Expenditure

7.2.1 Mains replacement

In accordance with the Final Decision, the forecast for mains replacement over the Access Arrangement Period does not include the renewal of mains in the CBD of Adelaide. However, the

Access Arrangement provides for Envestra to apply for a cost pass-through in relation to this project upon the Regulator receiving confirmation that Envestra will be proceeding with this project. The relevant trigger mechanism to accomplish this is contained in section 4.5 of the Access Arrangement.

7.2.2 Meter Changes

Envestra is required to periodically change gas meters in order to test them for metering accuracy. These periodical meter changes (PMCs) take place at intervals approved by the Technical Regulator. A continuous changeover and testing programme is in place to ensure that each gas meter continues to operate within prescribed tolerances.

About 24,000 meters were changed over in 2004/2005. As set out in Envestra Asset Management Plan, this figure will reach 36,000/year in the forecast period. 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, PMCs account for a correspondingly higher cost compared to the PMC cost for the First Access Arrangement Period.

7.2.3 Security of Supply

Envestra's Asset Management Plan provides details of the process undertaken that underpins the security of supply projects. A significant part of this plan entails the completion of the Eastern Ring Main (\$14.2m), reinforcement of supply to the northern Gawler region (\$7.4m) and completion of the Southern Loop (\$7.3m) that will ensure security of supply to the growing southern suburbs. It is noted, however, that, in accordance with the Final Decision, the Eastern Ring Main and the Southern Loop are not included in the forecasts for the Access Arrangement Period. Instead Envestra may apply for a pass-through of costs in relation to these projects when the Regulator receives confirmation that Envestra will be proceeding with these projects. The relevant trigger mechanism to accomplish this is contained in section 4.5 of the Access Arrangement.

7.2.4 Supervisory Control and Data Acquisition

Gas distributors rely on Supervisory Control and Data Acquisition (SCADA) systems for real-time monitoring of network conditions and for the remote control of gas flow and pressures to optimise system performance and maximise safety. Envestra's SCADA system has relatively few features of a modern SCADA system, with a limited number of real-time pressure monitoring installations.

In addition, unlike its counterparts in other jurisdictions, Envestra's network has no remote control capability. In order to comply with good industry practice in this regard, Envestra's New Facility Investment forecast provides for the installation of

- (a) remote control devices on key valves and installations, such that the emergency isolation of network sections is possible should the need arise; and
- (b) pressure monitoring at key points throughout the network, so that routine and emergency planning capability is enhanced.

7.2.5 Regulator Stations and Valves

This category provides for on-going replacement and improvement of regulator stations and valve pits across the Network.

7.2.6 Information Technology

The IT forecasts in this section allow for the replacement and upgrade of current IT systems to enable continuation of the current service delivery of those systems.

While some aspects of the forecast expenditure represent a continuation of IT programmes undertaken during the First Access Arrangement Period, other aspects as described above relate to initiatives that will address capability gaps.

7.2.7 *Other*

This category includes:

(a) Odourising stations

Envestra ensures that natural gas entering the network is adequately odourised for safety reasons. Envestra operates 14 odourising stations, which vary in design and capability. It is essential that odourising stations continue to operate safely and effectively 24 hours per day, seven days per week. The capital expenditure over the Second Access Arrangement Period will ensure that adequate spare parts and back-up systems are available should a malfunction occur at any of the odourising stations.

(b) Heating value measurement

Envestra has a responsibility to ensure that the heating value of natural gas (that is the basis on which customers are charged for gas consumption) is accurate and in accordance with regulatory requirements. The connection of the SEAGas pipeline to the Network has complicated the measurement of heating value, and the installation of additional monitoring equipment in the Second Access Arrangement Period will allow for a greater degree of confidence in consumer billing accuracy.

(c) Cathodic protection systems

Cathodic protection is an integral element of any network that utilises steel pipework. The forecast allows for replacement of cathodic protection transformer rectifier units that are necessary for the on-going operation of the cathodic protection system.

7.3 Growth Capital Expenditure

7.3.1 *Mains/Inlets/Meters*

This category provides for:

- (a) 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;
- (b) 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;
- (c) 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;
- (d) mains and associated facilities that are constructed on a routine basis to improve security of supply to consumers.

7.3.2 Extensions to Towns

Envestra had identified seven towns that it believed may be suitable for network extensions. These included Mt Barker (one of the fastest growing towns in Australia), McLaren Vale, Monarto, Tanunda, Renmark, Loxton and Waikerie.

Based on detailed economic analysis, Envestra determined that extensions to McLaren Vale, Tanunda and the Monarto Industrial Estate would pass the economic feasibility test in the Code. Envestra therefore has allowed for an extension of its network to these three towns in the Second Access Arrangement Period. Over the next 20 years, Envestra expects to connect around 2,250 new customers in these three towns to its network. The gas demand forecast and New Facilities Investment forecast for these towns have been incorporated into the Access Arrangement.

7.3.3 Other

A small amount of expenditure is required to enable Envestra to remove sub-meters from domestic premises. Such meters were historically installed as an economical means of connecting additional consumers. This practice is no longer undertaken and the expenditure allows for rectification of those connections.

An allowance has also been made for the additional cost that is expected to be incurred from increased use of high flow capacity meters on new connections, which are becoming increasingly necessary due to the needs of modern gas appliances.

8. COST OF CAPITAL

8.1 Approach

The regulatory rate of return, cost of capital or weighted average cost of capital (WACC), is a key input to the revenue determination. The CAPM formula has been used as a basis for estimating WACC, which is calculated on a real, pre-tax basis.

The real pre-tax rate WACC is calculated from the nominal post-tax WACC formula below:

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

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 ($R_f + D_m$)

The forward transformation methodology has been used to convert the post-tax nominal WACC to a pre-tax real WACC as set out below.

Step 1: convert the nominal post-tax rate of return ($\text{WACC}_{\text{nominal post-tax}}$) into a nominal pre-tax rate by dividing by the tax rate to get:

$$\text{WACC}_{\text{nominal pre-tax}} = \frac{\text{WACC}_{\text{nominal post-tax}}}{(1 - t_c)}$$

Step 2: convert the nominal pre-tax rate of return ($\text{WACC}_{\text{nominal pre-tax}}$) into a real pre-tax rate ($\text{WACC}_{\text{real pre-tax}}$) by dividing by the inflation rate (π) using the Fisher equation to get:

$$\text{WACC}_{\text{real pre-tax}} = \left(\frac{1 + \text{WACC}_{\text{nominal pre-tax}}}{(1 + \pi)} \right) - 1$$

This approach is consistent with that used previously by SAIPAR.

This approach yields a real pre-tax rate of return ranging between 5.64 per cent and 6.65 per cent for the period 13 November 2006 – 27 August 2007, and between 5.8 per cent and 6.65 per cent for the remainder of the Second Access Arrangement Period. The latter range reflects the decisions and orders of the District Court of South Australia, acting as the relevant appeals body under the *Gas Pipelines Access (South Australia) Act 1997*, on the review application made by Envestra.

9. NON-CAPITAL COSTS

9.1 Summary of Non-Capital Costs

Forecasts of efficient non-capital costs for the Second Access Arrangement Period are shown in the following table. UAFG is included as a non-capital cost.

Table 9 Non-Capital Cost Forecast

Non Capital Costs \$m (December 2005 dollars)	2006/07	2007/08	2008/09	2009/10	2010/11
Operating & Maintenance	26.0	26.0	25.7	26.1	26.2
Administration and General	7.2	7.0	7.3	7.2	7.3
FRC	6.3	6.6	6.5	6.8	6.8
Network Development	6.4	6.5	6.5	6.6	6.6
Material changes	1.3	1.5	1.5	1.4	1.4
Efficiency Factor	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)
Unaccounted for Gas	7.2	7.1	7.1	7.0	6.9
Licence Fee Increase	0.3	0.3	0.3	0.3	0.3
Less: Network Management Fee	(3.8)	(3.9)	(3.9)	(3.9)	(3.9)
TOTAL	50.4	50.6	50.5	50.9	50.9

In forecasting the network operating costs over the Second Access Arrangement Period, actual 2004/2005 costs have been used as a baseline.

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:

- (a) Network management;
- (b) Network maintenance;
- (c) Meter reading and billing;
- (d) Network planning;
- (e) Facilities management; and
- (f) Commission licence fees.

9.3 Administration and General Costs

Envestra's administration and general costs include:

- (a) accounting and finance costs;
- (b) human Resource Management and Administration;
- (c) information Technology costs;
- (d) regulatory functions; and
- (e) 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:

- (a) 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
- (b) Market Development costs. 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; and
 - 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 operating costs account for approximately 25 per cent of Network Development costs. The activities associated with this expenditure are essential to connect new customers to the Network.

9.5 FRC Operating Costs

FRC Non-Capital Costs have been identified as a separate item. The government contribution towards FRC costs has been deducted from these costs in the revenue derivation calculation (as set out in section 11.2).

9.6 Material Changes

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. The "Material Changes" category includes such costs.

9.7 Efficiency Factor

The Efficiency Factor represents forecast cost reductions arising from expected productivity improvements of 1.2 per cent per annum.

9.8 "Unaccounted For Gas" Costs

The level of UAFG in the Network is impacted mostly by leakage arising from aging cast iron and unprotected steel mains. 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 1545 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 100 km/year, this results in an annual reduction in UAFG volume of 15 TJ.

Given that the higher rate of mains replacement will not commence until 2006/2007, the full reduction in UAFG volume will not be realised until 2007/2008. Due to the expiry of the previous contract for supply of gas for UAFG, and the market now containing a number of participants that could potentially supply that gas, Envestra has tendered for the supply of gas for UAFG for the Access Arrangement Period. This has ensured an efficient cost in relation to this key component of Non-Capital Cost.

9.9 Licence Fee Increase

Subsequent to the making of the Final Decision, and Envestra's response to the Final Decision, the Minister for Energy increased the amount of the annual licence fee payable by Envestra for its gas distribution licence by \$300,000 per annum (in dollars of December 2006) to \$1,991,000 per annum. The figures presented in the Final Decision incorporated the amount of the previous licence fee (escalated by CPI for each year). The recovery of the additional licence fee amount has been incorporated within the Total Revenue, rather than engaging in a subsequent process under section 8.3A of the Code.

10. EFFICIENCY CARRYOVER – FIRST ACCESS ARRANGEMENT PERIOD

The incentive mechanism approved by SAIPAR in the first Access Arrangement allowed Envestra to retain the full value of any efficiency gains, including reductions in the costs of providing Reference Services and any revenue from the sale of Reference Services greater than forecast, for two Access Arrangement Periods. As discussed in section 2.1, Envestra's actual expenditure on Non-Capital Costs and New Facilities Investment exceeded the benchmarks set by SAIPAR. Therefore, under the incentive mechanism approved by SAIPAR, no incentive payment is payable.

Furthermore, gas volumes transported have been lower than forecast by SAIPAR (section 2.1). Envestra has therefore not qualified for an incentive payment arising from the sale of Reference Services being greater than forecast.

11. TOTAL REVENUE REQUIREMENT

11.1 Derivation of Total Revenue Requirement

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

Table 10 RAB roll forward – Second Period

Capital Base \$m (December 2005 dollars)	2006/07	2007/08	2008/09	2009/10	2010/11
Opening Asset Value	814.4	838.9	862.3	877.4	889.6
FRC telemetry	1.6	0.0	0.0	0.0	0.0
Net Capital Expenditure	42.0	44.0	37.4	35.5	35.9
<i>less</i> Depreciation	19.1	20.6	22.3	23.3	23.9
Closing	838.9	862.3	877.4	889.6	901.6
Average Asset Value	826.6	850.6	869.8	883.5	895.6

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

Table 11 Derivation of Total Revenue

Cost Reflective Revenue Derivation \$m (December 2005 dollars)	2006/07	2007/08	2008/09	2009/10	2010/11
Return on Assets	50.8	52.9	54.2	55.1	55.8
Return on Working Capital	0.1	0.1	0.1	0.1	0.1
Regulatory Depreciation	19.1	20.6	22.3	23.3	23.9
Non-capital Costs	54.1	54.5	54.4	54.7	54.8
Efficiency Carry-over	0.0	0.0	0.0	0.0	0.0
<i>Less</i> Prepayment Adjustment	1.8	1.8	1.9	1.9	1.9
Total \$m	118.6	122.4	125.3	127.5	128.8

NB: rounded to nearest \$0.1m

11.2 Components of Total Revenue

The Total Revenue will be sourced from:

- (a) Haulage Reference Services; and
- (b) 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.

11.2.1 Ancillary Reference Service Revenue

The forecast revenue from the provision of Ancillary Reference Services is determined from

the forecast demand for those Services and the cost for the provision of each of those Services. The forecast demand has been held constant with current levels over the regulatory period while charges are forecast to increase by the CPI. This yields a total revenue from Ancillary Reference Services of \$0.9m per year (expressed in December 2005 dollars).

11.2.2 Haulage Reference Services Revenue

The revenue to be obtained from the provision of Haulage Reference Services is derived by subtracting from the Total Revenue the revenue forecast for the provision of Ancillary Reference Services, as set out in the following table.

In addition, it is necessary to subtract the amount that Envestra is not required to recover due to the contribution made from the State government to Envestra for the purposes of FRC. The amounts that equate to the government's contribution are subtracted as shown in the following table.

Table 12 Haulage Reference Services Cost Reflective Revenue Requirement

Derivation of Haulage Reference Services Revenue \$m (December 2005 prices)	2006/07	2007/08	2008/09	2009/10	2010/11
Total Revenue Requirement	118.6	122.4	125.3	127.5	128.8
<i>Less</i> Ancillary Reference Services Revenue	0.9	0.9	0.9	0.9	0.9
<i>Less</i> Govt. Contribution on FRC	4.9	4.9	4.9	0.0	0.0
= Haulage Reference Services Revenue	112.8	116.6	119.5	126.6	127.9

NB: rounded to nearest \$0.1m

11.3 Haulage Revenue Requirement Price Path

The haulage revenue requirement calculated above was then adjusted to provide a smooth price path over the period. The price path for the haulage revenue requirement takes into account forecasts of demand. The price path provides for CPI escalation of Haulage Reference Tariffs in 2006/2007 and for the variation of Haulage Reference Tariffs on 1 July 2007 such that the average revenue that Envestra receives from Haulage Reference Services in 2007/08 increased by CPI + 0.2%. Prices are set in the last three years of the Access Arrangement Period (2008/09 – 2010/11) in order to equate the net present value of the cost reflective revenue stream and the forecast tariff revenue stream.

Smoothing of revenue provides customers with constant price adjustments throughout the last three years of the Access Arrangement Period rather than varying prices according to the specific operating programs undertaken by Envestra.

Table 13 Price Path Revenue

Price Path Haulage Revenue	2006/07	2007/08	2008/09	2009/10	2010/11
\$m (December 2005 dollars)	116.6	118.0	120.3	122.6	124.7

12. SERVICES

12.1 Haulage Reference Services

Envestra will continue to provide three Haulage Reference Services:

- (a) Demand Haulage Reference Service – this service provides for the forward haulage of Gas to Delivery Points (DPs) with an annual consumption that exceeds 10TJ per year;
- (b) Commercial Haulage Reference Service – this service applies to all DPs that are not Demand DPs or Domestic DPs; and
- (c) Domestic Haulage Reference Service – this service provides for the haulage of Gas to DPs where Gas is used primarily for domestic purposes.

The Haulage Reference Services will continue to include:

- receiving Gas injected at a Receipt Point;
- odorisation of Gas where Gas is not already odorised;
- haulage of Gas from a Receipt Point to a DP;
- allowing the withdrawal of Gas at a DP;
- provision of UAFG;
- provision and maintenance of Metering Equipment;
- meter reading on a quarterly basis for Domestic and Commercial DPs, and on a monthly basis for Demand DPs; and
- provision of metering data and other information in accordance with the Retail Market Rules (RMR).

It is noted that gas balancing (the reconciliation of gas injections into the network and gas withdrawals at DPs) is managed through the Retail Market Rules.

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.

12.2 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 that 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 not frequently requested (Envestra receives less than 50 requests for this service per year) and therefore do not qualify as Reference Services, despite such a service being classified as a Reference Service for the first Access Arrangement Period.

Following a review of Ancillary Reference Services, Envestra will continue with the Special Meter Read Service as an Ancillary Reference Service, as it is commonly demanded by Users, but will discontinue providing (as Reference Services) the two Ancillary Reference Services relating to disconnection in the street for non-payment and the associated reconnection service, due to their low demand. These services will be replaced with the services of disconnection at the meter and reconnection at the meter, as these services are commonly requested by Users.

Accordingly, the Ancillary Reference Services are:

- (a) Special Meter Reading Service – meter reading of a DP that is in addition to scheduled meter readings that form part of the Haulage Reference Service;
- (b) Disconnection Service and Reconnection Service in relation to Domestic DPs – these services are required by Retailers as part of their debt management process. Disconnection involves taking whatever action is necessary at the location of the Metering Equipment to prevent the flow of Gas. This includes one or more of the following:
 - turning off the service valve at the Metering Equipment, with or without a locking device;
 - inserting a wad in pipework downstream of the isolation valve;
 - removal of the meter.

The Reconnection service involves reversing the actions taken to perform a Disconnection plus actions necessary to restore supply safely to the Customer. This involves purging of the outlet service and relighting appliances where applicable.

12.3 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).

12.4 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 and the Office of the Technical Regulator with a number of performance indicators and data, including:

- (a) the number of connections not completed within regulatory timeframes;
- (b) the number of planned and unplanned interruptions to customers' supply;
- (c) the number of major supply interruptions;
- (d) the number of over-pressurisations;
- (e) data on gas leakage;
- (f) data on accuracy of gas meters;
- (g) the number of requested meter tests not performed within the specified timeframe; and
- (h) the number and type of complaints made to Envestra.

In addition, Envestra must comply with a host of service standards set out in relevant regulatory instruments, these being predominantly:

- (a) the Gas Distribution Code;
- (b) the Gas Metering Code; and
- (c) the Retail Market Rules.

Apart from those areas where Envestra interacts with consumers and Users, Envestra must comply with numerous standards that pertain to the operation and maintenance of the Network. Such standards ensure that gas consumers receive a high level of service and reliability. 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.

For example, Envestra is required to:

- (a) odorise gas to prescribed levels;
- (b) maintain gas pressure within the Network above a set level;
- (c) survey the Network regularly for gas leakage; and
- (d) 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.

13. REFERENCE TARIFFS

13.1 Derivation of Haulage Reference Tariffs

Haulage Reference Tariffs have been developed using a CPI-X approach, adopting a tariff basket approach to price control. Tariffs, and the Po and X factors that underlie them have been derived using the principles set out below.

13.1.1 *Tariff Structure*

The structure of Haulage Reference Service Tariffs is consistent with that used in the First Access Arrangement Period.

Therefore, the Domestic Tariff will be the same for all Regions and will continue to be charged on the basis of:

- (a) a daily fixed charge; and
- (b) two separate volumetric bands with declining block tariffs.

The Commercial Tariff will be the same for all Regions and will continue to be charged on the basis of:

- (a) a daily fixed charge; and
- (b) four separate volumetric bands with declining block tariffs.

The Demand Tariffs will continue to be based on the same regional and a modified zonal structure, and on a Maximum Daily Quantity (MDQ) basis. A minimum charge plus three declining block tariffs for the Adelaide Region and four declining block tariffs for other Regions will continue to apply.

There is a change to the zonal structure for Demand Tariffs such that the number of zones is reduced from four to three.

The zonal approach was adopted for the First Access Arrangement Period because of the elongated nature of the network in Adelaide. Because the city is constrained on the west by the coast and to the east by the Mount Lofty Ranges, development has taken place along a north-south axis. The two transmission pipelines that provide gas to the Adelaide Region terminate at the northern suburbs. Consequently the distance over which gas is transported to Delivery Points varies considerably, with Delivery Points at the southern end of the Network situated up to 40 kilometres from the Receipt Points. As a result, applying a postage-stamp approach to pricing for Demand Delivery Points within the Region was not considered to be cost-reflective in the circumstances.

A zonal approach was therefore selected as providing an appropriate balance, with price increments between Zones determined on the basis of the average length of mains required to transport gas from the Receipt Points. However, the North Western Zone only contains one customer. The North Western Zone has been removed, although Envestra will continue to levy the same tariff to that customer, with the tariff representing a negotiated tariff (for a Negotiated Service). As the North Western Zone was established purely to serve this one customer, the purpose for the existence of the North Western Zone can be effectively eliminated. While this change will have a neutral effect on revenue, the elimination of the North Western Zone will simplify administration and the tariff structure.

A map showing the Zone boundaries is contained in Annexure D of the Access Arrangement.

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, daily overrun charges apply to Demand Delivery Points. The daily overrun charge applies where a Network User’s MDQ is exceeded. In cases 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.

The Access Arrangement that applied during the First Access Arrangement Period had provisions for hourly overrun charges and misclassification charges. As there has been no need to levy such charges to date, these charges have been abolished for the Second Access Arrangement Period.

13.1.2 *Cost Allocation*

The method for allocating revenue between Reference Tariffs over the Second Access Arrangement Period is consistent with the method used in the First Access Arrangement Period. This implies that the share of revenue recovered from each haulage service has been held constant.

Envestra has undertaken two separate (but related) assessments of the allocation of costs to Users by Region.

The first assessment is a fully distributed cost analysis of the Network, and compares the allocated revenue with that forecast to be recovered from Reference Tariffs. This analysis allocates the aggregate building block parameters (i.e. operating expenditure, return on capital and depreciation) firstly to Regions on the Network (including the Demand Regions within the Adelaide metropolitan area) and then to customer type.

The broad outcomes of the model are as follows:

- (a) the recovery of revenue from all Regions is broadly in-line with the costs attributable to each Region;
- (b) the recovery of revenue from Volume customers (particularly in the Adelaide Region) is higher than required to recover costs;
- (c) the recovery of revenue from all Demand customers in the Adelaide Region is lower than required to recover costs, particularly for Northern Zone customers.

The second analysis undertaken by Envestra related to an assessment of the cost reflectivity of all Reference Tariffs. This analysis calculates the incremental cost and the stand-alone cost of servicing different customer types. These cost concepts can be broadly defined as follows:

- (a) stand-alone cost: which reflects the cost to service a market segment on the basis that no other customers are connected to that network (that is, a 100 per cent allocation of relevant costs to a particular market segment); and
- (b) incremental cost: which reflects the additional cost to service a market segment.

The incremental cost therefore reflects the lower bound of efficient costs and the stand-alone cost the upper bound of efficient cost. According to economic theory, prices charged outside of these bounds will result in cross-subsidies, or inefficiencies. For example, prices above stand-alone cost would provide a signal for a new entrant to enter the market and serve a

customer.

Envestra has defined incremental cost as the cost of connecting a new customer that has access to the gas distribution system. The costs include the cost of providing the new customer with a meter and the service from the gas mains to the customer's meter. The stand-alone cost adds to the incremental cost an amount for the use of the upstream gas distribution assets. This was undertaken by allocating a share of the capital cost components of the building block based on the share of total consumption in each customer group. A stand-alone network cost is determined by dividing the allocated capital costs by total customer numbers in each group in order to put reasonable bounds on the measured cost (i.e. it is not reasonable to assume the whole network would be built to serve one customer).

In terms of Demand customers, the analysis shows that all customers lie within incremental and stand-alone costs.

Overall, the analysis shows that all tariffs lie within the band set by incremental and stand-alone cost. The Domestic tariffs are closer to stand-alone costs while Demand tariffs are closer to incremental costs, supporting the findings from the cost allocation model. Overall, both the cost allocation model and cost reflectivity analysis suggest that Envestra's tariffs are cost reflective, although an argument could be mounted to rebalance tariffs in the Adelaide Region away from Volume customers towards Demand customers.

13.1.3 *Tariff Basket Approach*

In this Access Arrangement revision, a tariff basket form of price control has been adopted, consistent with the requirements of the Code.

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 Provider's tariffs:

- (a) 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;
- (b) 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 $CPI * (1-X)$

Where:

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

Envestra has adopted a tariff basket price-cap approach to Reference Tariff variation on the grounds of economic efficiency and compliance with the Code. A separate tariff basket will apply to the Reference Tariffs applying to each haulage Reference Service.

The X factor, which varies between years as shown in Table 14 (section 13.2), will apply to the last four years of the Access Arrangement Period, with CPI escalation of Haulage Reference Tariffs allowed for during 2006/2007.

13.2 Haulage Reference Tariffs

The resultant X factors in the $CPI*(1-X)$ price path that results from implementing the above approach are shown in the following table.

Table 14 Price Path X-Factor

Price Path for Haulage Reference Tariffs	2006/07	2007/08	2008/09	2009/10	2010/11
X factor	0.0	-0.2%	-0.93%	-0.93%	-0.93%

14. REFERENCE TARIFF POLICY

14.1 General

Sections 4 and 5 of the Access Arrangement contain the Reference Tariff Policy and include details of how Reference Tariffs are amended from year to year and procedures for withdrawing or introducing new Tariffs.

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 and relative zonal charges are unchanged (except in relation to the reduced number of Zones), thus reflecting the basis on which costs were originally allocated. A tariff basket approach to price control has been adopted.

14.2 Efficiency Sharing Mechanism – Second Access Arrangement Period

Envestra's Incentive Mechanism must comply with section 8.44 of the Code.

The Incentive Mechanism allows for the sharing of efficiency gains such that the Service Provider receives an estimated 30 per cent of the benefits of any gains, while consumers receive 70 per cent 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 five years.

In addition to the aspect described above, the Incentive Mechanism is based on the following properties:

- (a) no retrospective claw back - Total Revenue requirement for any future Access Arrangement Period will not be adjusted (apart from the carryover mechanism) 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:
 - a reduction in Non-Capital Cost is achieved; and
 - capex savings are made relative to regulator-approved benchmarks - to be measured based on annual changes in expenditure relevant to the benchmark multiplied by real pre-tax WACC;
- (c) no carryover of negative gains from one Access Arrangement Period to the next, unless the Regulator specifically requires otherwise;
- (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. The Commission has 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 two-year pattern. Where there is a negative efficiency gain within an Access Arrangement Period, Envestra is able to put a case to the Regulator 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 exogenously determined material changes in the scope of activities when calculating efficiency gains; and

- (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.

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 and Annexure G of the Access Arrangement.

Due to the introduction of FRC in 2004, most Users have only recently entered into haulage agreements with Envestra. In that process, Envestra took into consideration a number of requests from Users and amended the terms and conditions accordingly. Those refinements to the terms and conditions are reflected in the T&C 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. Examples of such changes are:

- (a) introduction of FRC and the Retail Market Rules;
- (b) new regulatory instruments (Gas Distribution System Code and Gas Metering Code);
- (c) injection of gas from the SEAGas pipeline; and
- (d) installation of telemetry on all Demand DPs.

In summary:

- (a) 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.
- (b) Annexure F allows for the details pertaining to the specific circumstances of the parties entering into the agreement;
- (c) Annexure G sets out the terms and conditions that are to apply, as a minimum, to the provision of each Reference Service. It 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:

- (a) 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;

- (b) clauses 17 and 18 (Part III) apply only to the Ancillary Reference Services;
- (c) clauses 19 to 39 (Part IV) apply to both 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 amendment to Annexure G. Both parties are therefore free to agree to arrangements that reflect their preferred risk profile at a point in time.

16. SYSTEM DESCRIPTION & CAPACITY

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 metropolitan Adelaide constitute the major part of the Network.

Table 15 Summary of Network Composition by Region as at 30 June 2005

Region	Kilometres	%
Adelaide	6,739	93.6
South East	180	2.5
Whyalla	86	1.2
Port Pirie	121	1.7
Riverland	73	1.0
Peterborough	4	0.1
Total	7,203	100

The Network is characterised by four pressure tiers - low, medium, high and transmission. It should be noted that the term 'transmission' in this context refers to distribution mains operating in the pressure range of 1,050 kPa to 1,750 kPa.

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

Table 16 Summary of Network Composition by Pressure Tier at 30 June 2005

	Length (km)				
	Low Pressure	Medium Pressure	High Pressure	Transmission Pressure	Total
Total	2,334	2,003	2,665	201	7,203

The capacity of the Network is analysed on 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). These typically ensure that redundant supply options exist for all major parts of the network.

17. FORECASTS OF DEMAND

The gas demand forecasts are summarised in the following tables.³

Table 17 Gas Demand Forecast for Volume Market

	2006/07	2007/08	2008/09	2009/10	2010/11
Forecasts of Demand (TJ)					
< 10 TJ p.a. Users					
<i>Consumption by Category (TJ)</i>					
Domestic	8,147	8,188	8,210	8,241	8,274
Commercial & Industrial	2,903	2,935	2,961	2,995	3,031
Total (TJ)	11,050	11,123	11,171	11,236	11,305
<i>Number of users by region</i>					
Domestic	361,742	368,843	375,265	382,348	389,618
Commercial & Industrial	8,724	8,843	8,958	9,091	9,204
Total Users	370,466	377,686	384,223	391,439	398,822

Table 18 Gas Demand Forecast for Demand Market

	2006/07	2007/08	2008/09	2009/10	2010/11
Forecasts of Demand (TJ)					
Large Industrial Users					
<i>Maximum Daily Quantity (TJ)</i>					
Adelaide	64.9	65.1	66.5	66.8	65.8
Peterborough	0.1	0.1	0.1	0.1	0.1
Port Pirie	3.6	3.6	3.6	3.6	3.6
Riverland/Murray Bridge	0.8	0.8	0.8	0.8	0.8
South East	0.9	0.9	1.0	1.0	1.1
Whyalla	0.1	0.1	0.1	0.1	0.1
New Towns	-	-	0.3	0.4	0.5
Total (TJ)	70.3	70.5	72.2	72.6	71.8
<i>Number of users by region</i>					
Adelaide	138	139	140	142	143
Peterborough	1	1	1	1	1
Port Pirie	2	2	2	2	2
Riverland/Murray Bridge	2	2	2	2	3
South East	5	5	5	5	5

³ In the tables, reference to Users should be interpreted as references to customers.

Whyalla	1	1	1	1	1
New Towns	-	-	3	4	5
Total (TJ)	149	150	154	157	160